DOCUMENT RESUME

ED 409 307 SP 037 438

AUTHOR O'Connor, Evelyn A.; Fish, Marian C.
TITLE Differences between the Classrooms of Expert and Novice Teachers on the Dimensions of the "Classroom Systems Observation Scale."
PUB DATE Apr 97
NOTE 22p.; Paper presented at the Annual Meeting of the New England Educational Research Organization (Portsmouth, NH, April 30-May 2, 1997).
PUB TYPE Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Beginning Teachers; *Class Organization; *Classroom Environment; Classroom Observation Techniques; *Classroom Techniques; Elementary Education; Elementary School Teachers; Private Schools; Public Schools; Teacher Characteristics; *Teaching Experience; *Teaching Styles

ABSTRACT

This study investigated whether differences exist between classrooms of expert and novice teachers on the cohesion, communication, and flexibility dimensions of the "Classroom Systems Observation Scale" (CSOS). Principals identified 10 expert and 10 novice elementary school teachers from 8 public and private schools. A 50-minute classroom observation using the CSOS was conducted for each classroom. Results showed that expert teachers' classrooms had a significantly higher level of flexibility within the balanced range of functioning than did novice teachers' classrooms. No differences between expert and novice teachers' classrooms were found on the cohesion and communication dimensions. These findings support prior research on expert-novice teacher differences. School psychologists can use this knowledge to help new teachers develop a more balanced, flexible classroom, thus improving the classroom system. (Contains 23 references.) (Author)

SP

Running head: CLASSROOM DIFFERENCES ON THE CSOS

Differences Between the Classrooms of Expert and Novice Teachers on the Dimensions of the Classroom Systems Observation Scale

Evelyn A. O'Connor

Graduate School and University Center

of the City University of New York

Marian C. Fish

Queens College of the City University of New York

Paper presented at the Annual Meeting of the
New England Educational Research Organization,
Portsmouth, New Hampshire, April 30 - May 2 1997

Abstract

This study investigated whether differences exist between classrooms of expert and novice teachers on the Cohesion, Communication, and Flexibility dimensions of the Classroom Systems Observation Scale (CSOS). Principals identified 10 expert and 10 novice elementary school teachers from eight public and private schools. A 50-minute classroom observation using the CSOS was conducted for each classroom. Results showed that expert teachers' classrooms had a significantly higher level of flexibility within the balanced range of functioning than novice teachers' classrooms. No differences between expert and novice teachers' classrooms were found on the Cohesion and Communication dimensions. These findings support prior research on expert-novice teacher differences. School psychologists can use this knowledge to help new teachers to develop a more balanced, flexible classroom, thus improving the classroom system.

Differences Between the Classrooms of Expert and Novice Teachers on the Dimensions of the Classroom Systems Observation Scale

A main focus of educational research is to investigate what variables contribute to the enhancement of learning and achievement. Researchers have examined the effects of various classroom variables on learning and achievement at two levels, the student as an individual and as part of the classroom system. Burden and Fraser (1993) state that the impetus has moved from studying individual characteristics such as intelligence to a more systemic approach to explain the learning process.

Research on classroom environments has mainly relied on case studies, observations, and self-report instruments to assess perceptions of teachers and students (Fraser, 1991). For instance, many instruments have been developed to assess students' and teachers' perceptions of their classroom environments such as Learning Environment Inventory (Fraser, Anderson, & Walberg, 1982), the Classroom Environment Scale (Moos & Trickett, 1974), and My Class Inventory (Fisher & Fraser, 1981). These self-report instruments assess respondents' perceptions of the classroom environment, and thus give a subjective view of the classroom system.

