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ABSTRACT

Teacher attitudes toward research-based effective teaching behaviors were inventoried to explore differences. Scores from the Teaching Behaviors Questionnaire (TBQ) for 300 teachers were analyzed for variables related to educational settings and teacher characteristics. Analysis of variance and selected post hoc procedures were used to identify differences. Elementary teachers, specifically first-grade teachers, were more supportive of the research-based behaviors than were high-school teachers. Support for the research-based effective teaching behaviors decreased with years of teaching experience in a linear trend. Recommendations included increased exposure to research-based effective teaching behaviors through preservice and inservice training. References are included. (Author/JD)

Teacher Agreement with Research-Based Effective Teaching Behaviors

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Abstract

Teacher agreement with research-based effective teaching behaviors

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Teacher attitudes toward research-based effective teaching behaviors were inventoried to explore differences. Scores from the Teaching Behaviors Questionnaire (TBQ) for 300 teachers were analyzed for variables related to educational settings and teacher characteristics. Analysis of variance and selected post hoc procedures were used to identify differences. Elementary teachers, specifically first grade teachers, were more supportive of the research-based behaviors than were high school teachers ($p < .01$). Support for the research-based effective teaching behaviors decreased with years of teaching experience in a linear trend ($p < .01$). Recommendations included increased exposure to research-based effective teaching behaviors through pre-service and in-service training.

Teacher Agreement with Research-Based Effective Teaching Behaviors

The attitudes and opinions of teachers have been studied concerning everything from teacher-student relationships (e.g. Leeds & Cook, 1947) to career ladders (Hart, 1987). While one study focused on teacher preferences for various models of teaching (Thompson, 1981), there has been little research regarding teacher attitudes toward the effective teaching behaviors identified through research.

The choice of teaching behaviors to practice no longer needs to be based solely on theory or conjecture. A great deal of research has been conducted in an effort to discover those teaching behaviors that might lead to greater student achievement. As the research results have accumulated, a number of reviews, summaries, and lists of effective teaching behaviors have been compiled (e.g. Brophy & Good, 1986; Gage, 1978; Medley, 1977).

The lists of effective teaching behaviors have grown longer and more complex. While the research has not been conducted in every context, it has provided general guidelines to follow in an effort to improve student achievement. These behaviors are likely to play an increasing role as the basis for policies, programs, and evaluation that affect school administration, teachers, and ultimately students.

The attitudes of teachers can affect their behavior (e.g. Bauch, 1982; Brown, 1968; Dobson, Hopkins, and Elsom,

1973) and ultimately the achievement of their students (Ramsay & Ramsley, 1986). Attitudes toward research-based effective teaching behaviors may be an indicator of the practice of these behaviors. Differences in teacher attitude may indicate differences in practice. These differences may be related to the limitations of the research which identified the behaviors, the nature of the educational setting, or the characteristics of the teacher.

The purpose of this study was to explore differences in teacher attitude toward research-based effective teaching behaviors. Differences in attitude toward these behaviors were studied for a number of variables related to educational settings and teacher characteristics. Educational setting variables included grade level, subject taught, and social economic status of students. Attitude differences related to these variables might indicate that the research-based behaviors do not generalize to all settings. However, differences could also suggest that more effective teaching takes place in certain settings. Teacher characteristic variables included years of experience, amount of professional activity, and gender. Attitude differences attributed to these variables might indicate that certain teacher characteristics affect the practicing of effective teaching behaviors.

Method

The research on effective teaching behaviors supplied

the content for this study of teacher attitudes. Elementary and secondary teachers completed a questionnaire which inventoried their support for the research-based effective teaching behaviors. The data were analyzed by analyses of variance and selected post hoc procedures.

Subjects

Data were collected from teachers in a variety of geographic and educational settings. The sample was s· ıctured on the basis of gender, level: elementary (kindergarten through sixth grade) and secondary (seventh through twelfth grade), and geographic location based on the statistics reported in the 1986-87 Estimates of School Statistics (National Education Association, 1987). Three hundred questionnaires were used with characteristics proportioned as indicated in Table 1.

Instrument

The Teaching Behaviors Questionnaire (TBQ) was designed to inventory attitudes toward research-based effective teaching behaviors. It resulted in a 50 item questionnaire with a Likert-type scale of agreement for each item. The items were based on an updated list of "teacher should" statements (cf. Gage, 1978). The "teacher should" statements were taken from the effective teaching research with the teacher behavior and student achievement chapter (Brophy & Good, 1986) of the Handbook of Research on Teaching serving

Table 1. Characteristics of the sample arranged by geographic location, level (elementary and secondary), and gender.

