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ABSTRACT

As interest in open educatien has increased, so have demands fer systematic evaluative research on its effects. There now exists a fairly sizable body of work cn academic and psychological effects of open classroom teaching. In 1975, the author reviewed the relevant literature and summarized it in a monograph published by the North Dakota Study Group on Evaluation. In late 1977, he searched the literature again and located nearly 100 additional studies which had either appeared in the intervening two years or been inadvertently overlooked in the previcus review. This paper updates the review of the open classroom's effects with respect to academic achievement, self-concept, attitude toward school, creativity, independence and conformity, curiosity, locus of contrcl, cooperation, and several other variables. Evaluation research on open classrcom teaching is difficult to summarize concisely because the findings are mixed. For most of the outcome variables assessed, more studies favcred open than traditional classroom children. Evaluation research can continue to play both a formative role in impicving quality of ongoing open classroom programs, and a summative role in documenting relative strengths and weaknesses of open and traditional approaches. (Author)

PSYCHOLOGICAL EFFECTS OF THE "OPEN CLASSROOM"

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Since the first descriptive reports of the progressive teaching approach in English primary schools appeared in the American press in the mid-1960's, there has been a vast outpouring of literature on what has come to be called "open education," or the "open classroom."

Many of the early reports[1] provided rich and vivid descriptions of what was going on in the English schools and stressed how much more humane and more sensitive to realities of child development this approach to teaching seemed to be. Other writings[2] analyzed the open education movement in the context of its historical precedents and psychological/philosophical underpinnings and compared the development of the approach in England and the United States. Still others,[3] with a more practical orientation, provided specific advice on how to implement open education in American schools.

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[1]Blackie (1967); Brown & Precious (1969); Central Advisory Council (1967); Featherstone (1967); Hull (1970); I/D/E/A (1969); Informal Schools in Britain Today (1971); Kallett (1966); Marsh (1970); Murrow & Murrow (1971); Ridgway & Lawton (1968); Rogers (1970); Yeomans (1967).

[2]Barth (1969, 1972); Devaney (1974); Eisner (1974); Fisher (1972); Grannis (1973); Lynch (1975); Podeschi & Dennis (1976); Rathbone (1970, 1971); Silberman (1970); Spodek (1970); Weber (1971).

[3]Hassett & Weisberg (1972); Hertzberg & Stone (1971); Kohl (1969); Nyquist & Hawes (1972); Silberman (1973); Stephens (1974); Taylor (1972); Thomas (1975).

As interest in open education increased, so did demands for systematic evaluative research on its effects, to the point where there now exists a fairly sizable body of work on academic and psychological effects of open classroom teaching. In 1975, I reviewed the relevant literature and located over 100 such studies, which I summarized in a monograph published the next year by the North Dakota Study Group on Evaluation (Horwitz, 1976a). In late 1977, in preparation for this paper, I searched the literature again and located nearly 100 additional studies which had either appeared in the intervening two years or been inadvertently overlooked in my previous review.

The outpouring of research continues, but for all the amassing of data, there is still by no means a clear answer to the question of whether or not the open classroom is significantly more beneficial to children than traditional teaching approaches. Part of the reason for this is the fact that conflicting findings have emerged for most of the variables which have been assessed. Another reason is that many variables considered important by advocates of open education have not yet been adequately evaluated because of problems in measurement. Perhaps the most important reason, though, lies in the lingering ambiguity surrounding the definition of "open classroom" -- particularly the confusion between "open space" and "open education."

Just what <u>is</u> an "open classroom"? Silberman (1970) has characterized "openness" as "less an approach or method than a set of shared attitudes and convictions about the nature of childhood, learning, and schooling" (p. 208). Yet some writers who describe "open" classrooms are clearly more concerned with physical

space than with attitudes or convictions. To them, the term "open" has primarily an architectural meaning, and "open classrooms" are simply large, open rooms with many children and not many interior walls. What goes on pedagogically in these open spaces may or may not be the same thing as "open education," as Barth (1969, 1972), Rathbone (1970, 1971), Katz (1972), and others have defined the term. In fact, several studies have shown that the organizational or affective climate in open space schools is sometimes no more "open" than it is in conventionally-built schools (Allen, Hamelin & Nixon, 1976; Holmquist, 1972; Jaworowicz, 1972; Seidman, 1975). Unfortunately, some of the research studies on so-called "open classrooms" have failed to make clear what precisely was open about the classrooms and whether the investigators were measuring effects of building layout, of teacher-student interaction, of both, or of something else.

Although the term "open classroom" has at times been used carelessly and imprecisely, it is important to note that there do exist a number of observational and questionnaire methods for systematically assessing the degree of "openness" in classrooms. Perhaps the most widely used is the 50-item scale developed by Walberg & Thomas (1971, 1972, 1974, 1975), which is based in large part on the thoughtful conceptual analysis of open education by Bussis & Chittenden (1970a). The Walberg & Thomas instrument has two parallel forms, one for teacher self-rating and one for observer-rating, and has been validated on a sample of British and American classrooms. Another popular instrument is the 30-item "Dimensions of Schooling Questionnaire" (DISC) constructed by Traub, Weiss, Fisher & Musella (1972) as part of a large-scale

evaluation of open classroom teaching in Canada. More than 20 other systematic procedures for rating classroom openness have been described in the literature,[4] and, in addition, a number of writers[5] have published long check-lists of distinguishing characteristics of open classrooms.

With such a plethora of definitions of "openness" and ways of measuring it, it is easy to see why any unequivocal statement about effects of "open classroom" teaching is impossible to make. Indeed, some writers (e.g., Barth, 1973, 1977; Crowl, 1975) have questioned whether the term "open classroom" should even be used any more. Still, the term is used, with at least some general understanding within the educational community that it refers to a style of teaching involving flexibility of space, student choice of activity, richness of learning materials, integration of curriculum areas, and more individual or small-group than large-group instruction. Not all of the evaluation studies summarized in this chapter define openness in precisely the same way, and it is certainly not safe to assume that all the classrooms described as "open" in these studies are alike. What the classrooms do have in common is that they have all either been explicitly labeled with the term "open" or have been described as having characteristics generally ascribed to "open education."

