

An Evaluation of Teaching Styles of Advanced Level Science Stream Teachers in Colombo District Schools

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Abstract - Teaching styles are different approaches of teaching. Student-centered approach to teaching increase student-teacher interaction, student motivation and prepare the students for adult learning in universities. To promote student-centered teaching it's important for the teachers to identify their teaching styles. This study's aim was to identify the teaching styles and the related factors of Sri Lankan school teachers. The study followed an analytical cross sectional study design and was conducted in 25 functional grade 1 AB schools in Colombo district, with the participation of 176 A/L science stream teachers. Schools were randomly selected and data was collected using two research tools, Van Tilburg/Heimlich Teaching Beliefs Scale and Principles of Adult Learning Scale. Relevant socio-demographic data was also collected. The data analysis was done using 16th version of SPSS. From the total of 176 participants 5.2% have a student-centered teaching style and 94.8% follow a teacher centered teaching style. Majority of participants have an awareness of their own teaching styles. There is a negative correlation between teaching styles with age ($r=-0.26$) and teaching experience ($r=-0.18$). There is a statistically significant difference in teaching styles based on gender ($p=30.2$) with female teachers preferring more student-centered approaches. The commonest indicative factor identified in the participants' teaching styles is participation in learning process. Factor analysis of Van Tilburg/Heimlich Teaching Beliefs Scale indicate that participants try to use student centered activities in teaching however are hesitant to change their teaching methods to cater individual learner needs. Majority of the study participants currently follow a teacher-centered teaching style. This may be due to their lack of training and lack of experience in student-centered teaching; however, their teaching methods include several student-centered teaching approaches. The teaching styles are associated with age, gender and teaching experience.

Key Words: Principles of Adult Learning Scale, Van Tilburg/Heimlich Teaching Beliefs Scale, Sri Lanka

I. INTRODUCTION

Education level in Sri Lanka has the highest ranking in South Asia in education index (Human development index: United Nation Organization 2010). Sri Lanka owes this education success to free education system and the higher standards of teaching. In Sri Lanka there are over 450,000 students studying in collegiate section (12-13 grades) who are about to enter adult education at universities or other higher education centers and only graduate teachers teach in collegiate section (Dharmadasa 1996).

Currently all teacher recruitment and placement are done by Ministry of Education. Teachers are recruited at different levels according to their academic qualifications, i.e., General certificate of Education-Advanced level (GCE A/L), Pre-service trained (3 year teacher education for GCE A/L graduates.) or Bachelor degree holders (Dharmadasa 1996).

Majority of (57.4%) of all Sri Lankan teachers are trained teachers, with only 38.8% of graduate teachers and 2.6% untrained and 1.2% trainee teachers (Ministry of Education 2012).

After collegiate education, students enter Universities and other higher education centers. The studies worldwide have found a gap in study styles used in secondary education in schools and adult learning styles used in Universities. Lowe and Cook (n.d)(cited by Cook & Lowe 2010). They also suggest that students' study habits formed in secondary school persist to the end of the first semester of university life and students are not bridging the gap between school and university quickly and effectively. This gap is probably created by the difference of teaching and learning styles in secondary and university education. To assess and address this gap it's essential to have an understanding of the teaching styles of secondary school teachers.

Studies have shown that there is a range of learning styles among students and as they have a variety of

needs as learners. According to a study by Cothran et al (2000) a potential way to meet these needs is to use different teaching styles suitable for the individual needs of the learners. But teachers are more likely to use a teaching style that is suitable for their own learning style if they are unaware of their own teaching styles (Alley & Friedman 2010).

The purpose of teaching is to facilitate personal growth and development that impact the professional, social and political aspects of learners (Galbraith 2004). Reviewing of literature gives many methods for classifying teaching styles. Pratt (2002) defines five different approaches according to learners and content. Fischer & Fischer (1979) have identified six categories. In developing teaching styles in adult education, the authors Heimlich & Norland (1994) describe four teaching styles, expert, facilitator, provider, and enabler. Conti (1998) categorizes teaching styles into “teacher-centered” and “learner-centered” according to the principles of adult learning scale (PALS).

Studies show that there are variations in teaching style according to gender teacher education and certification, class management skills and job satisfaction (Damme & Opendakker 2005). There is not much literature to be found regarding the variations of teaching styles in relation to age and years of teaching experience.