Currently, the only instrument available that evaluates dimensions of the classroom system using an outside, objective observer is the Classroom Systems Observation Scale (CSOS) (Fish & Dane, 1995). The CSOS is based on the Circumplex Model of Marital and Family Systems (Olson, Russell, & Sprenkle, 1989) and consists of three dimensions: Cohesion, Communication, and Adaptability. Two family instruments, FACES and the Clinical Rating Scale, use these dimensions to describe family functioning (Olson, Russell, & Sprenkle, 1989). The CSOS consists of the same three dimensions, except that adaptability is referred to as flexibility. The purpose of the CSOS is to assess the functioning of the classroom from a systems perspective (Fish & Dane, 1995). The classroom system has many elements that can influence students' performance. One important variable that influences the classroom system is the experience of the teacher.

Expert vs. Novice Teachers

The differences between experts and novices have long been examined by researchers. Chi, Glaser, and Farr (1988 cited in Gallagher, 1994) reviewed the literature on experts and novices in many fields (e.g., chess, computer science, and medicine) and found that within their specific domain experts have superior self-monitoring skills, are able to

examine a problem qualitatively, solve problems quickly and fairly accurately, and can process large meaningful patterns within their subject area. In addition, investigations in this area have shown that experts have a more elaborate knowledge base and perceive problems on a deeper, more complex level than novices (Gallagher, 1994; Weinert, Schrader, & Helmke, 1990).

Recent research has looked at the differences that exist between expert and novice teachers. Some investigators (Carter, Cushing, Sabers, Stein, & Berliner, 1988; Sabers, Cushing, & Berliner, 1991) have examined these differences by presenting videotapes or slides of a classroom lesson to teachers and asking for their interpretations. Researchers using this method have found that experts were more capable than novices of comprehending and describing classroom phenomena in-depth. In addition, experts were able to interpret students' behavior and offer possible solutions for problems (Carter et al., 1988; Sabers et al., 1991). In contrast, novices were more concerned about discipline (Sabers et al., 1991).

Another method used to examine expert-novice differences is to observe a lesson, take extensive notes and/or tape the lesson, and question teachers about their lesson both before and after they teach. These studies have found that experts have a more elaborate mental plan for their lessons

(Leinhardt, 1989; Livingston & Borko,1989; Westerman, 1991), used students' questions and responses to guide discussion (Cleary & Groer, 1994; Livingston & Borko,1989, Westerman, 1991), were more flexible and improvised more on lessons (Livingston & Borko, 1989; Westerman, 1991), used more interactive decisions (Cleary & Groer, 1994), and were concerned with students' understanding of the material (Cleary & Groer, 1994; Livingston & Borko,1989). In contrast, novices spent too much time planning how to present material (Borko & Livingston, 1989; Livingston & Borko, 1989), had difficulty presenting their lessons in a connected and meaningful way (Borko & Livingston, 1989; Leinhardt, 1989; Livingston & Borko, 1989, Westerman, 1991), were unresponsive to students' needs during a lesson (Livingston & Borko, 1989; Westerman, 1991), and did not deviate from their lesson plans (Cleary & Groer, 1994; Westerman, 1991).

Taken as a whole, these results indicate that when presenting lessons, novices tend to be more structured and less flexible than experts. Novices spend more time focusing on lesson content and discipline, and less time reacting to and altering their plans to meet the needs of their students. It has been proposed by cognitive theorists (Borko & Shavelson, 1990; Leinhardt & Greeno, 1986) that experts have a richer domain-specific knowledge base and more experience which lead to a more elaborate schema than that of novices.

This schema allows experts to be more cognizant of the various aspects of their environment and thus permits them to adjust their lessons when needed. (Leinhardt & Greeno, 1986; Weinert et al., 1990). Novices, on the other hand, seem to be overwhelmed by new information in the environment and cannot process and use this information to improve their teaching and adapt to students' needs (Carter et al. 1988; Weinert et al., 1990).