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[4] Ahlgren & Germann (1977); Applebury & Hay (1969); Bennett (1976); Brandt (1972a, 1972b, 1975); Cumins (1975); Dopyera (1972); Dopyera & Lay (1975); Evans (1975); Gardner & Cass (1965); Higgs (1973); Krueckeberg (1973); Myers & Duke (1973); Norwood & Norwood (1975); Rautio (1975); Resnick (1972); Ross & Zimiles (1971, 1974); Shambeck (1975); Troutt (1972); Tuckman, Cochran & Travers (1973); Winett & Edwards (1974); Ziskind (1975).

[5] Flurry (1972); Morse (1976); Nias (1974); Schneiderman (1973, 1976); Sealey (1976)

Research From the 30's & 40's: The "Progressive Era" Studies.

Before summarizing the more recent evaluative studies on open education which have been carried out in the U.S., Canada, and Britain, mention should be made of the substantial body of research which was undertaken during the "progressive education" era of the 1930's and '40's in this country. The descriptions of the better of these "progressive" schools[6] make it clear that in many ways they closely resembled the British infant schools which inspired the American "open classroom" approach. Since their appearance in the years following World War I happened to correspond with the burgeoning development of the tests and measurements field, a large number of studies were undertaken to quantitatively assess the impact of progressive schooling on children.

One particularly noteworthy research project evaluating the "activity program" in New York City public elementary schools was reported in a series of eight articles in the Journal of Experimental Education in 1939 and 1941.[7] Among the results obtained were these: activity school children scored slightly lower than the control group in reading and arithmetic achievement tests but surpassed the controls in tests of knowledge of current affairs, progressive social beliefs, personal and social

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[6]Cremin (1961); Dewey & Dewey (1915/1962); Gordon (1946/1970); Mayhew & Edwards (1936/1966); Pratt (1948/1970); Wrightstone (1938).

[7]Jersild, Goldman, Jersild & Loftus (1941a, 1941b); Jersild, Goldman & Loftus (1941); Jersild, Thorndike, Goldman & Loftus (1939); Jersild, Thorndike, Goldman, Wrightstone & Loftus (1941); Sells, Loftus & Herbert (1941); Thorndike, Loftus & Goldman (1941a, 1941b).

adjustment; in observational studies, the activity school group also showed more evidence of initiative, experimentation, criticism and appraisal of one another's work, cooperation, and leadership than the control students, while scoring substantially similar to the controls in ratings of classroom conduct and discipline.

Summarizing research studies from across the country, the Progressive Education Association's Informal Committee on Evaluation of Newer Practices in Education (Baker et al., 1941) reported:

> In general, the evidence shows convincingly that the new methods do not result in a loss of academic proficiency in the usual school subjects and that, where any measures have been applied, there is a definite gain in terms of initiative, skill in dealing with problems, knowledge of contemporary and world affairs, and social participation. (pp. 52-53)

Similar general findings were reported in the reviews of research compiled by Wrightstone (1938), Leonard & Eurich (1942), and Wallen & Travers (1963).

Research From the 50's & 60's: The Bank Street & Gardner Studies.

By far the most comprehensive single study of psychological effects of "open" vs. "traditional" teaching methods in American schools was the Bank Street College of Education report (Minuchin, Biber, Shapiro & Zimiles, 1969), based on data collected from fourth grade children in four New York City schools in 1956-58. At that time--after many of the progressive era innovations had disappeared and before the influx of ideas from the British infant schools--it was difficult to find examples of "progressive" or "informal" teaching practice. The Bank Street researchers, who designed their study to assess the impact on nine-year-old child-

ren of schools varying on a continuum from very "traditional" to very "modern," had to settle for a rather unusual and expensive private school for their most "modern"--a necessity which created serious methodoglocial problems and limited the generalizability of their findings, since the other three less progressive schools were all ordinary, neighborhood, middle class, public schools. However, this study remains an important contribution to our understanding of school effects on children, particularly because of its detailed, systematic descriptions of the school environments, its consideration of the influence of parental child-rearing ideologies and practices, and the broad range of cognitive and personality variables it investigates.

Because of the large number of dependent measures and the confounding influence of home and parental factors, the findings are complex and difficult to summarize. Generally, there were no significant differences between "modern" and "traditional" schools in group tests of academic achievement or in individual problem-solving tasks, including tests of imaginative thinking. However, children from the more "modern" or "open" schools tended to have more "differentiated" self-concepts--that is, they tended to describe themselves in less rigid, more subtle and thoughtful ways; they were more invested in their childhood status and less future-oriented; they had more open, less conventional or stereotyped conceptions of their social sex roles. In group problem-solving, the "open" school children were more cooperative, less competetive, and, in the end, more effective. "Open" school children also had much more positive attitudes toward school.

Although suffering from even more methodological flaws than

the Minuchin et al. study, the most important long-term investigation of effects of "open" or "informal" teaching methods to come out of England was the research carried out over some three decades by D.E.M. Gardner of the University of London Institute of Education and summarized in her books Testing Results in the Infant School (Gardner, 1942), Long Term Results of Infant School Methods (Gardner, 1950), and Experiment and Tradition in Primary Schools (Gardner, 1966). While by present standards the Gardner studies seem statistically unsophisticated, their findings are generally consistent with the American research results: little difference between "informal" and "traditional" schools on measures of academic achievement, and numerous advantages for the "informal" schools on other variables, including some skills and characteristics on which traditional schools are usually believed to place heavier emphasis. In tests administered in the last year of junior school (age 10-11), for example, the informal school children scored significantly higher in descriptive and expressive writing, free drawing and painting, listening and remembering, "neatness, care, and skill," ingenuity and inventiveness, and breadth and depth of out-of-school interests. The informal schools also showed some superiority (though apparently not statistically significant) in reading ability, ability to concentrate on an uninteresting task, moral judgment, general information, handwriting, and group cooperation and problem-solving. The only area in which the more formal schools showed superiority was arithmetic.

Recent Evaluation Studies.

Since the appearance of the Minuchin et al. and Gardner books, the evaluative research studies on "open" classrooms which have appeared have all been more modest in scope, but there have been a great many of them. Space limitations do not permit detailed descriptions of these studies here, but their major findings will be presented in table form, with complete reference citations listed at the end of the chapter, so that interested readers can consult the original sources for further information.

