379
N81d
No. 4837

PROBLEM-BASED LEARNING FOR TRAINING TEACHERS OF STUDENTS WITH BEHAVIORAL DISORDERS IN HONG KONG

DISSERTATION

Presented to the Graduate Council of the

University of North Texas in Partial

Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

By

Vivian Woon King Heung B.Ed., M.Ed., PgD.

Denton, Texas

August, 1999

Heung, V.W.K., Problem-based learning for training teachers of students with behavioral disorders in Hong Kong. Doctor of Philosophy (Special Education), August 1999, 147 pp., 10 tables, 1 figure, references, 138 titles.

This study attempts to explore the perceived value of Problem-Based Learning (PBL) in training teachers of students with behavioral disorders (E/BD) in Hong Kong. It represents an effort to improve the predominately lecture focussed approach adopted in many preparation programs. Data on the training needs of Hong Kong teachers were also acquired and 31 knowledge/skills areas related to teaching students with E/BD were identified. Subjects viewed the PBL approach as dynamic, interesting and incentive driven. It develops skills involved in group learning, self-directed learning, use of information resources and problem-solving. Most important, teachers felt they were supported to explore the practical problems they personally encountered in the classroom and actions they could take to resolve them. Difficulties in using PBL included a lack of resources and the tendencies of most Chinese students to accept rather than challenge others' ideas.

379
N81d
No. 4837

PROBLEM-BASED LEARNING FOR TRAINING TEACHERS OF STUDENTS WITH BEHAVIORAL DISORDERS IN HONG KONG

DISSERTATION

Presented to the Graduate Council of the

University of North Texas in Partial

Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

By

Vivian Woon King Heung B.Ed., M.Ed., PgD.

Denton, Texas

August, 1999

Copyright 1999

by

Vivian Woon King Heung

ACKNOWLEDGEMENTS

I would like to express my sincere appreciation and gratitude to Dr Lyndal Bullock for his expert guidance and support during the whole research process. His interest and endeavors to help serve as a model we should take to all our students. I also want to thank Dr Bertina Hildreth, Dr John Holman, and Dr Lloyd Kinneson of the dissertation committee, for the support and help they have rendered. Special thanks go to the teachers who participated actively in Problem-Based Learning in this research. They were receptive to changes, reflective and keen on improving the quality of education for students with emotional and behavioral disorders in Hong Kong. Last of all, I want to thank the children and the school who had kindly allowed me to video-tape lessons for Problem-Based Learning. Without their help, this research effort could not become a success.

TABLE OF CONTENTS

	Page
LIST OF TABLES	vi
Chapter	
1. INTRODUCTION	1
Purpose of the Study	5
Significance of the Study	5
Limitations of the Study	5
Definitions of Terms	6
2. REVIEW OF THE LITERATURE	8
Overview of Teacher Preparation for Students with E/BD	9
Classroom Practices of Teachers of Students with E/BD	14
Rationale for a Shift in Training Approach	17
Conceptual Dimensions of PBL	21
Implementation Problems of PBL	38
3. METHODOLOGY	50
Research Questions	50
Subjects	51
Setting	52
Implementation Procedures	53
Data Collection and Analysis	60
4. ANALYSIS OF RESULTS	63
Problem-Based Learning Process	63
Findings of Research Questions	70
5. SUMMARY AND RECOMMENDATIONS	100
Limitations of the Study	101
Implications	105
Recommendations	106
Appendix	109
References	121

LIST OF TABLES

TABLE	Page
1. Activities Observed in Problem Lesson	57
2. Subjects' Perceived Problem Cause and Recommended Action	59
3. Rank Order and Means for Importance and Proficiency of Knowledge/Skills Areas for Teaching Students with E/BD	62
4. Rank Order and Means for Importance of Knowledge/Skills Areas for Different Settings	65
5. Rank Order and Means for Importance of Knowledge/Skills Areas by Qualified and Unqualified Teachers	68
6. Rank Order and Means for Importance of Knowledge/Skills Areas by Gender	70
7. Rank Order and Means for Proficiency of Knowledge/Skills Areas for Different Settings	73
8. Rank Order and Means of Proficiency of Knowledge/Skills Areas by Qualified and Unqualified Teachers	76
9. Rank Order and Means for Proficiency of Knowledge/Skills Areas by Gender	78
10. Results of PBL	80
Figure A`	
Distribution of Settings Subjects Served	56

CHAPTER 1

INTRODUCTION

The need to research on an alternative approach to training stemmed from concerns about the deficiency of existing preparation programs in higher education for teachers of students with emotional and behavioral disorders (E/BD). Poor reports of classroom practices of teachers of students with E/BD abound (e.g., Knitzer, Steinberg & Fleisch, 1990; Wehby, Symons & Canale, 1998; Woodhouse, 1994). Typical problems include the inadequacies of teachers in employing effective strategies (Shores, Jack, Gunter, Ellis, DeBriere, & Wehby, 1993; Van Acker, Grant, & Henry, 1996), an explicit focus on a "curriculum of control", and a depressing lack of intellectual content (Steinberg & Knitzer, 1992; Zabel, 1992). Steinberg and Knitzer (1992) observed that there was a general lack of educational vitality and a pervasive boredom and apathy in many of the programs for children with E/BD. Meadows, Neel, Scott, and Parker (1994) found that teachers made minimal modifications in the teaching process for students with serious disorders.

With school and life failure all too likely for this population of children, the evidence is accumulating that changes are required in ongoing teacher training, alongside other measures, for supporting these children. The preparation of teaching personnel has become a high priority on the research agenda in the field of E/BD (U.S. Department of Education, 1994; Liberman, 1995; Whelan & Simpson, 1996)

Teachers represent a valuable asset for improving special education for students with E/BD. However, the effectiveness of current teacher preparation programs in tapping these powerful resources is questioned by researchers. George, George, Gersten and Grosenick (1995), for example, indicated that two-thirds of teachers of students with E/BD reported that their college coursework was poor preparation for their teaching assignments. Jack, Shores, Denny, Gunter, DeBriere, and DePaepe (1996) found that most teachers reported gaining their knowledge of classroom management strategies through informal means, such as through other teachers.

Based on a review of the literature, Zabel (1988) delineated that over the years, attempts to improve preparation for teachers of students with E/BD have tended to focus on unique features, such as preservice preparation, competency-based training, preparation for particular delivery models, or field-based training. Gable, Henrickson, Young and Shokoohi-Yekta (1992) noted that little effort has been made to explore the task demands of teachers to guide the development of preparation programs.

