FEATURE

Predictors of Teaching Style Among
Private Secondary School Teachers
of Dasmariñas, Cavite

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Abstract: This study explored the relationships between teachers' beliefs in learning theories and selected demographics as predictors of teaching style preference (behavior and verbal). The respondents were 301 teachers from 30 private secondary schools in Dasmariñas, Cavite, Philippines. Respondents answered the Teachers' Beliefs in Learning Theories Questionnaire, the My Teaching Style Profile, and a profile of selected demographics. Results showed that having majors in social sciences and values education efficiently predicted correct classification of teachers into their teaching style preferences.

Effective teaching is like a crafted piece of art. Ingrained in the artwork itself is "a system of principles and methods employed in performance of a set of activities and a trade or craft that applies such a system of principles and methods" (Cain, 2007, para. 1).

Research illustrating the blend of the three components—the teacher, theory, and practice—are inadequate, particularly the blend of concepts such as teaching style, with differentiation of self, beliefs in learning theories, and selected demographic variables as predictors and correlates.

Whereas literature identifies two teaching style factors: style based on teacher characteristics and style based on learner characteristics (Heimlich & Norland, 1994, p. 44), studies conducted on teaching style seemed to be limited mostly to its relationship with learner characteristics. For example, teaching style has been associated with student performance or achievement (Ayaso-Cabusora, 2003; Bustos, 1994; King, 2003; Tariga, 1994), and students' learning style (Ayaso-Cabusora, 2003). Mwangi's (2004) research is one of the few studies which focused on teaching style and teacher characteristics, and it

focused on style and teacher effectiveness. This study seeks to address this lack by exploring teacher beliefs and teaching style.

In the Philippines, there seems to be a teaching style problem, as evidenced in the students' low achievement rates. The Philippine Daily Inquirer reported that Philippine Education garnered very low ratings in the recent national achievement test. Quoting from the former Education Undersecretary Juan Miguel Luz, Dumlao (2006) reported that approximately 97 percent of high school students suffered failures in the National Achievement Test (NAT). The report suggests that, aside from logistics problems, there is a need to employ more teachers to relieve the teacher shortage, and teacher quality, particularly teaching style, has to be addressed. Tenedero (2005), president of *Learning and Teaching Styles Philippines*, suggests that "the failure of a learner (whether student or child) is generally indicative of inadequate, inappropriate or incompatible teaching style" (para. 11). Tenedoro's (2005) argument suggests a need to revisit the issue of teachers' teaching style. There is inadequate evidence from research to support Cain (2007) and Froom's (1956) claims that the art of teaching is a blend of the teacher himself, his theoretical knowledge, and his teaching practice. It is to fill in this gap that this research is intended.

This study explored predictors of teaching style (behavior and verbal) among private secondary schools in Dasmariñas, Cavite. The objectives were:

1. To find how the respondents were distributed in their levels of differentiation of self, beliefs in learning theories, and teaching style after accounting for demographic variables, and

2. To determine whether beliefs in learning theories and certain demographic variables predicted teaching style.

Methods and Materials

This study employed a correlational design (Creswell, 2003). The variables were beliefs in learning theories, demographic variables (gender, sibling order, teacher modeling, years of experience, areas of specialization), and teaching style (behavior and verbal). The respondents ($n = 301$) were teachers of private secondary schools in Cavite, from Dasmariñas, Cavite, Philippines. The main reason for this choice is that Cavite has achieved a very high literacy rate, and has developed a skilled and professional workforce (Philippine Information Agency, 2003; National Statistic Office, 2003; Wow Philippines, 2006). As of 2003, Cavite (96.52%) and Rizal (96.55%) had the highest literacy rating compared to other provinces within the Southern Luzon region. Recently Cavite was reported as gaining the highest literacy rate of 98 percent (Wow Philippines, 2006). In addition, the National Statistics Coordination Board (2005) also reported a 9% increase in both the number of elementary and secondary schools in Cavite during the 2003-2004 school year. This study particularly focused on

private secondary school teachers' teaching style, which might potentially have contributed to Cavite province's literacy status. This study sought to determine the teachers' predominant teaching style and factors contributing to it.