The advantage of summarizing a large group of studies in "box-score" form is that it permits a rapid overview of the existing data and provides a rough sense of the balance of findings. The danger in such an approach, however, is that it is completely non-judgmental and treats all studies as if they were equal, when in fact studies differ considerably in terms of sample size, conceptual design, precision of measurement, quality of statistical analysis, etc. At this stage what is needed is some "meta-analysis" of the existing studies, perhaps along the lines suggested by Glass (1976). Clearly some studies are better designed and more valid than others and should, in a sense, "count" more in the over-all analysis. Until this job of scientifically evaluating the evaluations is done, however--and it is an enormous and methodologically very difficult one--the "box-score" approach will have to suffice.

To simplify the presentation of the existing data, studies have been grouped together according to outcome variables.

Academic Achievement

Of all the variables which have been investigated in open classroom evaluation studies, the one which has received the greatest amount of attention is academic achievement. The overall pattern of

findings is quite mixed (see Table 1). Of 102 studies reviewed, 14 favored open schools, 12 favored traditional schools, 29 showed mixed results, and 47 revealed no significant differences. While these findings certainly do not point to a clear superiority of "open" or "informal" methods in the teaching of the "basic skills," they do not reveal a clear inferiority either, as might possibly be expected due to the more casual atmosphere and the lesser emphasis on drill. Many writers on open education point out that achievement tests do not adequately measure important aspects of a child's learning and development in school, but whatever other advantages the open classroom may offer to children, the existing research by-and-large suggests that it does not hinder their academic attainment. Unfortunately, the excessive publicity given to one recent study which showed superior attainment for traditional school children (Bennett, 1976) has tended to promote the erroneous impression that open education has been "proven" detrimental to achievement.[8] Aside from whatever specific objections can be made on statistical and

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[8]When the Bennett study was first released, it made front page news in several influential British newspapers, including the Guardian and the Sunday Times, which heralded its arrival with the provocative headline "Progressive teaching gets a damning report / Black marks for informal teaching" (April 25, 1976). For weeks thereafter, editorials and letters pro and con filled the British press, as if the Bennett study were a unique, pioneering study in an unexplored area. Typical of the commentary was this remark by Stuart Maclure, editor of the esteemed Times Educational Supplement: "Now for the first time there is a piece of solid research which measures the progress of pupils under different types of classroom regime and comes up with clear-cut and uncompromising findings" (The Times, April 27, 1976, p. 14). Even in the U.S. press, where reaction to the Bennett study was much less dramatic, misleading headlines such as "Research on Teaching Methods / British Study Gives First Hard Data" (New York Times, May 16, 1976) were allowed to appear.

For thoughtful critiques of the Bennett study, see Gray & Satterly (1976), Hunt (1976), and Rogers & Baron (1977).

other grounds to the Bennett (1976) study, the fact is that it is only one of many studies which have now addressed the question of academic achievement in the open classroom, and its findings are by no means representative of the prevailing pattern of results.

Self-Concept

The second-most popular area of research on the open classroom has been self-concept. While this is an area of research in child development fraught with serious methodological problems (Gordon, 1969; Wylie, 1961), many investigators have nonetheless endeavored to make use of the various self-concept measures available to test the hypothesis that children in open classrooms feel better about themselves (or at least indicate to adult testers that they feel better about themselves).

The results, once again, are quite mixed (see Table 2). Of 61 studies reviewed, 15 favored open schools, 2 favored traditional schools, 15 showed mixed results, and 29 revealed no significant differences. To what extent this rather inconclusive pattern of results is indicative of measurement problems and to what extent it may reflect a genuinely uneven impact of open schooling on self-concept is not readily apparent. One problem with the studies of self-concept which have been reviewed is that nearly all of them[9] present self-concept as a unitary, linear entity: i.e., children either have high self-concepts, medium ones, or low ones. While

[9]The most notable exception being the Bank Street study (Minuchin et al., 1969), which employed time-consuming interview methods and projective devices to assess many different aspects of children's self-conceptions.

lending itself to easily quantifiable data, this notion of self-concept or self-esteem as a single-factor variable is probably inadequate for dealing with the complex question, "What do these groups of children think of themselves?" which the studies purport to ask.

Attitude toward School

A somewhat clearer pattern of findings has emerged in studies investigating attitudes toward school. The observation that open classrooms seem to be more enjoyable for children than traditional classrooms has been made by both proponents and critics of open education, the critics generally claiming that the school has more important tasks to accomplish (e.g., teaching basic skills) than letting children have fun , the proponents contending that enjoyment of school is important in its own right.

Of 57 empirical studies which were reviewed (see Table 3), 23 found that open classroom children held more positive attitudes toward school, compared to only 2 studies favoring traditional classrooms. Fourteen studies showed mixed results, and 18 revealed no significant differences. While certainly not unanimous, the bulk of this evidence does indicate that, compared to children in traditional classrooms, open classroom children feel at least equally positive, and often more positive, towards their school experience.

Creativity

Another variable which has received a fair amount of attention in the open classroom evaluation research is creative thinking. Writers in the creativity field have long maintained that schools can do more than they traditionally have to foster the development of creative thinking in children (e.g., Biber, 1959; Getzels &

Jackson, 1962; Hudson, 1966; Torrance, 1962, 1963; Wallach & Kogan, 1965). Many of the descriptions of open classrooms suggest that far more creative activity occurs in them than is normally the case in conventional classrooms. The hypothesis that children in open classrooms will perform better than traditional classroom children on tests of creative thinking has therefore been of considerable interest to researchers. As with studies of self-concept, however, the creativity research has suffered from inadequacies of definition and measurement. The whole question of what creative thinking is and how one can assess and measure it is fraught with difficulties and continues to be debated in the literature (e.g., Crockenberg, 1972).

Of 33 studies relating creativity and open education (see Table 4), 12 of them indicated that children in open classrooms were more creative than children in traditional classrooms, 10 showed mixed results, and 11 found no significant differences. No studies favored the traditional classroom.

Independence and Conformity

Another area, related to creativity, which has been examined in a number of evaluation studies is independence. Yeomans (1967) has described the informal/open classroom approach to teaching as "education for initiative and responsibility," and there is a strong emphasis in the open education literature (e.g., Barth, 1972; Rathbone, 1971; Weber, 1971) on viewing the child as an "active agent" in his own learning and the classroom as a place to provide maximal opportunities for fostering self-reliance and autonomy.