Bloom and Bacon (1995) reiterated the need for teacher preparation programs to stay in touch with realities of the workplace. In actual fact, teachers of students with E/BD are often the targets of endless in-service programs designed for giving prescriptions for effective teaching. In recent articles concerned with the "state-of-the-art" in school programs for students with E/BD, a frequent recommendation is to provide teachers with more in-service training (e.g., Peacock Hill Working Group, 1991; Steinberg & Knitzer, 1992). These prescriptions may not be applicable to actual classroom needs and teachers are criticized for not putting research into practice. In her discussion of preparation programs for E/BD teachers, Nicholas (1991) concluded that up

to now, we have not done well with preparing E/BD teachers to analyze what needs doing and how to do, think and say what is needed.

The role of E/BD teachers is very complex and demanding. These teachers often have to deal with the most difficult behaviors and situations in the school. In addition, they need to collaborate with parents and professionals from other agencies in developing programs to ensure successful transitions of students. With the current emphasis on full inclusion, the E/BD teacher is often required to assist the regular education program in prevention of behavioral disorders and the successful inclusion of children with E/BD in the regular classroom (Bloom & Bacon, 1995; The Council for Exceptional Children, 1993). Given the complexity of the role and difficulties with which E/BD teachers are confronted, the focus of preparation programs must be shift to accommodate such needs.

Bloom and Bacon (1995) maintained that what is needed is not a new set of content to master or a new set of prescriptions. Instead, a shift in paradigm or approach to training geared to the practical need and complex role of E/BD teachers is recommended. It is apparent that E/BD teachers can not learn pedagogical knowledge in abstract but in the context that mirrored the complexity of the real work environment. The predominantly lecture-based activity of most preparation programs in higher education, however, may not create the necessary conditions for training competent practitioners.

There could be a variety of approaches that are consistent with the learning demands of teachers of students with E/BD but problem-based learning appears to almost ideally capture the principles. Problem-Based Learning (PBL), an instructional method characterized by the use of real problems that raise compelling issues for new learning, has aroused great interest in the North American medical schools in the past twenty years

(Vernon & Black, 1993). Available evaluation data has produced very positive outcomes confirming that PBL is effective in training better practitioners. Use of PBL has expanded to other fields and subject areas: administrator and principal education (Brideges, 1992; Chenoweth & Everhart, 1994); business schools (Milter & Stinson, 1994), schools of education in the teaching of mathematics, science and also gifted education (Bridges & Hallinger, 1992; Duffy, 1994); architecture, law, engineering, social work (Boud & Feletti, 1991); high school (Barrows & Myers, 1993); and teacher development (Clarke, 1990). PBL has also been employed to teach one master's level course in educational administration at the Chinese University of Hong Kong (Walker, Bridges, & Chan, 1996). This approach appears to offer attractive premises for the training of teachers of students with E/BD.

Purpose of the Study

The present study attempted to explore the feasibility of implementing PBL in the training course for teachers of students with E/BD in Hong Kong. The purpose of the study was twofold: (a) to acquire data on the training needs of TEACHERS OF students with E/BD in Hong Kong; and (b) to explore the effectiveness of PBL in preparing teachers of students with E/BD to be successful practitioners. The data acquired from this study would help to guide teacher educators in the development of more effective personnel preparation programs for teachers of students with E/BD in Hong Kong.

Significance of the Study

The present study assumed great significance in improving teacher preparation in Hong Kong as well as contributing to the E/BD field. It was a pioneer attempt to introduce PBL for training teachers of students with E/BD. If successful, the effort can be

replicated in other countries or in other areas of special education. It represented dramatic changes in the way teachers were taught to instruct and manage children with special education needs. Improving training effectiveness for teachers may enhance the quality of education for these children. In addition, there is an anemic account of research in E/BD in Hong Kong. There is an urgent need to acquire specific data on local needs so as to guide practice.

Limitations of the Study

This study had a number of limitations. The independent variable, PBL, was more than a simple teaching method. It was better described as a complex mixture of a general teaching philosophy, learning objectives and goals, and faculty attitudes and values, all of which were difficult to regulate. The outcome variables that were often the most highly valued, and best exemplify the special features of PBL were complex, multidimensional, and difficult to measure. Moreover, this study could not employ a control group, as professional students did not lend themselves easily to random assignment for large segments of their training. Hence, confounding was a concern. This raised the possibility of sampling bias and problems with generalizability. Finally, data were collected from a small group of students over a relatively short period of time. As a result of these conceptual and methodological obstacles, evidence demonstrating the superiority of PBL must be treated with caution.

Definition of Terms

The following definitions were used throughout this research study:

1. Problem-Based Learning: The basic outline of the problem-based learning process is: encountering the problem first, problem-solving with clinical reasoning skills and

identifying learning needs in an interactive process, self-study, applying newly gained knowledge to the problem, and summarizing what has been learned (BARROWS, 1985, P.15)

2. Emotional/Behavioral Disorders: The term means exhibiting one or more of the following characteristics over a long period of time and to a marked degree which adversely affects educational performance: (a) an inability to learn which cannot be explained by intellectual, sensory, or health factors; (b) an inability to build or maintain satisfactory interpersonal relationships with peers and teachers; (c) inappropriate types of behaviors or feelings under normal conditions; (d) a general pervasive mood of unhappiness or depression; or (e) a tendency to develop physical symptoms, pains, or fears associated with personal or school problems. The term includes children who are schizophrenic or autistic. The term does not include children who are socially maladjusted, unless, it is determined that they are seriously emotionally disturbed (Federal Register, August 1977).

3. Maladjustment: In Hong Kong, a maladjusted child is defined as one whose behavioral and emotional difficulties, however caused, have prevented the child from benefiting from the ordinary social and educational experiences of home and school, and whose difficulties will persist unless help is given by those with appropriate skills – a child for whom failure in learning and in socially approved situations is more probable than success (Rehabilitation Division, 1998).

4. Practical schools: In Hong Kong, the Education Commission in its Report No.4 (1990) recommended the establishment of practical schools (PSs) to cater for children of junior secondary school age who are more inclined towards a practically-oriented curriculum.

5. Skills Opportunity Schools: In Hong Kong, the Education Commission in its Report No.4 (1990) recommended the establishment of skills opportunity schools (SOSs) for the group of children who have severe learning difficulties and cannot benefit from the ordinary curriculum even with the help of the existing intensive remedial services.

CHAPTER 2

REVIEW OF THE LITERATURE

According to Barrows (1986), one should decide on major educational objectives and then select the method of learning that best fits these objectives. For the training of professionals of different disciplines, the learning approach selected reflects the dominant belief of how professionals should be orientated to the field. It is important, therefore, to review the beliefs and objectives that have guided the development of teacher preparation programs for students with emotional and behavioral disorders (E/BD) and the rationale for a shift in learning approaches for the present study.