Particularly, this study delimited its population to Dasmarinas, Cavite. "Dasmariñas has the largest population in the entire province of Cavite with 75 Barangays, 170 subdivisions and the biggest resettlement area in the Philippines. It is also considered as the 'University Town of Cavite.' There are currently 12 Colleges & Universities" (Dasmariñas, Cavite Association, 2006, Population section, para. 1). In addition, the Department of Education, Region IV-Calabarzon Division of Cavite (2006) reported that as of the September 2006 enrollment report, there were 37 private secondary high schools located in Dasmariñas. That same report registered 319 private secondary high school teachers in Dasmarinas. With Dasmariñas having the largest population of Cavite, which achieved the highest literacy rate among the provinces of Southern Luzon, possessing the biggest settlement area, and being the university town of Cavite, this study has been designed to purposively select the sample from this particular population and geographic location.

The outcome variable examined was teaching style. The instruments utilized were the My Teaching Style and Profile (MTSP), Teachers' Beliefs in Theories Questionnaire (TBTQ), and a demographic questionnaire. The My Teaching Style and Profile (behavior and verbal aspects) was developed by J. Robert Hanson (2002). It measures teaching style in four constructs: sensing/thinking, sensing/feeling, intuitive/thinking, and intuitive/feeling.

Two predictor variables were considered: the teachers' beliefs in learning theories and selected demographics (i.e., gender, birth order, model teacher, area of specialization, and years of teaching experience). The Teachers' Beliefs in Theories Questionnaire (TBTQ) is a researcher-constructed questionnaire. Questions were derived from the following learning theories: (a) Neobehaviorism, (b) Kohlberg's Moral Development, (c) Constructivism, (d) Maslow's Hierarchy of Needs, (e) Multiple Intelligences, (f) Piaget's Theory on Cognitive Development, (g) Bruner's Discovery Learning, (h) Emotional Intelligence, (i) Erickson's Psychosocial Development, (j) Experiential learning, (k) Problem-based Learning, (l) Cooperative Learning, (m) Carl Rogers' Theory, (n) Service. There are 85 items in this questionnaire.

SPSS Version 12 was used to analyze the data, and the results of the teachers' beliefs in learning theories were expressed as $M \pm SD$. The demographic variables and the distribution of the various teaching style preferences are expressed in frequencies and percentages. Because the outcome variable involves various teaching style categories, and the study sought to determine predictors of teaching style, discriminant function analysis was utilized. Reported in the tables are summaries of the canonical discriminant

functions, the standardized canonical discriminant function coefficients, and classification results of cases produced by the functions to distinguish teaching style categories.

During the analysis of the data, almost all of the respondents' average scores in the teaching style--behavior and teaching style—verbal were rated low. Upon review of the cases (*n = 301)*, it was found that another profile in six categories instead of only four (Hanson's teaching style categories) was possible. The two added categories were "no preference" and "eclectic." Respondents were considered eclectic if they had a "low" on three or more of the original teaching style categories, and no preference if more than two of the original categories were "very low" and there was no category higher than "low." If a respondent had a category higher than "low" (i.e. moderate), then that was considered a preference, for example, sensing/feeling, sensing/thinking, intuitive/ feeling, or intuitive/thinking. This necessitated multiple discriminant analyses which should result in (g − 1) categories, where g represents the number of grouping categories (Klecka, 1980). Presented in the first part of the results are the six teaching style categories and their predictors.

The researchers also regrouped the teaching style preferences into two categories: with or without teaching style (verbal and behavior) preferences. The regrouping of the teaching style categories resulted in some significant findings when the same predictors were placed in the discriminant function. This is presented in the last part of the results section.

Results

Table 1 presents the demographic variables of gender, birth order, model teacher, areas of specialization, and years of experience in teaching. As shown, of the 301 teachers, the teachers were mostly females and "middle children," and most considered their high school teachers as model teachers. Most had just started their teaching profession, and the "languages" majors comprised the majority.