Researchers investigating independence in open classroom children have studied the phenomenon in several different ways. Some

have used classroom observation and teacher ratings of children's behavior; some have used pencil and paper tests; others have devised experimental tasks. Twenty-three studies have been reviewed, and although the findings are not entirely consistent, they tend generally to support the hypothesis that open classrooms do promote greater independence (see Table 5). Only one study reported higher independence for a traditional classroom sample; two found no significant differences and two obtained mixed results; the remaining 18 studies all favored the open classroom.

Curiosity

Since one of the major aims of the open classroom is to stimulate children's curiosity and encourage them to develop and explore their own interests, several investigators have attempted to measure whether open classroom children are in fact more curious than their counterparts in traditional classrooms.

The measurement of curiosity in children has posed some serious methodological problems, however. Some researchers, for example, have utilized classroom observation procedures, which fail to distinguish compliance with teachers' rules from expression of "inherent" curiosity (i.e., children may ask fewer questions in a more tightly controlled classroom because they are not allowed to, but be just as curious in their attitude and behavior outside the classroom as children who are allowed to ask questions in school). But questionnaire measures of curiosity also suffer from uncertain validity (Kreitler, Kreitler & Zigler, 1975), and experimental procedures which involve sitting a child down and giving him a task on which he can choose to behave curiously or not seem to miss the whole point of curiosity as self-directed, self-initiated exploratory behavior.

For all the methodological difficulties, however, curiosity remains an important dimension worthy of evaluation. Fourteen studies assessing curiosity in open vs. traditional classrooms were reviewed (see Table 6). Six of them favored the open classroom children, 3 showed no consistent or significant differences, and 5 obtained mixed results. No study found evidence of greater curiosity among traditional classroom children. More work at instrument development and further evaluation studies would seem to be necessary before a satisfactory answer can be given to the question of whether open classrooms do in fact promote greater curiosity than traditional classrooms.

Adjustment and Anxiety

Several investigators have sought to examine whether children in open classrooms appear to have greater personal adjustment and less anxiety than children in traditional classrooms. The results have been quite inconclusive (see Table 7). Of 17 studies dealing specificially with anxiety, 3 found the open classroom children to be less anxious, 5 found the traditional classroom children to be less anxious, 8 found no significant differences, and one obtained mixed results. Of 22 studies dealing more generally with personal adjustment, 7 found evidence of greater adjustment in the open classroom, 4 found no significant differences, and 11 showed mixed results. No studies favored the traditional classroom. This very mixed pattern of findings is difficult to interpret and points to a need for further study of children's emotional reactions to the open classroom experience.

Locus of Control

Locus of control is a psychological variable referring to the extent to which a person feels he has control over his own destiny.

As explained by Knowles (1972),

> The feeling of control can be conceived to be spread out along a continuum. At one end, internal control connotes the attitude that one can manipulate environments for reinforcements. One that is internally controlled sees himself as instrumental in the outcome of events. On the other end of the continuum, external control, the self-attitude is characterized by the feeling that all that happens to the individual is the consequence of chance, luck, fate, etc., all of which are forces and events beyond the subject's control. (p. 94)

The notion of the open classroom as an environment which provides many opportunities for choice and encourages the development of responsibility for one's own actions (e.g., Yeomans, 1967) has led numerous investigators to test the hypothesis that open classroom children will show more internal control than traditional classroom children. The evaluation instruments usually employed were paper and pencil, forced-choice questionnaires with items such as: "Suppose you did better than usual in a subject at school. Would it probably happen (a) because you tried harder, or (b) because someone helped you?" (Crandall, Katkovsky & Crandall, 1965). In most of the instruments, measures are made of the child's sense of internal responsibility for both his successes and his failures.

Twenty-four studies were reviewed, and once again, the results were inconclusive (see Table 8). Six studies yielded results showing greater internal control among open classroom children, one favored a traditional classroom group, 13 found no significant differences, and 4 had mixed results.

Internal control has been shown to be highly correlated with achievement (Coleman et al., 1966) and a wide range of cognitive and social skills (Crandall, 1975), so research on the impact of open education on the development of internality will likely continue to be of considerable interest.

Cooperation

Because of the informal atmosphere and emphasis on cooperative learning projects in the open classroom, a number of investigators have designed experimental procedures to determine whether children from those classrooms will show a greater tendency than traditional classroom children to cooperate in group problem-solving situations outside the classroom setting.

Both Minuchin et al. (1969) and Gardner (1966) utilized such tasks in their studies, Minuchin et al. finding greater cooperation among the progressive school children, Gardner obtaining mixed results. Several of the more recent evaluative studies have utilized similar experimental procedures, while others have employed classroom observation techniques. The results are summarized in Table 9. Once again, the findings are not conclusive, but lean more in the direction of the open classroom, with 6 studies clearly favoring the open classroom, one showing mixed results, and 2 coming up with no significant differences. No studies favored traditional classrooms.

Other Variables

A number of other social and cognitive variables have been assessed in just one or a few studies apiece and are summarized in Table 10. While the results are interesting, the absence of adequate replication studies mitigates against over-interpreting them.

Interaction Studies

Several studies have been designed with the intent of examining interactions between variables in open and traditional classrooms. Others, while not originally designed to look for interactions, nonetheless discovered interesting interactions in the course of data analysis. The findings of these studies are summarized in

Table 11. While there are not yet a great many interaction studies, their findings are rather consistent in suggesting that the open classroom may be more supportive of and appealing to the student who is "different"--who thinks more independently or creatively or is weak in academic skills--though they also raise some questions as to how well-suited the open classroom may be for low IQ or highly anxious children.

Summary and Discussion

The evaluation research on open classroom teaching is difficult to summarize concisely because the findings are so mixed. For most of the outcome variables assessed, more studies favored open than traditional classroom children. However, studies showing no significant or consistent differences frequently outnumbered those favoring the open classroom (see Table 12). The overall impression one gets from this research is that, compared to traditional education, the open classroom sometimes has measurable advantages for children and that it sometimes appears to make no measurable difference, but that it rarely appears to produce any measurable harm. Even this very general impression must be qualified, however, because of the inconsistencies in defining "open classroom" and other variations among the research studies, including age level of subjects, number of years' exposure to open education, and type of evaluation instruments utilized.