"Teaching is a complex act requiring the moment-by-moment adjustment of plans to fit continually changing and uncertain conditions" (Lampert & Clark, 1990, p. 21). In order to be flexible, a teacher must be aware of the many aspects and changes that occur in the classroom. Because expert teachers are more sensitive to the performance cues from students than novices (Borko & Shavelson, 1990), they will be able to adapt the lesson so that the students will understand. If a teacher is adapting a lesson to meet students' concerns and needs, this should help the student learn the information. Therefore, flexibility is an important skill for teachers to acquire.

The purpose of this study is to investigate whether classroom systems of expert and novice elementary school teachers differ on the three dimensions of the CSOS. Although all three dimensions of the CSOS will be examined in this study, based on the literature, classroom flexibility is

the only dimension for which there is prior support of differences. According to the definition of the CSOS, "Classroom Flexibility is demonstrated by behavior in the classroom system that is adaptable and able to change in response to student and teacher needs. A flexible classroom is one in which teachers and students assume diverse roles and responsibilities" (Fish & Dane, 1995, p. 2). To determine whether differences exist between classrooms with novice and expert teachers classroom observations were conducted using the Classroom Systems Observation Scale. The following hypotheses were proposed:

1. Classrooms with expert teachers will obtain a score that reflects a more balanced flexibility score than classrooms with novice teachers on the Flexibility dimension of the Classroom Systems Observation Scale.
2. No differences will be found between classrooms of experts and novices on the Communication and Cohesion dimensions of the Classroom Systems Observation Scale.

Methods

Participants

The sample was composed of 10 expert and 10 novice elementary school teachers from eight schools in the New York State area. The schools consisted of six private and one public school in an urban region, and one private school in a

suburban region. Teachers who had less than one full year of teaching experience were considered novices. Teachers who had displayed exceptional teaching ability as per principal nomination, had five years or more teaching experience, and had one or more years' experience at their present grade level were considered expert teachers. The average experience rate for the expert teachers was 24.3 years, with a range from 11 to 43 years. See Table 1 for demographic information.

Measure

The Classroom Systems Observation Scale (CSOS)(Fish & Dane, 1995) is an observational instrument that is used to determine the level of Flexibility, Cohesion, and Communication evident in an elementary school classroom (See Table 2 for sample items from scale). Flexibility is determined by the level of adaptability of the teacher and students in the classroom. The level of Cohesion in the classroom is determined by the emotional bonding and supportiveness among the students as well as between the teacher and the students. Both the Flexibility and Cohesion dimensions of the scale are curvilinear, where the outer two levels represent unbalanced functioning, and the two mid-levels represent balanced functioning. The four levels of flexibility are: rigid (very low), structured or flexible

(moderate), and chaotic (very high). Cohesion also has four levels which are: disengaged (very low), separated or connected (moderate), and enmeshed (very high). The Communication dimension is reflected in the exchange of thoughts, feelings, and ideas in the classroom. The Communication dimension is linear, ranging from low to high.

The interrater reliability for the three dimensions are: Cohesion (.83), Flexibility (.89), and Communication (.61). In addition, the test-retest reliability for the 3 dimensions: Cohesion (.64), Flexibility (.44) and Communication (.54) are moderate (Ishofsky, Fish, & Sullivan, 1995). The CSOS has also been shown to have adequate construct validity (Berkson, Berger, Fish, & Dane, 1995).

Procedures

Consent was obtained from principals to conduct research in their schools. The principals identified novice and expert teachers in their schools using the criteria described above. After the principals nominated the teachers, the identified teachers were informed about the study and their consent to be observed was obtained.

Two researchers, one a graduate student and the other the author, collected the data for this study. Both of these researchers were trained by an expert using videotaped classroom situations. In addition, practice observations in

classrooms were conducted as part of the training process. The two researchers obtained an interrater reliability score of .80 with an expert prior to the collection of data. One 50-minute classroom observation using the Classroom Systems Observation Scale was conducted by a researcher for each teacher. In all instances, the researcher sat in the back of classroom to observe and record results.