There is a paucity of data in Sri Lankan setting regarding different teaching styles and factors affecting them. However, available data suggests that, Sri-Lankan teachers are more likely to select direct behavioral interventions as academic objectives (Dharmadasa & Gorrell 1995).

This study is an evaluation of commonly used teaching styles of Colombo district school teachers, teaching Advanced Level (A/L) science subjects. The aim of my study was to identify the common teaching styles and identify whether their teaching styles have the necessary features that are essential components in an effective teaching style. This will help the teachers to develop a personalized style of teaching and help them improve as teachers. This study will help them to identify the component of an effective teaching style, understand positive features of their teaching methods and areas of their teaching methods that need to be improved. The knowledge of teaching styles will help to improve teacher's effectiveness and increase students' attention and interest in class. Student-centered education and the teacher's role as a facilitator can improve students' academic performances and it will increase the job satisfaction of the teachers.

III. METHODOLOGY

The main purpose of this study was to identify the different teaching styles of Sri Lankan teachers and the factors that affect them. To achieve this objective, several research questions were developed.

- What are the preferred teaching styles of Sri Lankan teachers?
- Does the teaching style change with age, gender and teaching experience?
- What are the factors that affect the teaching style?

With the nature of the research objectives the best way to approach this study was an analytical cross-sectional study design. The study was conducted in 25 schools in Colombo district covering all the educational divisions of Colombo district. A total of 176 A/L science stream teachers participated in the study.

Two self-administered questionnaires, the Principles of Adult Learning Scale (PALS) (Conti 1998) and Van Tilburg/Heimlich Teaching Beliefs Scale (Heimlich 1990; Lacey *et al* 1998; Heimlich & Meyers 1999; Aaron *et al* 2012; Aaron & Roberts 2012) were used to collect data. Principles of adult learning scale (PALS) (Conti 1998), gathers most of the data that answers the research questions. The questionnaire has 44 questions, based on the score for these questions the teaching style of the participant is categorized, as learner-centered. PALS also divides these 44 statements into 7 factors which are indicative of one's teaching style. According to the score for each factor it is determined that whether each factor affect their teaching style.

Several selected statements of PALS can be used to assess whether the participants have an awareness of their teaching style.

- I help students diagnose the gaps between their goals and their present level of performance.
- I arrange the classroom so that it is easy for students to interact.
- I use different techniques depending on the students being taught.
- I provide knowledge rather than serve as a resource person.

IV. RESULTS AND DISCUSSION

A total of 176 teachers completed the Principles of Adult Learning Scale (PALS) at a response rate of 62.8%. Only 157 had completed the socio-demographic data sheet. It consisted of 113 females (72%) and 44 males (28%).

From the score of the completed questionnaire, two clear teaching styles were identified within the group, as teacher-centered and learner-centered. Nine participants out of 176 (5.1%) were learner-centered and 167 (94.8%) were teacher-centered. There is a strong statistical significance between the two teaching style, with a chi value of 141.8 at 0.05 level.

Several previous studies have also shown that teaching styles of the teachers are directly affected by the training they acquire. According to Biletzky and Keim (2010) on teachers with and without professional development training on teaching styles, the most popular teaching techniques in teachers without training were lectures, class discussions, written feedbacks and methods to engage critical thinking. Least favored were slides, field trips, audiotapes, and guest lecturers. The teachers who had professional development were more likely to use small group discussions, demonstrations, and activities to promote critical thinking. The focus found on teacher-centered teaching in the study may be due to the lack of training teachers get in learner-centered teaching method.