This review of literature is organized into five areas: (a) overview of teacher preparation for students with E/BD; (b) classroom practices of teachers of students with E/BD; (c) rationale for a shift in training approach; (d) conceptual dimensions of problem-based learning (PBL); and (e) implementation problems of PBL.

The major focus of the review will be on the literature for the years 1970 to 1998. It was conducted through a collection of information from the following: (a) Educational Resource Information Center (ERIC) journal articles, books, and documents, (b) Dissertation Abstracts International (DAI), and (c) Education Index. In addition, extensive hand searches were conducted in the libraries of the University of North Texas and the Hong Kong Institute of Education, as well as through personal contacts with experts in the field of emotional and behavioral disorders (E/BD) both in the United States and Hong Kong.

Overview of Teacher Preparation for Students with E/BD

The literature reflects that teacher preparation for students with E/BD is fraught with difficulties. First, there is a history of critical shortages of skilled teachers nationwide to work with this population (George et al., 1995; Singh & Billingsley, 1996, U.S. Department of Education, 1995, 1997). Recent data indicates a shortage of almost 6,000 certified teachers for students with E/BD (Advocacy in action, 1995; Wald, 1996). In 1960, Rainbow found only ten universities offered training and a total of 82 students enrolled in the area of educating students with E/BD. Over the past 15 years, there has been rapid growth in the number of E/BD training programs designed to help ameliorate shortages (e.g., Bullock, Ellis, & Wilson, 1994; Young, Gable, & Hendrickson, 1989).

Due to the shortage of teachers of students with E/BD, many persons are being employed under alternative or emergency certification programs. The Office of Special Education in the U.S. Department of Education estimates that as many as 30% of special education teachers are working under emergency certification (National Clearinghouse, 1992). Hence, another concern is that these teachers may lack training in many areas of pedagogy, much less E/BD. A recent commissioned report criticized the way teachers are trained and the low standards for teachers set by state and local education agencies (National Commission on Teaching and America's Future, 1996). The lowering of certification standards to address teacher shortages ironically perpetuates the problem. Because many under-trained teachers are hired to fill the vacant positions as teachers of students with E/BD, attrition is inevitable (Webber, & Scheuermann, 1997).

A third major issue relates to whether or not generic certification is appropriate for teaching students with E/BD. There has been a trend in recent years across the United

States towards generic teacher certification, specializations must occur at the graduate level (e.g., Cobb, Elliot, Powers, & Voltz, 1989; Elliot, Cobb, Powers, & Voltz, 1991). Putnam and Habanek (1993) surveyed 50 state directors of teacher education regarding certification requirements in the area of E/BD, learning disabilities (LD), and mental retardation (MR). Results revealed a great discrepancy between each state's categorization of certification. Katsiyannis, Landrum, Bullock, and Vinton (1997) found that E/BD certification requirements appear in only half of the states surveyed with mandated skills varying considerably from state to state. Given the fact that special certification often is not required and not reinforced reduces the number of teachers specifically trained to work with students with E/BD (Webber, & Scheuermann, 1997). Whelan and Simpson (1996) noted the trend of college and university personnel preparation program shifting form categorical teacher training to generic teacher preparation programs as states are adopting generic teacher certification/licensure system.

Research has indicated that generic teaching skills may not be enough for successful instruction and behavior management with students with E/BD (Kauffman & Wong, 1991). Simpson, Whelan and Zabel (1993) further argued that the breadth and depth of professional skills needed for success with students with E/BD require significant development above and beyond those of general educators. Kauffman (1994) suggested that preparation of special educators has been superficial; resulting in teachers with no real expertise or in-depth understanding of any disabling condition and its instructional demands.

Mode of Training

Regarding approaches employed in training E/BD teachers, Bullock et al. (1994) noted that few practices in teacher preparation are research-based or have been empirically validated. Zabel (1988) also expressed that research on this topic is limited and most existing literature consists of opinion, critiques of the state-of-the-art, descriptions of practice, or proposals for improvement of practice. Empirical data are scarce and the boundaries between state-of-the-art and state-of-practice are indistinct. There is a voluminous literature, however, showing that much of recent effort of the field has been devoted towards validating E/BD teacher competencies and competency-based training.

The issue of important competencies, skills and characteristics for teachers of students with E/BD has received considerable attention in preservice and in-service preparation programs for at least the past 30 years. One of the earliest attempts to identify competencies needed by teachers of students with E/BD was initiated by Mackie, Kvaraceus, and Williams (1957), who used a study group to identify 88 competencies. After this initial study appeared in the literature, other investigators began to explore the issue and there has been a gradual increase in not only the number of competencies needed but also the number of knowledge/skills categories. In 1960, Rainbow described competencies needed by teachers of students with E/BD to function as members of treatment teams. Hewett (1966) identified a hierarchy of seven competencies that were based on his experiences in teacher preparation. In 1971, Bullock and Whelan revisited the Mackie et al. (1957) study and in 1974, Bullock, Dykes and Kelly reported 123 competencies falling within nine knowledge/skills categories. Recently, Bullock et al. (1994) listed 201 competencies and 11 knowledge and skill categories.

The identification and development of competencies have a major influence in both preservice and in-service preparation programs for teachers of students with E/BD. Judging from published program descriptions and those provided in personnel preparation grant applications, many E/BD teacher preparation programs have geared their training around developing specific teacher competencies.

Zabel (1988) noted that the trend has been in the direction of increasing specification of constituent skills that are measurable resulting in a proliferation of sub skills. This trend has been criticized for resulting in a fragmented picture of teacher competencies. Moreover, the ability to demonstrate competence in numerous individual skills, as in competency-based teacher education, does not necessarily add up to successful teaching.

One of the most popular training modes for teachers of students with E/BD is competency-based training. Prompted by pressure exerted by the U.S. Office of Education, Bureau of Education for the Handicapped, many universities and college teacher education programs were transformed into so-called "Competency-based training programs" almost twenty years ago (Shores, Cegelka, & Nelson, 1973). Competency-based teacher education (CBTE) was founded on the assumption that behaviors and attributes essential to successful teaching are identifiable, measurable, and can be taught (Shores, Roberts, & Nelson, 1976). The ultimate goal of CBTE was to demonstrate change in student performance. Accordingly, proponents of CBTE argue that teachers of students with E/BD may be considered competent if they are able to promote positive academic and social emotional growth in an efficacious manner.