Before the question of how open classroom teaching affects children can be more fully answered, much additional research will have to be undertaken. Even as the number of outcome studies on open classroom teaching continues to mount, however, there is a

growing feeling among open educators that alternative forms of evaluation are necessary. In 1973, the Workshop Center for Open Education at City College in New York published a collection of articles titled Evaluation reconsidered: A position paper and supporting documents on evaluating change and changing evaluation (Tobier, 1973). Two years later, following up on a 1972 conference on open education evaluation at the University of North Dakota, a series of papers under the general editorship of Vito Perrone was published, again proposing new approaches to the assessment of open classroom teaching (Carini, 1975; Engel, 1975; Hein, 1975; Patton, 1975; Perrone, Cohen & Martin, 1975).

Some of the criticisms which have been made of the more conventional approaches to evaluation deal specifically with the problems of standardized testing. Meier (1972, 1973, 1975), for example, has criticized standardized reading tests such as the commonly used Metropolitan for their middle class bias, their emphasis on speed, the conventionality of thinking they require, the disadvantage they pose for children who lack confidence or emotional security in competitive situations, and the extent to which they tend to encourage teachers to "teach what the test measures" with methods which are inappropriate for many children. Shapiro (1971, 1973a, 1973b) argues convincingly that the very nature of the test situation--formal, silent, dominated by adult demands--may discriminate against open classroom children who are less accustomed to such a context for school performance than traditional classroom teaching. Carrying Shapiro's point one step further, DeRivera (1973) asserts that "the whole format of testing, the very structure of it, contradicts the goals and structure of an open classroom."

But is it reasonable to conclude from these arguments that standardized testing is inappropriate in the evaluation of open classroom teaching? Are other forms of assessment more appropriate? Ultimately, the answers to these questions lie within a much broader question: What is the evaluation for?. There are at least three different purposes for evaluation--the "teaching," the "scientific," and the "political" functions--and they do not all require the same types of assessment procedures.

Teaching Function.

The "teaching" function of evaluation is to help teachers assess their students' progress: to see how much they've learned, to diagnose areas of strength and weakness, to point up needs for additional work. It is in the area of the teaching function that much has been written critical of standardized testing. There no doubt is a great deal of truth to the contention that standardized achievement tests are not pleasant experiences for many school children, are not compatible with the philosophy and style of the open classroom, and often do not provide information which classroom teachers find particularly useful.

Many writers have pointed out that if teachers want to keep track of children's progress, there are methods other than formal, standardized testing which can generate a more thorough and sensitive picture of their development. One of the most valuable of these methods is simply to keep folders of representative samples of each child's school work (DeRivera, 1973). Another is to keep notes, daily or periodically, on each child's activities, interests, language, social, emotional, and academic skill development. To facilitate this process, the teacher may want to make use of special

evaluation tasks or check-lists, or may prefer to make careful anecdotal observations from time to time of the child's experiences in school. Carini (1973, 1975) and Engel (1975) provide some particularly enlightening examples of the types of observation, description, and documentation procedures which can be utilized by classroom teachers to keep track of children's progress and development. (See also Dean, 1972, and Cohen & Stein, 1972).

Scientific Function.

The "scientific" function of evaluation is concerned with description and assessment for the purpose of understanding. It may or may not provide information of immediate practical value to teachers, but should seek to answer important general questions about the process and effects of teaching. Standardized tests certainly have a place in scientific evaluation. Indeed, it is within the scientific realm that standardized, statistically valid and reliable procedures make most sense, particularly if investigators are attempting to compare large samples of children who have been exposed to different teaching approaches.

But standardized tests of academic achievement provide only a limited type of informaion, and it is the over-emphasis on them which has prompted vociferous criticism from proponents of open education. Reading, writing, and arithmetic ability are certainly important in open as well as traditional classrooms, but there is clearly a need to develop reliable measures of other aspects of the child's response to school. Such important but methodologically difficult areas as self-concept, creativity, curiosity, independence, resourcefulness, and sociability are still in need of much further study. Situational, observational, and experimental methodologies

(as described, for example, by Bussis & Chittenden, 1970a, 1970b; Duckworth, 1971; and Rentfrow, Goldupp & Hurt, 1973) as alternatives to the usual pencil and paper questionnaire measures are particularly deserving of further development. Additional research is needed on individual differences in children's responses to open education. In addition, there is room for more descriptive study of the process of open classroom teaching, for careful analysis of teacher-pupil interactions, for close investigation of the way in which such key concepts as structure, freedom, and authority are actualized in open as compared to more traditional classrooms.[10] Clarification of the open classroom teacher's role is another area in which further research is needed. Gardner & Cass (1965) and Resnick (1972) did the pioneering work in this area in their systematic observation studies, and further efforts along this line, using diary and interview methods, have been made in the Open Corridor program in New York City. There, teachers have kept logs "reflecting on their organizational changes and curricular developments" (Weber, 1973, p. 5), and researchers from the Educational Testing Service (Amarel, Bussis & Chittenden, 1973; Bussis & Chittenden, 1975; Bussis, Chittenden & Amarel, 1976; Chittenden & Bussis, 1971) have carried out intensive teacher interviews to identify the various modifications in perceptions, beliefs, and attitudes which teachers undergo in moving towards a more open

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[10] For examples of such descriptive studies, see Hirabayashi (1974), Meisels (1973), Molony (1974), Rothenberg (1975), and Travis (1974).

approach. Intensive teacher interviews have also been an important part of the assessment strategy developed by the University of North Dakota's Center for Teaching and Learning, as have interviews with children and parents (Patton, 1973, 1974, 1975; Perrone, 1973). Interview studies are still quite rare in open education evaluation and there is a need for more of them, for they may well make up in richness and depth what they lack in statistical precision.

Political Function.

The political function of evaluation has to do with the survival of programs--determing whether they are "good enough" to merit continuation.

In the political arena, in spite of the anti-achievement test sentiments of open educators, it is math and reading scores which often are held most important for determining whether a program lives or dies. This reality probably accounts for the fact that achievement tests were utilized far more frequently than any other sorts of measures in the studies reviewed for this chapter. Unfortunately, the mixed pattern of findings on achievement is such that advocates of open education will always be able to cite studies in favor of the open approach, while detractors will always be able to cite evidence against it. As with so many public policy issues, the decision about whether to support or not support the open classroom therefore ultimately becomes one of values, not science.