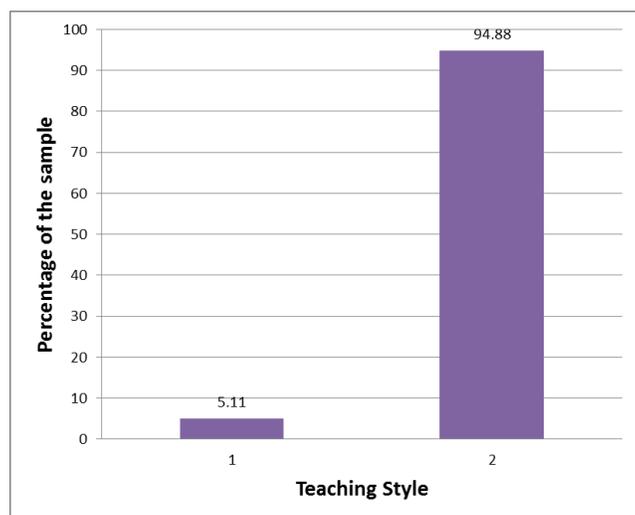


Figure 1: Teaching styles of A/L Science stream teachers in Colombo district

The scores of the Principles of Adult Learning Scale (PALS) has a moderate negative correlation with both age and teaching experience. The score for the scale decreased with age and years of teaching experience. Pearson correlation between the score and age was -0.26 and it's significant at 0.01 level. Years of teaching experience had a correlation of -0.18 which was significant at 0.05 level. Usually the teachers who have more teaching experience are older and older teachers have a more traditional approach to teaching and they have less interaction with

students. So due to that it is possible for a negative correlation to occur. When teachers increase in age their attitudes in class room management got more controlling (Martin & Shoho 2000). With more controlling attitudes their teaching style can deviate towards teacher-centeredness.

Chi square test shows a statistically significant difference of teaching style based on gender. Chi value for gender is 30.2. There is statically significant difference at 0.05 level. Only a small percentage (5.1%) the research participants are leaner centered, and majority of them are females. It may be the reason for the statistically significant difference found in results. Therefore with this low number of sample in the learner-centered category it is difficult to interpret the data in a way that can be generalizable to the whole population. But there are several previous done on the difference of teaching styles based on gender have found similar results. Lacey *et al* (1998) state that teaching styles of male instructors were more dominant and exacting, while female's styles were more informal and open toward students and their ideas. It also indicate that majority of female teachers preferred teaching, learning decisions constructed by learners and most of male teachers used teaching styles that don't allow learners to freely share ideas. According to Norton *et al* (2005) differences in teachers intensions based on gender is due to different conceptions of teaching.

Several Statements from the Principles of Adult Learning Scale (PALS) were selected to assess the self-awareness of teaching styles of the participants focusing both on student-centered and teacher-centered teaching. All the statements had the highest percentage of participants responding with always and almost always. Indicating that a high percentage of the sample group is aware that they have a specific method of teaching they frequently use in teaching, and there is self-awareness of their teaching style and its indicative factors. The responses to the selected statements are given in the table 1.

The study results indicate that majority of the teachers have an understanding of their own teaching styles. It shows that they have certain features of their teaching method that they usually use in every teaching occasion. This study was done with the participation of teachers with more than one year teaching experience, and most of the participants had more than ten years of experience. So, when they use a preferred teaching method over the years it becomes a part of their teaching styles and with their experience they get self-awareness of their own teaching methods.

Table 1: Self-awareness of teaching styles

	<i>Always</i>	<i>Almost Always</i>	<i>Often</i>	<i>Seldom</i>	<i>Almost never</i>	<i>Never</i>
<i>I help students diagnose the gaps between their goals and their present level of performance.</i>	52 (29.5%)	66 (37.5%)	52 (29.5%)	5 (2.8%)	1 (0.6%)	-
<i>I provide knowledge rather than serve as a resource person.</i>	40 (22.7%)	54 (30.7%)	42 (23.9%)	16 (9.1%)	15 (8.5%)	9 (5.1%)
<i>I arrange the classroom so that it is easy for students to interact.</i>	66 (37.5%)	47 (26.7%)	42 (23.9%)	10 (5.7%)	6 (3.4%)	5 (2.8%)
<i>I use different techniques depending on the students being taught.</i>	47 (26.7%)	63 (35.8%)	31 (17.6%)	30 (17%)	2 (1.1%)	3 (1.7%)

There are several indicative factors of the teaching styles of the participants found in the study. Most common factor was participation in learning process indicating that most teachers play an active role in teaching rather than facilitation. The least common factor is learner-centered activities. This is in line with the low percentage of learner-centered teaching styles. Although the learner-centered activities are the least common factor seen, it's seen in 3.4% of population indicating that the teachers understand the importance of learner-centered teaching. Principles of Adults Learning Style (PALS) focus on seven indicative factors of a teaching style.