Results

A series of t tests were employed to determine whether differences exist between expert and novice teachers on the Communication, Cohesion, and Flexibility dimensions of the CSOS. Descriptive statistics for novice and expert teachers on the three dimensions of the CSOS are presented in Table 3. The results showed that expert teachers' classrooms were significantly more flexible than novice teachers' classrooms, based on the Flexibility dimension of the CSOS, ($t=3.02$, $df=18$, $p=.007$). No significant differences were found between expert and novices on the Communication dimension ($t=1.61$, $df=18$, $p=.125$), indicating that expert and novice teachers do not differ in relation to their classroom interactions. In addition, no significant differences were found on the Cohesion dimension ($t=.85$, $df=18$, $p=.405$). This shows that novice and expert teachers' classrooms do not differ on the members' sense of belonging or their emotional bonding.

Discussion

Results of this study indicate that expert teachers' classrooms are significantly more flexible than novice teachers' classrooms. This suggests that teacher experience does influence the amount of adaptability that occurs in the classroom. This corroborates findings in the literature on expert-novice differences. Expert teachers were found to be responsive to students' needs and willing to adapt their lesson when necessary (Cleary & Groer, 1994; Livingston & Borko,1989; Westerman, 1991). Further, no significant difference was found between expert and novice teachers' classrooms on the Communication or Cohesion dimensions. This suggests that experience does not affect communication among members in the classroom or their sense of being a cohesive group.

As with any study, there are limitations that must be noted. The researcher has encountered the same limitations which plagued many of the studies comparing expert and novice teachers. The first limitation is the small sample size. Although highly significant results were found for the Flexibility dimension, one wonders whether other differences may have been found with a larger sample size. The other limitation is the definition of an expert teacher as someone nominated by the principal. Unfortunately, to date there is

no adequate method to identify an expert teacher. As Berliner (1986) stated, "In the elementary grades a teacher's reputation, along with classroom observations and consistent excellent classroom performance on standardized tests, may be taken as indicators of expertise despite all the well-known faults inherent in reputational measures, observation, and standardized tests" (p.8).

Since expert teachers adapt their lessons and way of teaching to meet students' needs, it would be of interest to investigate whether there is a relationship between student achievement and the Flexibility dimension of the CSOS. There has been some research that has shown a relationship between some classroom environment factors (e.g. Cohesiveness, Order and Organization, Personalization, and Rule Clarity) and students' achievement (Byrne, Hattie, & Fraser, 1986).

The CSOS is an important instrument for researchers and school personnel because it can assess classroom functioning and lead to appropriate interventions. The results of this study have shown that expert and novice teachers' classrooms differ in flexibility. With this perspective in mind it is important to realize that new teachers may be less flexible at first, but with experience and a developing knowledge base they may become more flexible in dealing with students in the classroom. It may be important for preservice teachers to spend more hours student teaching, and reflecting on the

lesson that they teach (Livingston & Borko, 1989). In addition, this information is important for school psychologists whose "primary prevention orientation implies that counseling and training teachers is an important as providing individual support and assistance to the students" (Weinert et al., 1990, p. 164). School psychologists can use this information to help new teachers to develop a more balanced, flexible classroom, thus improving the classroom system.

References

Berkson, N. B., Berger, D., Fish, M. C., & Dane, E. (1995, August). Classroom Systems Observation Scale: Determining construct validity through factor analysis. Poster session presented at the annual convention of the American Psychological Association, New York, NY.

Berliner, D. C. (1986). In pursuit of the expert pedagogue. Educational Researcher, 15, 5-13.

Borko, H., & Livingston, C. (1989). Cognition and improvision: Differences in mathematics instruction by expert and novice teachers. American Educational Research Journal, 26, 473-498.

Borko, H., & Shavelson, R. J. (1990). Teacher decision making. In. B. F. Jones & L. Idol (Eds.), Dimensions of thinking and cognitive instruction (pp. 311-346). Hillside, NJ: Erlbaum Associate.