Geographic Location	Elementary		Secondary		
	Male	Female	Male	Female	Total
Illinois	21 (7)	78 (26)	30 (10)	21 (7)	150 (50)
Indiana	7 (2)	33 (11)	21 (7)	18 (6)	79 (26)
Wisconsin	8 (3)	30 (10)	18 (6)	15 (5)	71 (24)
Total	36 (12)	141 (47)	69 (23)	54 (18)	300 (100)

Note. ( ) = percent of total sample.

as a major source. The questionnaire had a two page information sheet attached, and the whole instrument took approximately 15 to 20 minutes to complete. Thirty-seven of the items were scored to yield a final item alpha (N=300) of .76.

Procedure

The primary procedure for analysis of the data was analysis of variance. The data were tested for the assumptions of normality and equal variance. The data distribution was normal, and the results reported satisfied the assumptions of homogeneity of variance unless otherwise noted (Table 2). This study represented a quasi-experimental design in which group membership could not be randomly

assigned.

The following null hypotheses were tested to determine differences in TBQ scores related to educational settings and teacher characteristics:

Educational settings. With regard to attitudes toward research-based effective teaching behaviors, there are no differences among teachers related to the:

1. grade level taught
2. school building level
3. the subject matter taught (secondary only)
4. perceived social economic status of the students
5. perceived achievement level of the students
6. class size

Teacher characteristics. With regard to attitudes toward research-based effective teaching behaviors, there are no differences among teachers related to the:

1. years of teaching experience
2. highest degree earned
3. years since last degree was earned
4. reading of professional education journals
5. gender of the teacher

Once differences were established by analysis of variance, posteriori multiple-comparison procedures were performed. Scheffé's method and the Newman-Keuls studentized range procedure of multiple comparisons were used to determine differences between groups. The Scheffé F method is not affected by unequal n's and was therefore preferrable

to studentized range methods for most analyses. Due to the rigorous nature of the F method, the .10 level was recommended by Scheffé (1959) and repeated by Ferguson (1981)

Results and Conclusions

A series of one- and two-way analyses of variance were conducted on the data using a variety of combinations of variables. None of the interactions were found to be significant. Therefore, the results of the one-way analyses are presented for clarity (Table 2).

Teaching Settings

Teacher attitude toward research-based effective teaching behaviors was affected by the grade level and school level at which they taught. Posteriori multiple-comparison procedures were performed on the grade level and school level groups.

Grade level. The TBQ scores of lower elementary grade teachers were higher than those of teachers of fifth grade and above (Table 3). The Newman-Keuls studentized range procedure identified the first grade teachers as being different from the high school teachers ($p < .05$, Figure 1).

From this result one might conclude that primary teachers, first grade teachers in particular, were better able to identify and were more supportive of the research-based effective teaching behaviors than high school teachers. There are two likely explanations for this result.

First, the difference could be due to the failure of the research-based behaviors to generalize to higher grade levels. Most of the research studies on effective teaching have been conducted at lower grade levels (Brophy, 1979; Medley, 1977). The results from this study might be an indication that the research-based behaviors are more valid for lower grade levels.

Table 2. Analysis of variance and test of homogeneity of variance for factors.

Factor	Homogeneity Box-F	df	Mean squares Among	Within	F
Teaching settings					
Grade level	1.31	9, 290	157.85	55.54	2.84 **
School level	.32	3, 296	243.76	56.74	4.30 **
Subject (Sec.)	.24	4, 113	58.28	59.36	.98
Student SES	2.89 *	3, 287	128.61	57.32	2.24
Achievement	.85	3, 291	31.30	58.37	.54
Class size	.96	4, 284	81.53	59.02	1.38
Teacher characteristics					
Experience	.02	4, 280	160.23	56.18	2.85 *
Degree	.82	1, 296	7.98	58.59	.14
Degree year	.47	4, 288	65.38	57.80	1.13
Journals	6.44 *	1, 297	58.11	58.74	.99
Gender	.10	1, 293	967.75	55.56	17.42 ***