It is unlikely that more evaluation studies--however useful to teachers or scientists they may be--will ever resolve the debates between proponents of more "open" teaching styles and advocates of the so-called "back-to-basics" approach (Peterson, 1975; Brodinsky,

1977).[11] Vito Perrone has suggested rather optimistically that evaluation can serve to counter the back-to-basics movement by "assisting people to understand what open education is about" (Maeroff, 1975). But there seems little doubt that many opponents of open education already do understand it; they simply don't like it, and they are not likely to be swayed by yet more research.

Conclusion

At this time, the evidence from evaluation studies of the open classroom's effects on children is not sufficiently consistent to warrant an unqualified endorsement of that approach to teaching as decidedly superior to more traditional methods. But there certainly is enough evidence now to defend the idea that open classrooms should be supported as viable alternatives where teachers and parents are interested in having them.

Evaluation research can continue to play both a "formative" role in improving the quality of ongoing open classroom programs and a "summative" role in documenting the relative strengths and weaknesses of the open and traditional approaches. While political decisions to support or not support open education will no doubt continue to be made regardless of the actual research evidence, there are still many unanswered questions about the open classroom, and there remains a need for more and better evaluation studies.

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[11] "Back-to-basics" is the latest American term for the anti-progressive movement, but England too has its vociferous anti-progressive critics who have publicized their views in a series of widely circulated "Black Papers" (Cox & Dyson, 1971, Cox & Boyson, 1975; see also Boyson, 1972).

Table 1

Academic Achievement

Open Better	Traditional Better	Mixed Results	No Significant Differences
Abelson, Zigler & DeBlasi (1974)	Bell & Switzer (1973)	Allen (1974)	Barker Lunn (1970)
Case (1971)	Bennett (1976)	Bell, Switzer & Zipursky (1974)	Black (1974)
Cline & Ferb (1975)	Biggs (1967)	Bell, Zipursky & Switzer (1976)	Bowman (1975)
District #6, Philadelphia (1973)	Earnshaw (1972)	Broward County School Board (1972)	Burchyett (1972)
Dornseif (1975)	Forman (1975)	Crandall (1973)	Burnham (1971)
Killough (1971)	Gooch & Kellmer Pringle (1966)	Daniels (1974)	Burnham (1973a)
Lickona (1971)	McColloch (1975)	Dempsey (1975)	Burnham (1973b)
Morris et al. (1977)	Robinson (1974)	Egeland, Marsh & Feldman (1972)	Butson (1975)
Nash & Christie (1972)	Sackett (1971)	Grapko (1972)	Dugan (1976)
New Orleans Public Schools (1968)	Solomon & Kendall (1976)	Greener (1972)	Elkind et al. (1973)
Nixon (1973)	Wright (1974)	Hill (1973)	Firester (1974)
Reiss & Dyhdalo (1974)	Wright (1975)	Hopke (1974)	Fox (1975)
Weiss (1971)		Lewis & Adank (1975b)	Franks et al. (1977)
Williams (1970)		Lukasevich (1976)	Garhart (1972)
		McBride (1975)	Godde (1972)
		Mealor, Perkins & Reeves (1975)	Grogan (1976)
		Mills (1975)	Groobman, Forward & Peterson (1976)
		Moore (1974)	Harris (1976)
		Ray et al. (1972)	Harris (1974)
			Hayes (1975)
			Horwitz (1976b)
			Jeffreys (1970)
			Johnson (1970)
			Kelton (1974)
			Kennedy & Say (1971)

Table 1 (Continued)

Academic Achievement

Open Better	Traditional Better	Mixed Results	No Significant Differences
		Reeder (1975)	Lovell (1963)
		Richards & Bolton (1971)	McPartland & Epstein (1975b)
		Rozar (1976)	McPartland & Epstein (1977)
		Stallings (1975)	Meadow (1973)
		Stowers (1974)	Morris (1974)
		Townsend (1971)	Olson (1973)
		Traub, Weiss & Fisher (1974);	Owen et al. (1974)
		Traub, Weiss, Fisher & Musella (1972)	Read (1973)
			Reel (1973)
		Trotta (1973)	Reynolds (1974)
		Tuckman, Cochran & Travers (1973, 1974)	Riley (1976)
			Samph & Campbell (1974)
		Ward & Barcher (1975)	Scheiner (1969)
			Scheirer (1972)
			Sewell et al. (1975)
			Shapiro (1971)
			Spigel (1974)
			Travers (1974)
			Walker (1972)
			Walls (1976)
			Warner (1970)
			Winnett & Edwards (1974)

Table 2

Self-Concept

Open Better	Traditional Better	Mixed Results	No Significant Differences
Abelson, Zigler & DeBlasi (1974)	Sackett (1971)	Brown (1973)	Bennett (1976)
Beckley (1972)	Scheirer (1972)	Burchyett (1972)	Black (1974)
Cockerham & Blevins (1976)		Dempsey (1975)	Daniels (1974)
Dornseif (1975)		Drummond, Cobb & McIntire (1976)	Elkind et al. (1973)
Feeney, Hochschild, Joy & Sadow (1974)		Franks, Marolla & Dillon (1974)	Glinsky (1973)
Franks et al. (1977)		Hopke (1974)	Grogan (1972)
Heimgartner (1972)		Kohler (1973)	Groobman, Forward & Peterson (1976)
Jensen (1976)		Koskoff (1973)	Hayes (1975)
Krenkel (1973)		Lukasevich (1976)	Ihde (1976)
McCorkle (1974)		Meadow (1973)	Judd (1974)
Purkey (1970)		Mills (1975)	Kelton (1974)
Sewell et al. (1975)		O'Neill (1974)	Kitay (1975)
Shopland (1975)		Reeder (1975)	Klaff & Docherty (1975)
Traub, Weiss & Fisher (1974); Traub, Weiss, Fisher & Musella (1972)		Ruedi & West (1973)	Lewis & Adank (1975b)
Wilson, Langevin & Stuckey (1972)		Tuckman, Cochran & Travers (1973, 1974)	Moore (1974)
			Owen et al. (1974)
			Reynolds (1974)
			Robinson (1974)
			Rudawski (1974)
			Sadow (1976)
			Scheiner (1969)
			Shapiro (1971)
			Stowers (1974)