- Factor 1- Learner Centered activities.
- Factor 2- Personalizing instructions.
- Factor 3- Relating to experience.
- Factor 4- Assessing student needs.
- Factor 5- Climate building.
- Factor 6- Participation in the learning process.
- Factor 7- Flexibility for personal development.

All of the seven factors are present in varying percentages in the participants' teaching styles. Highest number of participants had factor 6 and lowest number had factor 1 as indicative of their teaching styles. Out of 176 participants, 6, 26, 68, 98, 30,159 and 39 participants had factors 1 to 7 respectively. Results are presented in figure 2.

The Van Tilburg / Heimlich Teaching Beliefs Scale was used to identify the factors indicative of different teaching styles and how teachers respond to different teaching situations. A factor analysis was done on the scale and it showed that the scale was more focused on adult learning or student-centered teaching and changing teaching styles to cater individual needs of learners.

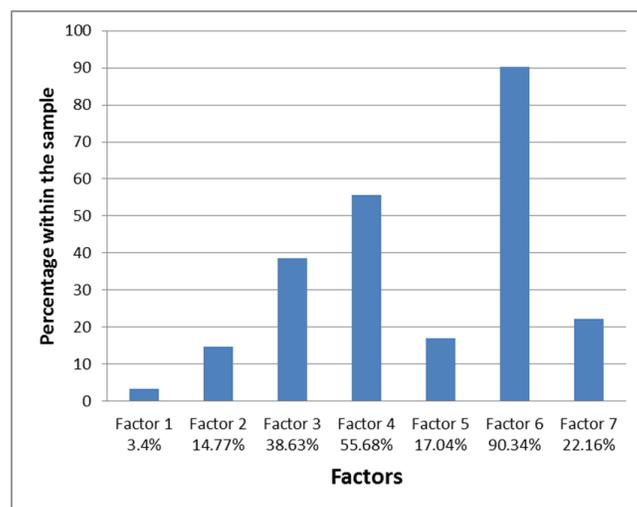


Figure 2: Indicative factors of teaching styles

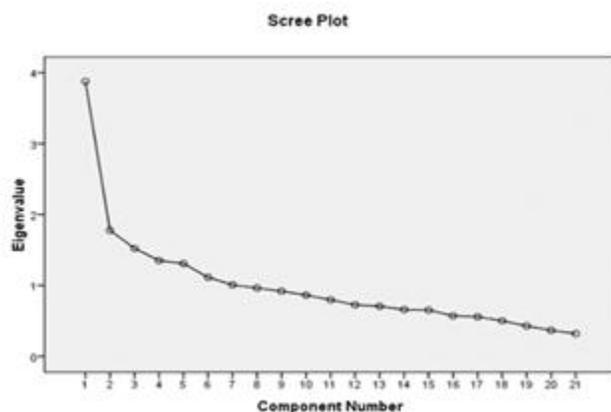


Figure 3: Scree plot for factor analysis of The Van Tilburg / Heimlich Teaching Beliefs Scale

According to the responses from the participants two clear patterns could be identified. Participants,

- Didn't practically use student-centered teaching.
- Reluctant to change their teaching to individual needs.

Could this difference be the result of the lack of conceptual training the teachers get? Or is it due to the lack of resources in Sri Lankan classroom setting? Study by Schaefer & Zygmunt (2003) indicates that even though the teachers recognize the need for a student-centered environment they may have difficulties with implementation.

Results of the study were generalizable to a larger population since both research scales showed a high Cronbach's alpha value.

V. CONCLUSION

The findings of this study indicate that, majority of the teachers in study sample prefer a teacher-centered teaching style. The teaching styles of the teachers differ with age, teaching experience and gender. The main indicative factor of the teaching styles within the population was the teacher participation in the learning process.

In practice most teachers are more teacher-centered, but some have student-centered features in their teaching. Teachers showed unwillingness to change their teaching styles to suit different learners in practice. The reasons for these tendencies within the population should be identified and addressed.

Identifying the different teaching styles of teachers in secondary education can help increase the self-awareness of the teachers of their teaching style and how they can change or improve their teaching style to better suit the needs of individual learners and help student learners to better adapt to adult learning in higher education.

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