Note. * $p < .05$. ** $p < .01$. *** $p < .001$

Table 3. TBQ score mean and standard deviation for factors

Factor	Source	N	M	SD
Teaching settings				
Grade				
	K	15	116.07	4.03
	1	21	118.48	7.27
	2	28	114.46	6.76
	3	23	117.70	8.06
	4	24	117.46	7.62
	1-6	17	116.88	5.92
	5	26	112.42	7.60
	6	23	113.70	8.75
	7-8	40	114.25	8.34
	9-12	83	112.35	7.39
	Total	300	114.60	7.66
School				
	Elementary	177	115.73	7.44
	Middle	10	116.70	7.41
	Junior high	31	113.39	8.45
	High school	82	112.35	7.39
	Total	300	114.60	7.66
Subject (Sec.)				
	Ail (Bilingual)	3	110.00	5.29
	Language arts	22	115.22	8.25
	Mathematics	26	112.81	7.84
	Special educ.	10	115.00	6.63
	Other	62	112.05	7.67
	Total	123	112.97	7.70
Student SES				
	High	10	109.70	4.11
	Upper middle	88	115.40	7.10
	Lower middle	143	114.38	8.26
	Low	50	115.98	6.75
	Total	291	114.80	7.62
Achievement				
	Definitely above	33	115.30	8.96
	Slightly above	117	114.93	7.44
	Slightly below	103	113.84	7.57
	Definitely below	42	114.98	7.00
	Total	295	114.60	7.62

Class size			
1 - 15	34	115.91	6.54
16 - 20	50	115.44	7.06
21 - 25	114	115.04	8.15
26 - 30	83	113.23	7.61
31 +	8	117.38	9.68
Total	289	114.74	7.70
Teacher characteristics			
Years of experience			
1-6	72	116.13	7.43
7-12	70	114.97	7.50
13-18	87	114.22	7.61
19-24	29	115.97	7.29
25-30	27	110.74	7.52
Total	285	114.73	7.59
Degree			
Bachelors	150	114.78	7.37
Masters	148	114.45	7.94
Total	298	114.62	7.64
Degree year			
0 - 5	85	115.42	7.81
6 - 10	61	115.23	7.36
11 - 15	60	113.28	7.28
16 - 20	43	114.91	7.06
21 +	44	113.32	8.43
Total	293	114.55	7.61
Journals read			
Yes	127	114.10	6.70
No	172	114.99	8.30
Total	299	114.62	7.66
Gender			
Female	195	115.92	7.52
Male	105	112.15	7.33
Total	300	114.60	7.66

Second, elementary teachers might be more closely oriented toward the teaching-learning process than high school teachers. Emphasis in training and practice might provide elementary teachers with a stronger basis for identifying effective teaching behaviors.

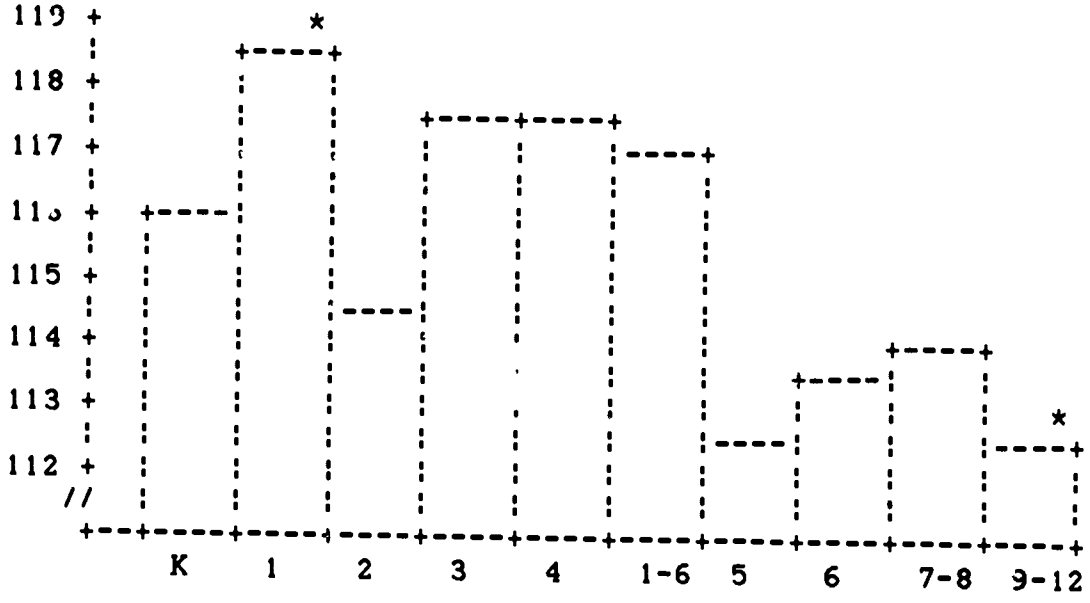

Figure 1. TBQ score means with a maximum possible score of 148 by teachers' grade levels where * indicates that $p < .05$ as determined by the Newman-Keuls procedure.