↓

Table 2 (Continued)

Self-Concept

Open Better	Traditional Better	Mixed Results	No Significant Differences
			Travers (1974)
			Walls (1976)
			Ward & Barcher (1975)
			White (1973)
			Wright (1974)
			Wright (1975)

Table 3

Attitude toward School

Open Better	Traditional Better	Mixed Results	No Significant Differences
Beals (1972)	Scheirer (1972)	Allen (1974)	Abelson, Zigler & DeBlasi (1974)
Daniels (1974)	Spigel (1974)	Arlin (1976)	Elkind et al. (1973)
Day (1974)		Arlin & Palm (1974)	Fox (1975)
Earnshaw (1972)		Barker Lunn (1970)	Jeffreys (1970)
Feeney, Hochschild, Joy & Sadow (1974)		Crandall (1973)	Judd (1974)
Franks et al. (1977)		Epstein (1974)	Klaff & Docherty (1975)
Glinsky (1973)		Hopke (1974)	Lewis & Adank (1975b)
Godde (1972)		Jolley (1974)	Nixon (1973)
Groobman, Forward & Peterson (1976)		Kourilsky & Baker (1975)	Read (1973)
Horwitz (1976b)		Leroy (1973)	Reynolds (1974)
Kingsmore (1972)		Morrow (1972)	Riley (1976)
Morris et al. (1977)		Olson (1973)	Robinson (1974)
Rothschild (1976)		Stowers (1974)	Rozar (1976)
Ruedi & West (1973)		Townsend (1971)	Samph & Campbell (1974)
Sadow (1976)			Scheiner (1969)
Sewell et al. (1975)			Walls (1976)
Shapiro (1972)			Ward & Barcher (1975)
Traub, Weiss & Fisher (1974); Traub, Weiss, Fisher & Musella (1972)			Zeli (1975)
Travers (1974) ↓			

Table 3 (Continued)

Attitude toward School

Open Better	Traditional Better	Mixed Results	No Significant Differences
Tuckman, Cochran & Travers (1973, 1974)			
Weiss (1971)			
Willsey (1976)			
Wilson, Langevin & Stuckey (1972)			

Table 4

Creativity

Open Better	Traditional Better	Mixed Results	No Significant Differences
Barker Lunn (1970)		Elkind et al. (1973)	Bennett (1976)
Burchyett (1972)		Nogrady (1975)	Day (1974)
Carini (1972a, 1972b)		Ramey & Piper (1974)	Forman (1975)
Duckworth (1971)		Ruedi (1974)	Fox (1975)
Earnshaw (1972)		Shapiro (1971)	Garhart (1972)
Haddon & Lytton (1968)		Sullivan (1974)	Greener (1972)
Haddon & Lytton (1971)		Traub, Weiss & Fisher (1974); Traub, Weiss, Fisher & Musella (1972)	Karnes & Zehrbach (1974)
Horwitz (1976b)		Ward & Barcher (1975)	O'Neill (1974)
Owen et al (1974)		Wilson, Langevin & Stuckey (1972)	Riley (1976)
Richards & Bolton (1971)		York County Board of Education (1973)	Wright (1974)
Shapiro (1972)			Wright (1975)
Solomon & Kendall (1976)			

Table 5

Independence and Conformity

Open Better	Traditional Better	Mixed Results	No Significant Differences
Allman-Snyder, May & Garcia (1975)	Firester (1974)	Cronemeyer (1975)	Grapko (1972)
Bengis (1974)		Rothschild (1976)	Trotta (1973)
Bleier, Groveman, Kuntz & Mueller (1972)			
Butaon (1975)			
Carbonari (1971)			
Duckworth (1971)			
Earnshaw (1972)			
McPartland & Epstein (1975a)			
Meadow (1973)			
Mensh & Mason (1951)			
Myers (1971)			
Rentfrow, Goldupp & Hurt (1973)			
Spivack (1973)			
Stallings (1975)			
Sullivan (1974)			
Traub, Weiss & Fisher (1974)			
Wren (1972)			
York Councy Board of Education (1970)			

Table 6

Curiosity

Open Better	Traditional Better	Mixed Results	No Significant Differences
Abelson, Zigler & DeBlasi (1974)		Corlis & Weiss (1973)	Day (1974)
Elias & Elias (1976)		Jeffreys (1970)	Horwitz (1976b)
Glinsky (1973)		Stork (1973)	Wilson, Langevin & Stuckey (1972)
Rothschild (1976)		Traub, Weiss, Fisher & Musella (1972)	
Stallings (1975)		York County Board of Education (1973)	
York County Board of Education (1970)			

Table 7:

Anxiety

Open Better	Traditional Better	Mixed Results	No Significant Differences
Bell, Zipursky & Switzer (1976)	Bennett (1976)	Epstein (1974)	Feeney, Hochschild, Joy & Sadow (1974)
Butson (1975)	Carbonari (1971)		Horwitz (1976b)
Elkind et al. (1973)	Kellmer Pringle & Cox (1963)		Klein (1976)
	Moore (1974)		Lewis & Adank (1975b)
	Wright (1975)		Sadow (1976)
			White (1973)
			Wren (1972)
			Wright (1974)

Adjustment

Open Better	Traditional Better	Mixed Results	No Significant Differences
Carbonari (1971)		Bell, Zipursky & Switzer (1976)	Hayes (1975)
Farrall & Thaller (1976)		Butson (1975)	Jeffreys (1970)
Feeney, Hochschild, Joy & Sadow (1974)		Epstein (1974)	McCallum (1971)
Godde (1972)		Garhart (1972)	Mensh & Mason (1951)
Hochschild (1976)		Gooch & Kellmer Pringle (1966)	
Jensen (1976)		Hudson (1973)	
Joshi (1973)		LaForge (1972)	
		McDaniel (1970)	
		Reeder (1975)	
		Spivack (1973)	
		Wren (1972)	