Eight of the nine learning theories were rated "often believe," and Behaviorism was rated "sometimes believe." Whereas the overall mean for "Behaviorism" ($M = 3.97$, $SD = .63$) fell on the "sometimes believe" range, its score indicates a very strong leaning to the "often believe" range (Table 2). This should be interpreted that teachers tended to "often believe" in all of the aforementioned learning theories.

Table 3 shows the teachers' profile when considering these six categories. Most teachers fell into the *eclectic* category for both teaching style—behavior and teaching style—verbal. This means that the majority of the teachers did not have a specific teaching style preference based on the original categories of Hanson (2004). The lowest percentage fell on intuitive/feeling. Further, a Chi

Table 1
Demographic Profile of the Sample of this Study

Demographic variables	*f**	*%*
Gender		
Male	67	22.2
Female	234	77.8
Birth Order		
Eldest	88	29.2
Middle	154	51.2
Youngest	52	17.3
Only child	7	2.3
Model Teacher		
Elementary	89	29.6
High school	111	36.9
College	68	22.6
Graduate school	11	3.7
Others	22	7.3
Areas of Specialization		
Math/math and English	47	15.6
Languages(English and Filipino)	81	26.9
Natural sciences	36	12.0
Social sciences/values education	51	16.9
MAPE/technology/home economics	38	12.6
Other	48	15.9
Years of Teaching Experience		
1-5 years	177	58.8
6-10 years	72	23.9
10 years and above	52	17.3

Note. f* = frequency

square computed on the data showed no difference in the preferences between the two teaching style categories, teaching style—behavior and teaching style—verbal, at a significance level of .05 ($\chi^2 = 10.44$, *DF* = 5, p = .064).

Table 2

Teachers' Beliefs in Learning Theories (n = 301)

Learning Theory	*Mean*	*SD*
Maslow's hierarchy of needs	4.47	.54
Constructivism	4.43	.52
Kohlberg's moral development	4.42	.44
Multiple intelligences	4.39	.53
Piaget's cognitive development	4.32	.55
Humanistic theory	4.22	.57
Vygotsky's cultural-learning theory	4.21	.54
Erickson's psychosocial development	4.07	.61
Behaviorism	3.97	.63

Note. Scoring scale: 5(*Always Believe*), 4(*Often Believe*), 3(*Sometimes Believe*), 2(*Rarely Believe*), 1(*Never Believe*).

Table 3

Teachers' Teaching Style Frequency Distribution

Preferences	Teaching style—behavior		Teaching style—verbal	
	f	%	*f*	%
Eclectic	163	54.2	175	58.1
Sensing/thinking	57	18.9	56	18.6
No preference	34	11.3	39	13.0
Sensing/feeling	32	10.6	12	4.0
Intuitive/thinking	12	4.0	16	5.3
Intuitive/feeling	3	1.0	3	1.0
All	301	100.0	301	100.0

The significance of the Wilk's lambda showed two functions that distinguished between the teaching style—behavior categories (Table 4). Function 1 ($\lambda = .81$, $\chi^2 = 61.08$, $p < .01$) explains 46.6% of the variance of the model, and Function 2 ($\lambda = .89$, $\chi^2 = 32.10$, $p < .01$) accounts for 36.1%. The Eigenvalue of function 1 is greater than that of function 2. Eigenvalues show that Functions 1 and 2 had the potential percentage of the total discriminating power in discriminating the teaching style—behavior categories. This means that only function 1(related to teachers' beliefs in behaviorism and in Erickson's psychosocial development theory) and function 2 (related to being a male and a social sciences/values education major) will be considered for further analysis.

Table 5 shows the unique contribution of each independent variable to each of the discriminant functions that significantly distinguish the six teaching style—behavior categories. Characterizing the first function are teachers' beliefs in behaviorism and in Erickson's psychosocial development theory because they have the highest loading (standardized canonical discriminant coefficient values). Being a male and a social sciences/values education major loaded the most on the second function. While the fifth variable, elementary teacher considered as model teacher, is a significant predictor of group membership, it did not load on either of the two significant discriminant functions. Thus, this variable may not be considered a discriminating variable.