There has been a sizable amount of literature on the topic of CBTE in special education. Some of this has included the training of teachers of students with E/BD. Much of the literature on CBTE appeared during the 1970s when the topic was widely discussed in general teacher education. Shores et al. (1973) reviewed the voluminous literature on the topic and found that competency statements were mostly grounded in expert opinion, sometimes verified by practitioners' judgement, but little research has been conducted which directly measured the effects of teaching skills on students. Gable et al.(1992) reaffirmed that scarcity of information on skills and aptitudes of teachers of students with E/BD had led authorities to produce a succession of teacher competency statements derived from expert opinion and in some cases bolstered by empirical evidence.

Based on a review of the literature, Morsink, Fardig, Algozzine, and Algozzine (1987) categorized special teacher competencies as falling into three classes: (a) generic, for both regular and special educators; (b) core, for teachers of mildly handicapped regardless of category; and (c) specialized, those that are specific to teaching the categories of specific learning disabilities, educable mentally handicapped, and emotionally handicapped. These educators defined specialized competencies for emotionally handicapped to include such skills as implementing individual behavior plans, implementing programs which enable emotionally handicapped students to assess and manage their own behavior, the teaching of social skills, and assisting emotionally handicapped students in dealing with personal problems.

Several writers have expressed skepticism of the emphasis placed on teacher competencies and CBTE. Blatt (1976) strongly expressed several biases about CBTE,

charging that CBTE is either a very large umbrella or a very fragile idea. He noted that the CBTE literature explains very little. There are enormous catalogs on competencies available, but there is little substantive discussion or empirical validation of these competencies. Bloom (1979) commented on the dilemma of a proliferation and trivialization of instructional competencies on the one hand, while avoiding the trap of generalizations which cannot guide instructional activity on the other. Besides CBTE and teacher competencies, empirical data on other training modes developed for teachers of students with E/BD were limited.

Classroom Practices of teachers of students with E/BD

As we approach a new century, accumulated disappointments in the quality of E/BD programs and student achievement have led researchers to question the adequacies of preparation programs for teachers of students with E/BD. A commonly adopted reflective indicator of teacher competency is the quality of programs for which they are responsible. Hence, the problems associated with educational programs for students with E/BD are often attributed to poor performance of teachers of students with E/BD.

Recent studies have shown that children labeled E/BD face daunting odds in achieving educational and life success. Close to two-thirds function below grade level, and many have a history of repeated failures (Steinberg & Knitzer, 1992; Wagner, 1991; Yell, 1996). Federal data suggested that they obtained lower grade point average than any other group of students with disabilities. Approximately 50% had failed one or more of their courses in their most recent school year, and over 66% failed the competency examination for their grade level, with only 1/3 of the students identified with E/BD completing school (U.S. Department of Education, 1995). Once in the special education

track, less than 10% of the students return to the mainstream (Walker et al., 1988). Moreover, an on-going study (Wagner, 1989) confirms that a large proportion of E/BD students do poorly after school. For example, over one-quarter of a sample of 800 secondary students had been involved with the courts within one year of leaving school; by the end of the second year this percentage had skyrocketed to 44%. More recently, the National Agenda for Achieving Better Results for Children and Youth with Serious Emotional Disturbance (1994) identified additional discouraging patterns including high rates of absenteeism, placements outside local schools and over representation of certain minority groups and groups from low socioeconomic backgrounds.

In examining the public education programs for students with E/BD in the United States, Steinberg and Knitzer (1992) reported that few programs are educationally productive. These authors repeatedly found a pervasive boredom and apathy in many of the programs they visited. There was a depressing lack of intellectual content and concepts and challenges were few. Besides, teachers typically used very limited and often ineffective set of teaching strategies. The professional literature is replete with documented, empirically validated teaching strategies designed to improve academic and social outcomes for students with E/BD (e.g., Dunlap & Childs, 1996). However, these effective practices are not observed routinely in special education settings (Shores et al., 1993; Van Acker et al., 1996; Wehby et al., 1998). Meadows and colleagues (1994) reported that teachers made minimal modifications for students with serious disorders. The majority of the teachers interviewed used the same curricular, the same behavior management techniques, and had the same class rules for all of the students. In an observational study of E/BD classes, Conoley, Peterson, Etchison and Lawson (1989)

found a clear adaptation of the curriculum only once when the teacher turned a worksheet into a flashcard.

Kameenui and Darch (1995) further noted a general absence of an instructional approach and a prevailing lack of attention to students' emotional well being. Instructional interactions are infrequent, perhaps less than 30% of all teacher-student interactions (Wehby, 1997). Shores et al. (1993) found that a basic component of effective instruction, providing students information needed to respond correctly occurred on less than 20% of the occasions in which students with E/BD were requested to respond. Kauffman (1997) speculated that instruction in nonfunctional and irrelevant skills is a common school practice.

Even though the classes for students with E/BD are far smaller than regular education classes, teachers appear to lack teaching strategies that might have permitted them to maximize the opportunities the smaller class size affords them. Most learning was done through identification and memory, group discussions and problem-solving experiences were rare (Steinberg & Knitzer, 1992; Weinstein & MacDonald, 1986).

In place of an educationally exciting classroom was an explicit focus on control (Steinberg & Knitzer, 1992; Zabel, 1992). Curriculum and behavior management had become merged. A quiet class is highly regarded by school officials and parents and little more is required. This merging of curriculum and behavior management may have many negative educational consequences. It strongly influences what information teachers try to help children absorb by putting a premium on isolated responses and behaviors rather than patterns and concepts and making connections between concepts (Steinberg, 1991).

It appears that instructional and curriculum materials that emerge from research are seldom employed in the classrooms for students with E/BD. Jack et al. (1996) suggested that a gap exists between recommended teaching practices and teacher behavior directly observed in classrooms for students with E/BD. If teachers of students with E/BD have learned effective teaching skills in their training programs, it appears then that these skills are not applied or maintained over time in the classroom (Denny, Epstein, & Rose, 1992; Gunter & Denny, 1996). Ineffective educational programming has been considered a formidable barrier for those who care about and work with children with E/BD (Webber & Scheuermann, 1997).

Rationale for a Shift in Training Approach

So far, suggestions advanced for improving teacher preparation programs for students with E/BD have tended to focus on unique features, such as field-based training, preparation for particular delivery models, or preservice preparation (e.g., Bullock et al., 1994; Peacock Hill Working Group, 1991; Rainbow, 1960). Little effort has been made to explore the actual needs of teachers, and the conditions and the process of teaching in E/BD settings to guide the development of preparation programs. Scant information is available regarding the task demands in today's classrooms or the amount of time E/BD teachers devoted to various professional activities they are committed to perform on a daily basis. The degree to which "best practices" with E/BD students are being applied by practitioners remains essentially unknown (Gable et al., 1992). This apparent lack of information jeopardizes the planning of training programs to match the needs of teachers.