School level. The grade level results were supported by the school level comparison (Figure 2). In this comparison elementary school teachers scored significantly higher than did the high school teachers.

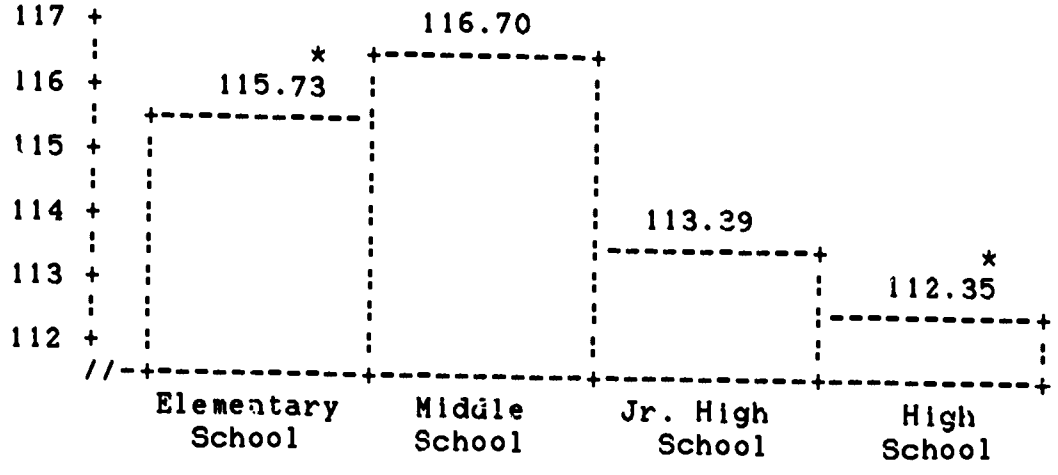

Figure 2. TBQ score means with a maximum possible score of 148 by teachers' school level where * indicates that $p < .10$ as determined by the Scheffé method. The middle school group, while having a higher mean, had an n of only 10.

Other settings comparisons. There were no significant differences found between groups in the areas of subject matter (secondary only), SES and achievement level of student, or class size. However, two groups have mean scores that would indicate less than an "agree" average for the research-based effective teaching behaviors (Table 3). These two groups were the bilingual high school teachers and the teachers that identified their students as coming from high social economic backgrounds.

Teacher Characteristics

ANOVAs were conducted to determine TBQ score differences among teachers related to the following teacher characteristics: years of teaching experience, highest degree earned, years since attaining last degree, the reading of professional journals, and the gender of the teacher. Of these, years of experience and teacher gender were found to significantly affect scores on the TBQ.

Experience. A pilot study using the TBQ found that teachers (N=60) with less than 11 years of experience scored higher than teachers with more than 10 years of experience. That finding was supported by the results of this study.

Years of teaching experience were divided into five groups of six years each. An ANOVA determined that there was a significant difference among the groups (Table 2). A trend analysis was conducted to analyze the relationship of the groups (Ferguson, 1981). Five points were plotted against

coefficients of orthogonal polynomials for a linear trend. A significant linear trend was indicated with the deviation not being significant (Table 4). Using TBQ scores and years of experience as a continuous variable, a Pearson product-moment correlation yielded a negative coefficient of -.18 which was significant at the $p = .001$ level.

The Scheffé multiple-comparison procedure identified group 1, those teachers with 6 years or less experience, as having scored significantly higher than group 5, those teachers with 25 to 30 years of experience (Figure 3). Group 4, those teachers with 19 to 24 years of experience, had scored surprisingly high in comparison to the linear trend.

The general trend of the TBQ scores, decreasing as years of experience increased, could have been related to time on the job or a historical effect. The difference in scores may have been due to a "burn-out" factor, with teachers having the fewest years of experience being more active and more involved. The score difference could have been due to when

Table 4. Linear trend analysis for teachers' years of experience.