Burden, R. L., & Fraser, B. J. (1993). Use of classroom environment assessment in school psychology: A British perspective. Psychology in the Schools, 30, 232-240.

Byrne, D. B., Hattie, J. A., & Fraser, B. J. (1986). Student perceptions of preferred classroom learning environment. The Journal of Educational Research, 80, 10-18.

Carter, K., Cushing, K., Sabers, D., Stein, P., & Berliner, D. (1988) Expert-novice differences in perceiving

and processing visual classroom information. Journal of Teacher Education, 39, 25-31.

Cleary, M. J., & Groer, S. (1994). Inflight decisions of expert and novice health teachers. Journal of School Health, 64, 110-114.

Fish, M. C., & Dane, E. (1995). Classroom Systems Observation Scale: Manual.

Fisher, D. L., Fraser, B. J. (1981). Validity and use of My Class Inventory. Science Education, 65, 145-156.

Fraser, B. J. (1991). Validity and use of classroom environment instruments. Journal of Classroom Interaction, 26, 5-11.

Fraser, B. J., Anderson, G. J., & Walberg, H. J. (1982). Assessment of learning environments: manual for Learning Environment Inventory (LEI) and My Class Inventroy (MCI) (third version). Perth: Western Australian Institute of Technology.

Gallagher, J. J. (1994). Teaching and learning: New Models. Annual Review of Psychology, 45, 171-195.

Ishofsky, H., Fish, M. C., & Sullivan, J. (1995, August). The psychometric properties of the Classroom Systems Observation Scale. Poster session presented at the annual convention of the American Psychological Association, New York, NY.

Lampert, M., & Clark, C. M. (1990). Expert knowledge and expert thinking in teaching: A response to Floden and Klinzing. Educational Researcher, 19, 21-23.

Leinhardt, G. (1989). Math lessons: A contrast of novice and expert competence. Journal for Research in Mathematics Education, 20, 52-75.

Leinhardt, G., & Greeno, J. G. (1986). The cognitive skill of teaching. Journal of Educational Psychology, 78, 75-95.

Livingston, C., & Borko, H. (1989). Expert-novice differences in teaching: A cognitive analysis and implications for teacher education. Journal of Teacher Education, 40, 36-42.

Moos, R. H., & Trickett, E. J. (1987). Classsroom Environment Scale manual (2nd ed.). Palo Alto, CA: Consulting Psychologists Press.

Olson, D. H., Russell, C. S., & Sprenkle, D. H. (Eds.) (1989). Circumplex Model: Systemic assessment and treatment of families. New York: The Haworth Press.

Sabers, D. S., Cushing, K. S., & Berliner, D. C. (1991). Differences among teachers in a task characterized by simulataneity, multidimensionality, and immediacy. American Educational Research Journal, 28, 63-88.

Weinert, F. E., Schrader, F. W., & Helmke, A. (1990). Educational expertise: Closing the gap between educational

research and classroom practice. School Psychology International, 11, 163-180.

Westerman, D. A. (1991). Expert and novice teacher decision making. Journal of Teacher Education, 42, 292-305.

Table 1

Demographic Variables of Expert and Novice Teachers and Their Schools

Subject	School Region	Type of School	Grade	Years of Experience	Gender
1	Urban	Private	Kindergarten	36	Female
2	Suburban	Private	Kindergarten /First	14	Female
3	Urban	Private	First	11	Female
4	Urban	Private	First	43	Female
5	Urban	Private	Second	19	Male
6	Urban	Private	Third	12	Female
7	Urban	Private	Third	22	Female
8	Urban	Public	Third	30	Female
9	Urban	Private	Fourth	40	Female
10	Urban	Private	Fifth	16	Female
11	Urban	Private	First	<1	Female
12	Urban	Private	First	<1	Female
13	Urban	Public	First	<1	Female
14	Urban	Private	Second	<1	Female
15	Urban	Private	Second	<1	Female
16	Urban	Private	Third	<1	Female
17	Urban	Private	Fourth	<1	Male
18	Urban	Private	Fifth	<1	Female
19	Urban	Private	Fifth	<1	Female
20	Urban	Private	Seventh	<1	Male