Teachers of students with E/BD have to work with the most difficult behaviors and situations in schools. The behavior of children labeled E/BD challenges tolerance and

understanding. It often directly affronts teachers' sensibilities, causing them to be angry and frustrated. Besides, E/BD teachers often work in isolation and frequently lack the support and encouragement to resolve the many issues with which they are confronted in carrying out their duties (Fullan, 1993). They often have too little access to decision-making and are consistently deprived of recognition (Maeroff, 1988). Hence, they are more likely to suffer from prestige deprivation and feelings of inconsequentiality. Lowered feelings of personal efficacy and a lowered sense of competency lead to a greater need to exert external control over students (Nichols, 1991). The complexity of the role, lack of power in decision-making, lack of professional recognition, and lack of collegial support have been identified as factors associated with the attrition of special education teachers (Brownell & Smith, 1992). Furthermore, teachers of students with E/BD compared to other special education teachers report greater professional dissatisfaction, feelings of depersonalization, isolation, and exhaustion (McManus & Kauffman, 1991; Pullis, 1992; Zabel & Zabel, 1982).

Given the complex role and the unique challenges teachers of students with E/BD have to face, the focus of E/BD preparation programs must be shifted to accommodate such needs. In her synopsis of a debate at the Annual Midwest Symposium for Leadership in Behavioral Disorder, Nichols (1994) states that "teachers with confidence in their own abilities to both seek and give help are able to respond with warmth, empathy, and understanding to their students' needs and to assume the responsibility for shaping the learning environment to meet them without dependence on one particular classroom model or technique" (p.12).

Hence, the focus of training programs should be on helping teachers to (a) acquire the tools to promote positive change, (b) evaluate new ideas and practices, and (c) gain professional confidence. To make meaningful changes in enhancing the perception and professional confidence of teachers of students with E/BD, teacher educators must change their approach to teacher preparation and in-service training. Several recommendations are apparent from reviewing the needs and the demands of the workplace of teachers of students with E/BD.

First, as the constructivists advocate, learning is not the acquisition of new information from an external source but the creation of meaning from inside the learner (Savery & Duffy, 1995). Similarly, in teacher education, the concept of best practices must change from a core of information and strategies, which experts know and students must learn, to the development of skills to analyze problems and engage in creating meaningful solutions from study and work (Roschelle, 1992). It is not enough to provide teachers of students with E/BD with new prescriptions for instructional programs and classroom management. Rather, students or teachers-in-training must be actively involved in evaluating programs and developing their own creative alternatives.

Second, actual engagement in working on real problems provides valuable opportunities for teachers of students with E/BD to channel their efforts to learn new strategies in attempts to resolve them. Based on experience in training teachers of students with E/BD who must fill complex and diverse roles, Bloom and Bacon (1995) recommended that in-service and preservice programs be involved in real-life problems in schools and communities. They found that actual engagement in working on a current issue creates a dynamic program in which students and faculty work cooperatively on a

common concern. Honebein, Duffy and Fishman (1993) also stressed the importance of an authentic learning environment in which the cognitive demands are consistent with those in the environment for which the learners are prepared. Hence, the focus of a teacher preparation curriculum should not only be on learning to understand current problems in a historical context but on building the confidence to develop and implement new ideas and the skills to evaluate them. When students are engaged in the process of implementing and evaluating their own ideas, research becomes important and meaningful.

Third, teachers are rarely encouraged to question classroom practices and their voices are often absent in the research and school reform literature. If teachers are to develop their own voice and assume ownership of the problems of the schools, they must be encouraged to develop their voice in the university programs. Students who complete assignments just for a professor to grade never experience the opportunity for social dialogue. In societal interaction and in dialogue with others, teacher education students should learn to communicate their own ideas and learn to evaluate them in the context of their peers and other professionals. Communications can be fostered in class presentations or group project. Besides, presenting to real audiences who have mutual concerns can provide meaningful training opportunities.

Finally, along with assisting teachers of students with E/BD to become creative problem-solvers, university programs need to help their students link to their profession. Finding audiences for their work, engaging students in dialogue with the professional community and assisting them in gaining needed recognition are important. Through this

dialogue with other professionals, teachers develop a sense of professionalism which promotes the development of leaders in the field.

In essence, the above recommendations appear to hit upon a strategy that value personal relevance, active engagement, reflectivity, generativity, personal autonomy, and collaboration. These principles can lead to a wide variety of instructional designs. In examining the various instructional strategies or learning environments, it is found that one application appears to almost ideally capture the principles, the problem-based learning (PBL) model of Barrows (1985,1986).

Conceptual Dimensions of PBL

The preponderance of work on PBL has been conducted with programs in the medical school. Hence, it is necessary to look to the medical field first because a major pioneering effort has taken place there. Albanese and Mitchell (1993) examined the effects of PBL in an exhaustive meta analysis type study of the literature from 1972 to 1992. They chronicle that PBL has existed in medical schools since the 1960s and is in use at many institutions. For example, PBL has been implemented at institutions such as McMaster University, Harvard University, University of New Mexico, the University of Sherbrooke, and Michigan State University.

PBL in medicine is viewed as part of curricular renewal. Part of the renewal package calls for less lecture-based instruction and more emphasis on independent learning and problem- solving. Physicians believe that there is a better way to train medical students by avoiding endless hours of lecture and then testing their ability to recall bits of trivia on a multiple choice test (Albanese & Mitchell, 1993).

Hence, PBL has gained increasing usage in health related areas: medicine (Schwartz, Middleton, Nash & Witte, 1991), dentistry (Branda, 1990; Ferrier, 1990), and allied health fields (Moore & Barnett, 1992; Swinford & Mckeag, 1990; Rangachari, 1991). It has also been expanded to other subject areas: administrator and principal education (Bridges, 1992; Chenoweth & Everhart, 1994); business schools (Milter & Stinson, 1994), schools of education in the teaching of mathematics, science and also gifted education (Bridges & Hallinger, 1992; Duffy, 1994); architecture, law, engineering, social work (Boud & Feletti, 1991); high school (Barrows & Myers, 1993); and teacher development (Clarke, 1990).

For example, in 1985, the architecture faculty in the University of Newcastle (Australia) began using PBL in its courses in response to a number of criticisms of the traditional architecture courses organized around separate, uncoordinated, lecture-based subjects (Maitland, 1991). The new course has undergone rigorous external accreditation procedures and now receives excellent reports (Kingsland, 1996). Positive outcomes include, students are better prepared for practice and better able to begin productive work because they understand the need for, and are capable of, integrating diverse areas of knowledge on complex projects. Employers also confirm these observations. In the 1994 Course Experience Survey of 1993 graduates, the Newcastle graduates rated the PBL course as the top of all fourteen Australian Architecture courses for clear goals and standards and overall satisfaction.