Table 4

Summary of Canonical Discriminant Functions on the Teaching Style—Behavior Distribution in Terms of the Variables of this Study

Function	Eigenvalue	% of variance	Cumulative %	Canonical Correlation	Wilk's Lamda
1	.10	46.60	46.60	.30	.81[a]
2	.08	36.10	82.70	.27	.89[a]
3	.03	12.20	94.90	.16	.96
4	.01	4.80	99.70	.10	.99
5	.00	.30	100.00	.02	.99

[a] $p < .01$

Table 5

Standardized Canonical Discriminant Function Coefficients
of the Variables Studied

	Function				
	1	2	3	4	5
Male	-.11	.71	.29	.16	.63
Social sciences/ values education major	-.24	-.62	-.04	.61	.46
Model teacher (elementary)	.56	.30	-.23	.76	-.11
Behaviorism	.96	-.37	.65	-.06	.26
Belief in Erickson's psychosocial development theory	-.86	.24	.32	.34	-.73

Data summarized in Table 6 shows the extent to which cases were classified correctly into the teaching style groups. Since the test for homogeneity of variance was not significant ($p = .03$), the "all groups equal" theory was used to determine accuracy of classification. The criterion for the proportional by chance accuracy was computed by squaring and then summing up the proportion of cases in each group from the table of prior probabilities for groups (Schwab, 2002). Using this formula, the proportional by chance accuracy criterion value arrived at is 27.88. The accuracy rate computed by SPSS (number of correctly classified cases [83] divided by total number of cases [301]) is 27.60%, a value which is less than the criterion value for the proportional by chance accuracy rate of 27.88%. This shows that the criterion for classification accuracy was not satisfied. The findings suggest that this model did not succeed in accurately identifying teaching style—behavior categories for predicting teaching style behaviors.

Table 7 shows that the discriminant function analysis resulted in four functions instead of five when stepwise discriminant analysis was performed on teaching style-- verbal and its predictors. The option of "separate" means classification using the group variances of the canonical discriminant function was utilized to analyze the teaching style—verbal, because there was a significant result when testing for the null hypothesis of equal population covariance matrices, which means that the population was not homogenous.

Table 6

Classification Results of Cases Produced by the Functions Generated
to Distinguish Teaching Style—Verbal Categories

Teaching style— behavior preferences		Predicted group membership						
		NP	EC	SF	NF	NT	ST	Total
Count	NP	5*	7	8	3	7	4	34
	EC	19	30*	29	24	36	25	163
	SF	2	2	20*	2	3	3	32
	NF	0	0	0	3*	0	0	3
	NT	0	2	1	1	6*	2	12
	ST	6	9	8	9	6	19*	57
%	NP	14.7**	20.6	23.5	8.8	20.6	11.8	100.0
	EC	11.7	18.4**	17.8	14.7	22.1	15.3	100.0
	SF	6.3	6.3	62.5**	6.3	9.4	9.4	100.0
	NF	.0	.0	.0	100.0**	.0	.0	100.0
	NT	.0	16.7	8.3	8.3	50.0**	16.7	100.0
	ST	10.5	15.8	14.0	15.8	10.5	33.3**	100.0

Note: 27.6% of original grouped cases correctly classified. NP = No preference, EC = eclectic, SF = sensing/feeling, NF = intuitive/ feeling, NT = intuitive/thinking, ST = sensing/thinking.

 * Number of cases that are correctly classified under the specific category as predicted.

** Percentage of cases that are correctly classified under the specific category as predicted.

Table 7

Summary of Canonical Discriminant Functions on the Teaching Style—
Behavior Distribution in Terms of the Variables of this Study

Function	Eigenvalue	% of variance	Cumulative %	Canonical Correlation	Wilk's Lamda
1	.08	45.4	45.4	.277	.84[a]
2	.07	38.0	83.4	.255	.91[a]
3	.03	15.1	98.5	.164	.97
4	.00	1.5	100.0	.053	.99

[a] p < .01

Again, two functions showed to be significant (see Table 7) in distinguishing between the teaching style--verbal categories. Function 1 (λ = .84, χ^2 = 52.19, 08, p < .01) explains 45.4% of the variance of the model, and Function 2 ((λ = .90, χ^2 = 28.67, p < .01) accounts for 38.0%. The Eigenvalue of function 1 (0.08) is greater compared to function 2 (0.07), but function 1 is only 14% better than function 2 in discriminating between the teaching style—verbal groupings (Eigenvalue *ratio* = 1.14). Functions 1 and 2 have the potential percentage of the total discriminating power in discriminating the teaching style--verbal categories. However, the canonical correlation is very weak.