Table 8

Locus of Control

Open Better	Traditional Better	Mixed Results	No Significant Differences
Earnshaw (1972)	Trotta (1973)	Horwitz (1976b)	Bothwell (1974)
Eisenberger (1972)		Judd (1974)	Feeney, Hochschild, Joy & Sadow (1974)
Knowles (1972)		Stallings (1975)	Fox (1975)
McColloch (1975)		Stowers (1974)	Francis (1973)
Singh (1974)			Kocher (1977)
Stone (1974)			Martin (1975)
			Owen et al. (1974)
			Reiss & Dyhdalo (1975)
			Rozar (1976)
			Sadow (1976)
			Ward & Barcher (1975)
			Wright (1974)
			Wright (1975)

Table 9

Cooperation

Open Better	Traditional Better	Mixed Results	No Significant Differences
Duckworth (1971)		Bothwell (1974)	Rothschild (1976)
Feeney (1975)			Traub, Weiss, Fisher & Musella (1972)
Feeney, Hochschild, Joy & Sadow (1974)			
Franks et al. (1977)			
Solomon & Kendall (1976)			
Stallings(1975)			

Table 10

Other Variables

Variable	Studies	Results
Achievement Motivation	Bennett (1976)	Open better
	Burchyett (1972)	Open better
	Drummond, Cobb & McIntire (1976)	Mixed results
	Elkind et al.(1973)	Traditional better
	Gooch & Kellmer Pringle (1966)	Open better
Communication Skills	Rothschild (1975)	Mixed results
Critical Thinking	Nixon (1974)	Open better
Delay of Gratification	Blumenthal & Reiss (1975)	No significant differences
Democratic Conflict Resolution	Allman-Snyder, May & Garcia (1975)	Open better
Friendship Patterns	Barker Lunn (1970)	Open: Greater number of friendships between children of dissimilar academic ability.
	Feeney (1975)	Open: More diffuse pattern of rejection of classmates (i.e., less "scapegoating").
	Franks, Wismor & Dillon (1974)	Open: Less consensus in labeling classmates "best" and "worst" (i.e., less "malevolent").
	Hallinan (1976)	Open: Friendships less "hierarchized," with fewer social isolates.
	Signatur & Reiss (1974)	Open: More "altruistic" relationships with friends
Hyperactivity	Flynn & Rapaport (1976)	Open: Greater decrease in hyperactivity over the course of one year.
Impulsivity in Problem-Solving	Koester & Farley (1977)	Open better (i.e., less impulsive)
	McBride (1975)	No differences
	Ward & Barcher (1975)	No differences
Interpersonal Trust	Moore (1974)	Mixed results
Involvement in After-School Activities	Barker Lunn (1970)	No differences
	Groobman, Forward & Peterson (1976)	No differences
	Jeffreys (1970)	Open better

Table 10 (Continued)

Variable	Studies	Results
Leadership	Bell, Zipursky & Switzer (1976)	Open better
Misbehavior in Class	Solomon & Kendall (1976)	As perceived by children: no differences. As perceived by teachers: more misbehavior in traditional classrooms.
Moral Development	Nelson (1975)	Open better
Open-Mindedness	Nixon (1974) Weiss (1971)	Open better Open better
Peer Interaction	Peak (1976)	Open: More "educationally facilitating" interactions.
Peer Labeling	Franks, Wismer & Dillon (1974)	Open: Classmates selected on basis of quality of peer interaction Traditional: Classmates selected on basis of quality of interaction with teacher.
Perceived Sex-Appriateness of School	Lindsay (1974)	Open better
Persistence	Carbonari (1971) Dyhdalo & Reiss (1974) Reiss & Dyhdalo (1975) Wren (1972)	Open better Open better Traditional better
Personal Space	Brody & Zimmerman (1975)	Open: Closer approach behavior towards adults and peers. Less reluctance to approach unfamiliar or threatening figures.
Rigidity in Problem-Solving	Kellmer Pringle & McKenzie (1965)	Mixed results
Risk-Taking Behavior	Anifant (1972)	Mixed results
Role-Taking Ability	Hudson (1975)	No differences

Table 11

Interaction Studies

Study	Variables	Results
Arlin (1975)	Locus of Control & Attitude toward School	Internals more satisfied than externals in open classrooms. No difference in satisfaction between internals and externals in traditional classrooms.
Bennett (1976)	Anxiety & Achievement	Anxious pupils performed better in traditional than in open classrooms.
Judd (1974)	Locus of Control & Attitude toward School	Internals more satisfied in open classrooms. Externals more satisfied in traditional classrooms.
Klein (1975)	Anxiety & Creativity	Low anxiety pupils more creative in open than traditional classrooms. High anxiety pupils equally creative in open and traditional classrooms.
Koskoff (1973)	Reading Ability & Self-Concept	Poor readers had higher self-concepts in open than traditional classrooms.
Lewis & Adank (1975a)	Anxiety & Achievement	Low achievers more anxious than high achievers in traditional classrooms. No relationship between anxiety and achievement in open classrooms.
McPartland & Epstein (1975a)	Socio-Economic Status (SES) & Achievement	High-SES pupils achieved better in open classrooms. Low-SES pupils achieved better in traditional classrooms.
O'Neill (1974)	Creativity & Self-Esteem	Creative pupils had high self-esteem in open classrooms and low self-esteem in traditional classrooms.

Table 11 (Continued)

Interaction Studies

Study	Variables	Results
Robinson (1974)	Reading Ability & Self-Concept	Self-concept positively correlated with reading ability in traditional classrooms, but negatively correlated with reading ability in open classrooms.
Wright & DuCette (1976)	Locus of Control & Achievement	Internality positively correlated with achievement in open classrooms but not correlated with achievement in traditional classrooms.

Table 12

Overview (By Percentage) of Results

Variable	Results (Percent of Studies)			
	Open Better	Traditional Better	Mixed Results	No Significant Differences
Academic Achievement	14%	12%	28%	46%
Self-Concept	25%	3%	25%	47%
Attitude toward School	40%	4%	25%	32%
Creativity	36%	0%	30%	33%
Independence & Conformity	78%	4%	9%	9%
Curiosity	43%	0%	36%	21%
Anxiety & Adjustment (combined)	26%	13%	32%	29%
Locus of Control	25%	4%	17%	54%
Cooperation	67%	0%	11%	22%
(Overall average)	(39%)	(4%)	(24%)	(33%)

Horwitz

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