In the field of educational administration and leadership education, PBL has been introduced to a master's degree program for prospective public school principals at the Stanford University School of Education and the results are encouraging (Bridges & Hallinger, 1996). In the spring of 1995, the newly appointed dean of the Stanford School of

Education commissioned a comprehensive internal and external review of its academic programs. The Prospective Principals Program was the only one singled out for special accolades. All graduates who were interviewed mentioned the problem-based orientation of the program as a basis for its excellence. PBL has also been instituted in the Chinese culture, in a master's level course in educational administration at the Chinese University of Hong Kong and the overall response of students was very positive (Walker, Bridges, & Chan, 1996).

Fiddler and Knoll (1995) explored the use of PBL in a more 'open-ended' learning environment often associated with a liberal arts program. The results revealed a high level of student satisfaction among adult, undergraduate learners. The study also found that adult learners attempted to apply PBL to contexts outside of school on their own initiative following an engagement with it. This indicated the potential for valuable use of the strategy in the implementation of a liberal learning curriculum for adults whose lives offer immediate testing grounds for self-directed application.

The obvious merits of PBL, as evident in the programs mentioned earlier, are that in traditional programs students occupy a passive, individualistic, subordinate role rather than an active, interdependent, superordinate role in PBL. Besides, the relatively slow tempo of the student's classroom role contrasts sharply with the accelerated work pace of the real world. With the conventional kind of preparation programs, graduates experience reality shock when they start working; they feel ill-prepared to deal with the emotional and cognitive demands of their work role and often suffer from what has been called analysis paralysis. The problem-based learning strategy of PBL is designed to promote structuring of knowledge for application, development of effective self-directed learning skills,

enhancement of general mental abilities, and an increase in motivation for learning (Barrows, 1986; Birch, 1986). While each of these outcomes has been put in the context of clinical practice (Barrows, 1986), there are suggestions that this PBL technique is of value for teaching interdisciplinary studies (Reithlingshefer, 1992), humanities (Colby, Almy, & Zubkoff, 1986), and the development of learning management skills (Bridges & Hallinger, 1996).

Defining PBL

Defining what constitutes PBL is a confusing and somewhat contentious task. The complexity of defining PBL was reflected in the fact that Barrows (1986) felt it necessary to develop a taxonomy of PBL types to help clarify the situation. The following constitutes an attempt at synthesizing a definition from key sources.

PBL at its most fundamental level is an instructional method characterized by the use of patient problems as a context for students to learn problem-solving skills and acquire knowledge about clinical sciences. The basic outline of the PBL learning process is: (a) encountering the problem first, (b) problem-solving with clinical reasoning skills and identifying learning needs in an interactive process, (c) self-study, (d) applying newly gained knowledge to the problem and (e) summarizing what has been learned (Barrows, 1985). In the closed-loop or reiterative form of PBL described by Barrows (1986), the PBL process concludes with students' evaluating the information resources they used and then analyzing how they might have better managed the patient problem.

Wilkerson and Feletti (1989) stated that it was crucial to PBL that the problem raised compelling issues for new learning and that students had an opportunity to become actively involved in the discussion of these issues, with appropriate feedback and corrective

assistance from faculty members. The faculty role was to facilitate the problem-solving process, to guide, probe, and support the students' initiatives, not to lecture, direct or provide solutions (Kaufman, 1989).

What distinguishes PBL from other problem-centered methods, such as the case method, is that in PBL, the problem is presented first, before the students have learned the basic science or clinical concepts, not after. PBL is also different from the typical case in that students do not initially provide or synthesize all the information needed to solve the problem, thus greater realism and free inquiry are provided (Barrows, 1986).

According to Walton and Matthews (1989), conditions that facilitate PBL include:

1. Greater input and responsibility on the part of students (compared with students in a conventional curriculum) in deciding what and how they will learn. This is referred to as student-centered and self-directed learning (Blumberg & Michael, 1992). However, the extent of student control of the learning process differs across PBL curricula.
2. Small-group tutorials and independent study constitute the main instructional activities. Other instructional methods (e.g., lectures, labs, clinical skills sessions) are not eliminated but are kept to a minimum and are coordinated with the patient problems. While proponents suggest that PBL could be implemented with students individually or even in large groups (Barrows, Myers, Williams, & Moticka, 1986; Wilkerson & Feletti, 1989), medical schools have almost universally implemented the method in a small-group format.

Theoretical Underpinnings for PBL

Many authors have provided rationales for PBL as an instructional method based on various learning theories. These are founded on works primarily by Barrows (1985) and

Coles (1990). The major theory in support of PBL is information-processing (Schmidt, 1983). In essence this theory holds that what a student learns now is affected by past learning. A student uses knowledge already obtained to understand new information. Therefore, to be successful, the instructional method must activate the student's prior knowledge. There is a convergence of evidence that expertise and knowledge in solving problems are characterized by the availability of an extensive organized body of specialized knowledge. Further, there is some indication that this theory is highly compatible with PBL (Norman, 1988). PBL, with well-written problems, is proposed as a method of activating a student's prior knowledge.

Another aspect of this theory is transfer of learning. If the problem is realistic in the classroom, the new information acquired by the student will be easily transferred when a related 'real' problem arises. This demands well-written and realistic problems for the PBL curriculum.

Finally, new information will be better understood and remembered when there is opportunity for elaboration. Elaboration includes activities such as discussion, answering questions, teaching peers, critiquing. Providing opportunities for elaboration is one of the main activities of PBL.

Barrows (1985) contends that medical students do not remember or cannot use the knowledge they learned in the traditional basic science courses because that knowledge was structured into mental organizations that are not useful for the clinic. Knowledge was structured around taxonomies and hierarchies, for example, symptoms, signs, or course of illness. He proposes that learning basic science in a problem-based format will structure the knowledge in such a way that students will better remember it and will be able to retrieve it when they need it in clinical practices.

Barrows' argument follows along the lines of Bruner's theory of discovery learning. This theory suggests that learning is enhanced when students actively participate in the process and when learning is organized around some problem (Benor, 1984).

Coles (1990) argues that PBL is an educational model that equates closely to contextual learning theory (CLT). CLT has three time-dependent phases: context, information, and relating together. Coles makes the case that in PBL a patient case is encountered early, which provides a suitable context for subsequent learning. The patient case prepares the learner's cognition to be receptive to large amounts of novel and abstract information that must be able to be used in unpredictable ways. With the cognitive structure established, information that is relevant to the demands of the context, and therefore meaningful to the learner, can be processed. In PBL, this occurs when students use self-directed study to encounter relevant information. Finally, in order for learning to occur, new information must be actively related to existing knowledge through elaboration processes. In PBL, the attempt to solve problems at the outset serves to relate the new information to existing information. Further, if at the conclusion of the PBL process, students reevaluate their strategies and determine how the process could be more effectively accomplished, the relationship will be even more strongly elaborated.