Table 8 shows the unique contribution of each independent variable to each of the discriminant functions that significantly distinguish the teaching style—behavior categories. In function 1, the variable "only child" loaded the most (.68), and the "eldest" and "male" loaded the most in function 2.

Data summarized in Table 9 shows the extent to which the generated discriminating functions could classify grouping of the cases in this study. The criterion for the proportional by chance accuracy was computed based on a formula that squared and summed the proportion of cases in each group from the table of prior probabilities for groups. The proportional by chance accuracy criterion value is 39.36%. The accuracy rate computed by SPSS resulted in 53.50% (161 cases correctly classified out of 301), which is greater than the proportional by chance accuracy rate criterion value (39.36%). Thus, the criterion for classification accuracy was satisfied. The findings suggest that this model in predicting teaching style—verbal was able to identify the categories; namely, no preference (35.90%), eclectic (79.40%), sensing/feeling (50.00%), intuitive/feeling (33.30%), and intuitive/thinking (6.30%).

Table 8

Standardized Canonical Discriminant Function Coefficients of the Variables

	Function			
	1	2	3	4
Eldest	.36	.59	.47	.57
Only child	.68	-.21	-.56	.43
Male	.46	.64	-.17	-.62
Model teacher in college	.51	-.53	.64	-.22

Table 9

Classification Results of Cases Produced by the Functions Generated to Distinguish Teaching Style—Behavior Categories

Teaching style behavior pref.		Predicted Group Membership						
		NP	EC	SF	NF	NT	ST	Total
Count	NP	14*	23	1	1	0	0	39
	EC	20	139*	13	3	0	0	175
	SF	1	5	6*	0	0	0	12
	NF	1	1	0	1*	0	0	3
	NT	2	11	2	0	1*	0	16
	ST	10	38	7	1	0	0*	56
%	NP	35.9**	59.0	2.6	2.6	.0	.0	100.0
	EC	11.4	79.4**	7.4	1.7	.0	.0	100.0
	SF	8.3	41.7	50.0**	.0	.0	.0	100.0
	NF	33.3	33.3	.0	33.3**	.0	.0	100.0
	NT	12.5	68.8	12.5	.0	6.3**	.0	100.0
	ST	17.9	67.9	12.5	1.8	.0	.0**	100.0

Note. 53.50% of original grouped cases correctly classified. NP = No preference, EC = eclectic, SF = sensing/feeling, NF = intuitive/ feeling, NT = intuitive/thinking, ST = sensing/thinking.

 * Number of cases that are correctly classified under the specific category as predicted.

** Percentage of cases that are correctly classified under the specific category as predicted.

On teaching style categories "with" and "without" preferences, the discriminant function analysis, stepwise approach, did not show results for teaching style—verbal, but showed results for or teaching style—behavior. This analysis also used the "separate" mean classification approach because the test for homogeneity was significant ($p < .01$). As shown in the significance of the *Wilk's lamda* (Table 10), one function was generated ($\lambda = .90$, $\chi^2 = 28.67$, $p < .01$). The function explains 100.00% of the variance in the model. However, the canonical correlation was weak.

Data summarized in Table 11 shows how well the generated function could discriminate the two teaching style—behavior categories. The proportional by chance accuracy criteria amounted to 54.74%. The accuracy rate computed by SPSS resulted in 65.10% which was greater than the proportional by chance accuracy rate of 54.74%. The criterion for classification accuracy was satisfied. The findings suggest that the model is good. The prediction of group membership in *without preference* is 86.80%, and for *with preference* 24.00%. Results showed one predictor variable in the function that discriminated teaching style behaviors in two categories. Being social science and values education majors combined predicted groupings of teachers in their teaching style behaviors. Its standardized canonical discriminant function coefficient amounted to 2.70.