Source	SS	df	MS	F
Linear	378.42	1	378.42	6.74 **
Deviation	278.54	3	92.85	1.65
Within Groups	15730.82	280	56.18	
Total	16371.73	284		

Note. ** $p < .01$

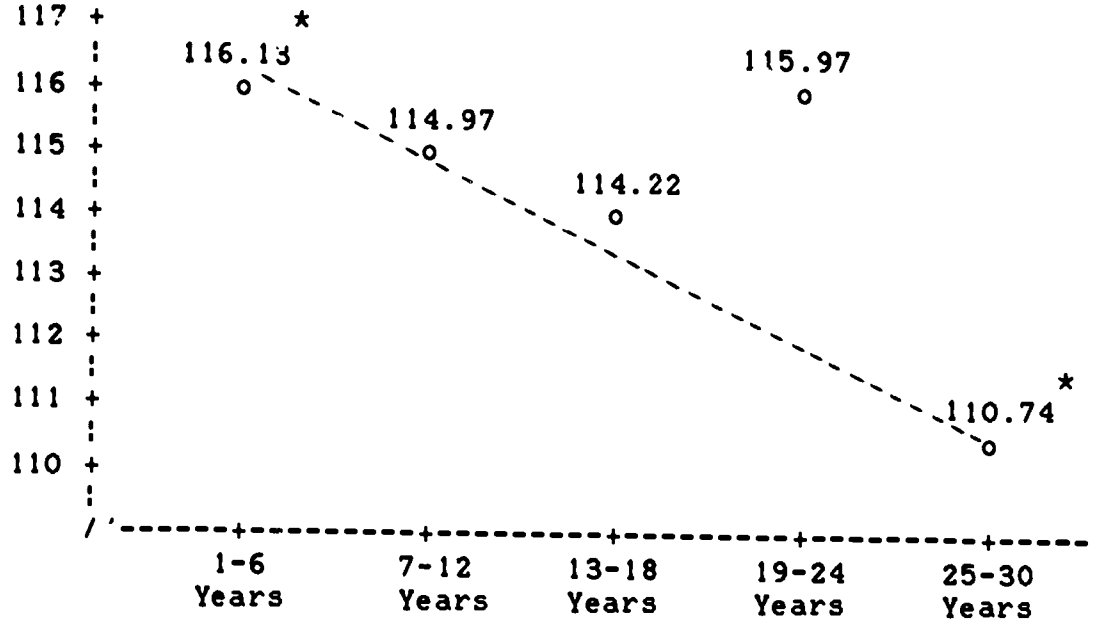

Figure 3. TBQ score means with a maximum possible score of 148 by teachers' years of experience. Dashed line indicates linear trend line, and * indicates that $p < .10$ as determined by the Scheffé method.

the teachers entered the field. Teachers with more experience may have developed a different view of appropriate teaching behaviors due to when they entered the profession. This historical perspective of good teaching may have been what was measured.

Gender. There were differences in the TBQ scores related to the gender of the teachers (Table 2). A series of two-way ANOVAs failed to identify any interaction effect with any other variable including grade or school level. Female teachers scored higher on the TBQ than did male teachers. Any conclusion as to why women scored higher than men or any real practical application was unclear from these data.

Other characteristics comparisons. Comparisons related to the highest degree that the teacher earned, the number of

years since it was earned, and the reading of professional education journals did not indicate any differences. This suggests that the role which higher education played in the teachers' attitudes toward research-based effective teaching behaviors was minimal. The failure to reject the null hypothesis for the reading of professional journals could have been function of data recording. The groups were defined by those that listed journals and those that did not. Failure to list journals could have been a function of haste, not an indication that none were read on a regular basis. The failure of this variable to meet the homogeneity of variance assumption lends support to this conclusion.

Discussion

The effective te :hing research has produced a body of results that are sure to shape policies, influence teaching behaviors, and ultimately affect the achievement of students. The presence of research-based effective teaching behaviors offers a great hope for improved teaching.

However, do classroom teachers support those behaviors that research has shown to be effective in producing greater student achievement? And what factors affect this support?

This study has begun to answer these questions. The general attitude of teachers toward the research-based behaviors may be cause for optimism. However, some of the factors affecting their attitude is cause for concern. An initial concern has to do with the ability of the research-

based behaviors to generalize to higher grade levels. If the behaviors are valid for higher grade levels, a second concern involves elementary teachers being better able to identify and being more supportive of the research-based effective teaching behaviors. A third concern involves the decrease in support for the research-based behaviors with increased years of experience.