Bridges and Hallinger (1992) provide a rationale for PBL that is based on cognitive, motivational, and functional grounds. The cognitive grounds include prior knowledge (prior knowledge is activated), encoding (the context in which information is learned resembles the context in which it will be applied), and elaboration of knowledge (information is better

understood if students have the opportunity to elaborate on it). These were presented above in the discussion of information-processing.

Brideges and Hallinger's explanation of motivational grounds is based on the work by Good and Brophy (1991). They contend that the effort people expend on an activity depends on the degree to which they expect to perform the activity successfully if they apply themselves and the degree to which they value the rewards that successful performance brings.

PBL strives to create the necessary preconditions for successfully using motivational strategies. One precondition is the learning environment. Here students are encouraged to take risks and treat mistakes and failures as learning opportunities. Students are praised for their risk-taking attempts. Another precondition is the assignment of materials having an appropriate level of difficulty and realistic learning objectives. Perhaps the most important precondition is the intrinsic motivation strategies. PBL students learn by doing. They are involved in facilitating, leading, recording, discussing, decision-making, and holding conferences, for example. These activities require an active response. In PBL, there is a problem to be solved that requires analysis and applied knowledge. The consequences for decisions must be projected into the future. This strategy involves higher order intellectual skills.

Another strategy for motivation involves simulations. For example, PBL students deal with simulated problems, participate in mock meetings of a board of education, or conduct placement meetings for special education students. The PBL environment is also amenable to immediate response from the instructor. Instructors may intervene when

students do not understand a specific concept or the instructor may let the students make the wrong decision and then use this mistake as a learning experience.

Most PBL events conclude with a finished product, an intrinsic motivation strategy that lends itself to a feeling of accomplishment for the student. Finally, PBL provides the opportunity to interact with peers. Because the basic unit of instruction is a project and students work as members of a team, there is ample opportunity for them to be involved in accomplishing the project's objectives.

Based on experience in preparation of educational leaders at Stanford University, Tanner, Gallis, and Pajak (1997), found that the major contribution of PBL from the functional perspective is that it narrows the gap between the work of a student and the work of an administrator. One way that this gap is narrowed is in the rhythm of work. Work in the PBL environment more closely corresponds to the rapid work pace of the administrator than does the work of a student in a traditional instructional environment. In the 'real world' of the school administrator rarely is there enough time. This is true for PBL activities. Students in PBL are judged on the feasibility of their actions. They are also judged on their comprehensive analysis of the problem.

Another functional aspect of PBL Tanner et al. (1997) observed is the nature of the work. The PBL environment resembles the work of an administrator. Students serve as team members, team leaders, and facilitators. Their work experience in PBL allows them to see the dependency inherent in managerial roles, the necessity for delegating responsibilities to others, and the frustrations inherent in trying to obtain results through other people. Besides, method of communication is a positive factor in PBL. Unlike the traditional instructional environment, students in PBL spend roughly equal amounts of time in sending and receiving

roles. They rely heavily on oral modes of communication, prepare written memos, and work in situations that require face-to-face, two-way communication. Therefore work-related communications in PBL closely resemble those of educational administrators. Finally, the PBL environment allows for an emotional tone that resembles actual situations. Students encounter emotional problems when working with people in PBL settings, just as practicing administrators do. When projects go awry, the PBL student also acquires insights into how they deal with frustration and disappointment.

Ryan (1993) merits the PBL approach for its overt emphasis on the development of self- directed learning abilities of students. As new and important knowledge proliferates in every profession, so does the pressure on educators in higher education to 'cover' this content in their courses without any corresponding increase in curriculum time. As a result, course content is ineffectively crammed into lectures and tutorials; and in order to release pressure from overburdened curricula, self-directed learning is expected of students who are often ill-prepared and ill-equipped for this responsibility. An aphorism attributed to the Chinese has expressed this idea very succinctly: 'Give me a fish and I eat today. Teach me to fish and I will eat for a lifetime'. It is so much easier, and often more satisfying and comforting, for professors to simply feed students with information. It is not surprising to discover that students may not only demonstrate poorly developed self-directed learning ability on graduation, but that they may also attach very little importance to having such an ability.

Writers on self-directed learning and problem-based learning (e.g., Barrows & Tamblyn, 1980; Barrows, 1986; Candy, 1991), argue that these skills should not be developed independently of course content. Barrows (1986), for example, suggests that skills

such as these not only have to be perfected through active, repeated and guided practice, but must also be associated in the learning process with the acquisition of course-related information. This deliberate process, he argues, can lead to the establishment of richer associations in memory between existing and newly acquired information and skills. The conceptual frameworks which can be developed through this active, guided thinking tend to remain in memory and to be more easily recalled. The related cognitive skills of probing, analyzing, searching for appropriate information and information sources, mental review and deliberation, and synthesis of information in larger concepts are needed throughout life and work, and it should be an overt function of the role of faculty to help students to develop these skills.

The process of transition from dependence to independence as learners, however, can be difficult for both the teacher and the students. The teacher may be unwilling and/or unable to shift the responsibilities for learning to the students; and the students, too, may have difficulty in changing dependent learning practices. Candy (1987) challenges a number of the assumptions which are often made by educators about adult learners, in particular that they are, by nature, self-directed. Is it reasonable, he asks, to expect adult students to automatically assume control of learning when often their experiences at school have actively discouraged this independence? There are many different ways in which self-directed learning abilities can be achieved in higher education settings. Problem-based learning, in particular, has demonstrated this capacity.

Application to Education

For the field of education, the traditional instructional method can be defined as learning objectives, lectures, and assignments provided by the instructor, formal class

discussion, an occasional film and field trip to a school setting, tests, and papers written about the concepts identified in the instructor-defined objectives. In contrast, the following characteristics of PBL are summarized from Bridges and Hallinger (1992):

(a) The problem is the starting point.

(b) The problem is a 'real problem' that the students may have to deal with.

(c) Knowledge that students should acquire is organized around problems, not disciplines.

(d) Students, as a group and individually, assume the (major) responsibility for their own instruction and learning.