Discussion

The extent of the respondents' beliefs in learning theories in nine of the 10 learning theories fell in the "often believe" range. This finding confirms the assumption of this research that learning theories were learned during the undergraduate level courses, workshops, and seminars that the teachers attend. This also affirms Donaghue's (2003) conceptualization that beliefs are the teachers' hard core foundations, and they play an important role in teacher development. Theories provide arguments concerning issues pertaining to curriculum, teaching, academic freedom, class size, and the learning process (The Daily Brewin, 2007). It should be noted, however, that the teachers' beliefs in learning theories did not indicate extent of practice.

Table 10

Summary of Canonical Discriminant Functions on the Teaching Style Behavior in Two Categories Distribution in terms of the Variables of this Study

Function	Eigen Value	% of Variance	Cumulative %	Canonical Correlation	Wilk's Lamda	SCDFC
1	.02	100.00	100.00	.14	.98[a]	1.00

[a] p < .01. SCDFC = Standardized canonical discriminant function coefficients.

Table 11

Classification Results of Cases Produced by the Functions Generated to Distinguish Teaching Style--Verbal Categories

Teaching style behavior preference		Prediction of group membership		Total
		Without preference	With preference	
Count	Without preference	171*	26	197
	With preference	79	25*	104
%	Without preference	86.80*	13.20	100.00
	With preference	76.00	24.00*	100.00

Note. 65.10% of original grouped cases correctly classified.

* Number of cases that are correctly classified under the specific category as predicted.

** Percentage of cases correctly classified under the specific category as predicted.

The majority of the respondents did not show strong teaching style preferences in all the teaching style categories. The majority showed low preferences in almost all the subscales. Considering this result, some reasons can be suggested. Studies have shown that several factors not considered in this study may potentially affect teaching style preference. Examples are knowledge of principles and practices in education and teaching (Medley & Hill, 1970), attitude of teachers (Seevers & Clark, 1993), perceptions on teachers' role in teaching and number of years employed as teachers (Genc & Ogan-Bekiroglu, 2004).

Having a major in social science and values education predicted teaching style behavior in two categories. This suggests that having a major in the social sciences and values education predicted preferences of teaching style behaviors. It seems possible that having major in the social sciences helps in choosing teaching style behavior preferences because of a better understanding of human behavior. It should be noted that the social sciences compose groups of dynamic academic disciplines such as psychology, political sciences, philosophy, history, sociology, marriage and sexuality, business, law, recreation, philosophy, and even foreign studies (Leadership University, 2007, Schools of Sciences, University of California, 2007; Social Sciences and Philosophy, University of the Philippines, 2007).

This finding is also relevant to the present Basic Education Curriculum (BEC) implemented by the Department of Education in the Philippines in the Elementary and secondary levels. It can be argued that having a major in social

sciences and values education predicts teaching style with preference is very relevant to the strong emphasis to teaching the MAKABAYAN and Values Education of the BEC. In the BEC, teachers have to teach the "laboratory of life curriculum of MAKABAYAN, Values Education included (Basic Education Curriculum 2002). This finding serves as an empirical evidence of the BEC concept that major emphasis on the social science and values education are integral parts of basic education for learner empowerment, and it accentuates the role of these academic disciplines in the making of a self-actualized learner (Basic Education Curriculum, 2002).

Implications for Educational Practice

The findings of this study carry several implications two of which are as discussed here. First, the teacher education programs in teacher education institutions may have succeeded in providing adequate instruction about the core foundation courses in education such as psychological foundations of education and learning, educational psychology, and principles of teaching. And if teacher education programs value these foundations, they should perhaps continue to thoroughly emphasize the understanding of theoretical orientations on learning and teaching.

Second, the findings that the majority did not show a preference of a teaching style seem to provide a challenge for teacher education programs to emphasize the development of teaching styles which fit students' diverse needs. Courses specializing in teaching strategies may be inadequate; hence, clearer instruction and demonstration of specific teaching styles for specific learners' needs may be advanced in the teacher-education curricula.

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