Generalizing of Behaviors

Lower TBQ scores from teachers at higher grade levels may indicate that the research-based effective teaching behaviors do not generalize well to the upper grade levels. However, there is little research evident to suggest a conflict in good teach ng behaviors between upper and lower grade levels. A number of studies conducted on the high school level have supported the results of studies in lower grade levels (e.g. Arehart, 1979; McDonnell, 1977). In meta-analyses that have been conducted across grade levels, such as Luiten, Ames, and Ackerson (1980) study on advance organizers, effect sizes differed but the results were still positive.

Elementary and Secondary Effectiveness

The lower TBQ scores for high school teachers may indicate that the research-based effective teaching behaviors are valid, but that high school teachers are less aware of effective teaching practices. Elementary teachers may be

more oriented toward effective teaching behaviors due to the nature of their training and their responsibilities.

Two studies have supported the perception that elementary teachers are more effective than secondary teachers. Jandes, Murphy, & Sloan, (1985) demonstrated that elementary teachers, principals, and superintendents all view their schools as more effective than any of their secondary counterparts. The elementary school professionals scored their schools over 60 percent higher in overall school effectiveness than did the secondary school professionals. Richardson (1985) found the same results for elementary and secondary teachers and principals in the area of classroom management.

Why do secondary teachers perceive themselves as less effective? The answer might be attributed to the nature of the high school classroom and to the orientation of the teachers. While the behaviors that make a teacher effective might be the same for both the elementary and secondary level, the teaching environment and content level are different. The level of sophistication of the students and the subject matter may influence the teachers orientation to teaching.

Ryans (1960) found that secondary teachers were more traditional and academically oriented, while elementary teachers were child-centered. Elementary teachers deal with the diverse development of basic skills requiring a comprehensive understanding of the teaching and learning

processes. Elementary teachers are not only actively involved in the teaching process; they are actively involved in monitoring and guiding a variety of learning processes. This is an important part of their training and their job.

Secondary teachers are more specialized. Their scope is usually limited to one subject, and their role is often that of an information giver. Achievement is often measured by tests of accumulated knowledge, rather than the progressive development of a skill. Secondary teachers must be subject specialists, whereas elementary teachers must be generalists.

Improving Teaching on the Secondary Level

Emphasis on specific subject matter might obscure the more general concerns of teaching and learning in training and in practice. Russell and Morrow (1986) found that the major problem facing secondary teachers, as perceived by principals and teachers, was not lack of subject knowledge. The most difficult problems facing secondary teachers had to do with how to teach, motivate, and manage the students. This suggests that an increased emphasis on effective teaching behaviors in pre-service and in-service training might be the most appropriate means of improving teaching. Reform reports, such as A Nation Prepared (Carnegie Forum, 1986), recognized this deficit and have recommended the additional requirement of a graduate degree in education as the way to improve teaching.

The Effect of Experience

Teachers with many years of experience are probably as effective at improving student achievement, if not more so, than those teachers with less experience. However, the experienced teachers might be even more effective if they could better recognize and implement those teaching behaviors that research has identified as effective. In-service programs should keep teachers current with regard to research findings. If the research-based teaching behaviors become the basis for teacher evaluation, as suggested by Medley, Coker, and Soar (1984), then teachers will need to know these behaviors. If special efforts are not made, those teachers with more years of experience may be at an unfair disadvantage.

Suggested Research

As with most studies, this research on teacher attitudes toward research-based effective teaching behaviors raises as may questions as it answers. The following represent some of the most important questions:

1. Is there a relationship between TBQ scores and classroom behavior? Do teachers that score higher on the TBQ display more of the surveyed effective teaching behaviors in their classrooms?
2. Is there a relationship between school level taught and research-based effective teaching behaviors displayed? Do elementary teachers demonstrate more research-based

effective teaching behaviors than do secondary teachers?

3. Is there a relationship between years of teaching experience and the number of research-based effective teaching behaviors displayed? Do teachers with fewer years of experience demonstrate more research-based effective teaching behaviors?
4. Is there a relationship between the gender of the teacher and the number of research-based effective teaching behaviors displayed? Do female teachers demonstrate more research-based effective teaching behaviors than do male teachers?
5. Is there a relationship between the TBQ scores of teachers and the achievement of their students. Do teachers with higher TBQ scores have students that demonstrate greater achievement?
6. What other factors act and interact with support for research-based effective teaching behaviors to produce increased student achievement?

Along with pursuing the answers to these questions, educational researchers should be encouraged to continue the study of effective teaching behaviors. The list of these behaviors should be continually revised. New behaviors should be added, questionable behaviors dropped, and more specific contexts defined. As educational research grows and is applied in classrooms, teaching should improve and education should grow as a profession.

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