Table 2

Sample Items from the Classroom Systems Observation Scale

Classroom Cohesion	
Emotional Bonding	
C-1	Teacher encourages class to work as a group.
Supportiveness	
C-16	Students assist other students with academic work.
Boundaries	
C-17	Students share classroom space.
Classroom Flexibility	
Leadership	
F-4	Teacher is responsive to students' need for orientation.
Discipline	
F-6	Teacher considers circumstances in enforcing consequences.
Negotiation	
F-9	Decisions made through teacher-student compromise.
Classroom Communication	
Listener's Skills	
CO-1	Teacher listens to students without interrupting.
Self-disclosure	
CO-9	Teacher speaks about friends & families with students.
Clarity	
CO-10	Teacher verbal messages are clear & consistent.

Table 3

Descriptive Statistics for Expert and Novice Teachers on the Dimensions of the Classroom Systems Observation Scale (CSOS)

Variable	Mean	SD	2-Tail Significance
COHESION			
EXPERT	2.2980	.368	.405
NOVICE	2.1270	.516	
FLEXIBILITY			
EXPERT	2.1910	.229	.007*
NOVICE	1.8360	.292	
COMMUNICATION			
EXPERT	3.5780	.591	.125
NOVICE	3.2060	.429	

Note. N=20 (Experts=10, Novices=10)
*Results significant at the $p < .01$ level

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
Educational Resources Information Center (ERIC)

REPRODUCTION RELEASE

(Specific Document)

I. DOCUMENT IDENTIFICATION:

Title: Differences Between the Classrooms of Expert and Novice Teachers on the Dimensions of the Classroom Systems Observation Scale	
Author(s): O'Connor, E.A., + Fish, M.C.	
Corporate Source:	Publication Date:

II. REPRODUCTION RELEASE:

In order to disseminate as widely as possible timely and significant materials of interest to the educational community, documents announced in the monthly abstract journal of the ERIC system, *Resources in Education* (RIE), are usually made available to users in microfiche, reproduced paper copy, and electronic/optical media, and sold through the ERIC Document Reproduction Service (EDRS) or other ERIC vendors. Credit is given to the source of each document, and, if reproduction release is granted, one of the following notices is affixed to the document.

If permission is granted to reproduce and disseminate the identified document, please CHECK ONE of the following two options and sign at the bottom of the page.

☐ Check here
For Level 1 Release:
Permitting reproduction in microfiche (4" x 6" film) or other ERIC archival media (e.g., electronic or optical) *and* paper copy.

The sample sticker shown below will be affixed to all **Level 1** documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

Level 1

The sample sticker shown below will be affixed to all **Level 2** documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN OTHER THAN PAPER COPY HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

Level 2

☐ Check here
For Level 2 Release:
Permitting reproduction in microfiche (4" x 6" film) or other ERIC archival media (e.g., electronic or optical), but *not* in paper copy.

Documents will be processed as indicated provided reproduction quality permits. If permission to reproduce is granted, but neither box is checked, documents will be processed at **Level 1.**

"I hereby grant to the Educational Resources Information Center (ERIC) nonexclusive permission to reproduce and disseminate this document as indicated above. Reproduction from the ERIC microfiche or electronic/optical media by persons other than ERIC employees and its system contractors requires permission from the copyright holder. Exception is made for non-profit reproduction by libraries and other service agencies to satisfy information needs of educators in response to discrete inquiries."

Sign here→ please

Signature: Evelyn A. O'Connor	Printed Name/Position/Title: Evelyn A. O'Connor / doctoral student
Organization/Address: 4 West Ave Lawrence, NY 11559	Telephone: (516)239-2990 / FAX:
	E-Mail Address: Evelynoc@AOL.COM / Date: 6/16/97

(over)