(e) Much of the learning occurs within the context of small groups rather than lectures. (p.5-6)

Problem-simulated and student-centered learning are two species of problem-based learning (Waterman, Akmajian, & Kearny, 1991). These species are mainly distinguished by whether the instructor or the student defines the curriculum goals and who determines the resources and methods of evaluation for the problem-based activity. According to Bridges and Hallinger (1992), the objectives of problem-stimulated learning emphasize the development of administrative and problem-solving skills and the acquisition of a knowledge-base underlying administrative practice. To reach these objectives, the instructor highly structures the materials for learning around each focal problem. The student is given a realistic administrative problem, the objectives to be mastered, a list of materials, including audio-visual materials, computer technology, and questions to be answered that deal with concepts and applications of the knowledge-base.

In problem-stimulated learning, the students work as a group or project team, with a fixed time-line to solve a problem and achieve the learning objectives. The time allotted to each project varies from two to five three-hour sessions spread over a two-day to two-week period. Students are assigned roles such as leader, facilitator, recorder, and team member (Doyle & Straus, 1982). Students usually stay in these roles for the duration of a given project. The project team schedules its activities and determines how time will be used to solve the problem and achieve the learning objectives. Student evaluation is accomplished by peers, the instructor, and self-assessment through a wide variety of techniques. Instructors serve as resources to the teams instead of dispensers of information. Should a team become 'bogged down,' the instructor's role is to provide guidance or direction.

Problem-Based Curriculum

Several writers have contributed to the development of PBL curricula (Barrows, 1986; Bridges & Hallinger, 1992; Neufeld, Woodward, & MacLeod, 1989; Ross, 1991; Walton & Matthews, 1989). Ross (1991), in his work entitled Towards a Framework for Problem-Based Curricula, has presented a general taxonomy for PBL that is relevant to education and is shown in five steps as follows:

(a) Problems can be selected by the:

- Curriculum design team (or individual);
- Curriculum design team, from problems listed by students; or
- Students as a group or as individuals.

The first component of the framework deals with who selects the problem(s).

(b) The problem can be selected:

- to ensure that students cover a predefined area of knowledge;

- to help students learn a set of important concepts, ideas, techniques;
- for its suitability for leading students to (parts of) the field;
- for its intrinsic interest or importance; or
- because it represents a typical problem faced by the profession.

This component provides a framework for the purpose for which the problem is selected. It defines the area of knowledge to be covered.

(c) The form that the problem takes could be:

- an event (or 'trigger');
- a descriptive statement; or
- a set of questions.

Here the focus is on the form in which the problem is presented to students. For example, the team selects an event to place before the students, who (as a group) define the problem from the event as a set of questions.

(d) The resources students will use can be selected by:

- the design team;
- the students, from a resource 'package' (accumulated by the design team); or
- the students, from any sources available to them.

The questions help define the resources needed to solve the problem. Therefore, the resources are collected and applied toward a solution (or alternative solution) to the problem.

(e) Students can work:

- in groups with a tutor;
- in groups without a tutor; or

- as individuals.

In most situations, students would expect to work in all of these ways on a particular problem. Students should be encouraged to contact the tutor (a professor and/or a practitioner with expertise in a specific area) when the need arises.

All factors in the above steps are not mutually exclusive and variations can be as wide as resources will allow. Ross (1991) indicates that expressing the problem in terms of questions and then using the questions to define, collect, and apply the needed resources can involve a considerable amount of irritation. For example, students may redefine the questions a number of times. They may return to original event a number of times before a solution is recommended.

The main features of the problem-based curriculum for medicine at McMaster have been discussed by Neufeld and colleagues (1989). They see PBL as the main method of acquiring and applying knowledge about health care problems. The development of lifelong learning skills is at the heart of the process. These skills are developed in small tutorial groups that consist of five or six students and a faculty tutor in each group (Neufeld et al., 1989). The features Neufeld described appear to be typical of other PBL curricula described in the literature. The essential characteristics of the PBL curriculum in medicine are the use of problems as a focus for learning basic science and clinical knowledge along with clinical reasoning skills in an integrated, rather than separate, fashion (Walton & Matthews, 1989). These problems are typically organized into basic science and clinical thematic blocks. For example, one block would deal with chest pain, another would focus on anemia, and another would concentrate on inflammation (Albanese & Mitchell, 1993).

Does PBL Work?

Associated with the increasing interest in PBL in North American medical schools is a considerable evaluation base on PBL. A meta-analysis-type review of all available evaluation research from 1970 through 1992 that compares PBL with more traditional methods of medical education was conducted simultaneously by Vernon and Blake (1993) and Albanese and Mitchell (1993). These two reviews are significant in helping educators weigh the strengths and weaknesses of this innovative approach and shape future evaluation effort.

In the review of Vernon and Blake (1993), five separate meta-analyses were performed on 35 studies representing 19 institutions. For 22 of the studies (representing 14 institutions), both effect-size and supplementary vote-count analyses could be performed; otherwise, only supplementary analyses were performed.

Overall, the results of the meta-analyses support PBL as significantly superior according to students' program evaluations. The typically examined variables include the attitudes and opinions of participating students and faculty, as elicited by questionnaires, class attendance, that is "voting with one's feet", and measures of student "mood" or distress as indicative of the extent they like or value their courses. Several studies found that the process of learning was different for PBL students, the pattern of resource use suggested more self-directed learning in PBL programs, and PBL students placed greater emphasis on understanding and correspondingly less emphasis on memorizing.

With respect to clinical function, the performance of PBL students, as measured in a variety of ways, was better than that of traditional students. There was no significant difference between the two groups of students on conventional measures of clinical

knowledge, although the trend favored PBL. In contrast, traditional teaching methods were generally associated with higher scores on tests of basic science knowledge. The heterogeneity of these data, however, somewhat mitigates any conclusion regarding the general effect of PBL on this outcome variable across programs. The comparative value of PBL is also supported by data on outcomes that have been studied less frequently, faculty attitudes, student mood, class attendance, academic process variables, and measures of humanism. In conclusion, the results generally support the superiority of PBL approach over more traditional methods.

Almost simultaneous with the report of Vernon and Blake (1993), another review was conducted independently by Albanese and Mitchell (1993). It covered much of the same literature, from 1972 to 1992, defined PBL similarly but differed in some methodological issues.

The findings of Albanese and Mitchell (1993) suggest that, compared with conventional instruction, PBL is more nurturing and enjoyable; PBL graduates perform as well, and sometimes better, on clinical examinations and faculty evaluations; and they are more likely to enter family medicine. Further, faculty tend to enjoy teaching using PBL. However, PBL students in a few instances scored lower on basic sciences examinations and viewed themselves as less well prepared in the basic sciences than were their conventionally trained counterparts. PBL graduates tended to engage in backward reasoning rather than the forward reasoning experts engage in, and there appeared to be gaps in their cognitive knowledge base that could affect practice outcomes.

In addition, Albanese and Mitchell (1993) identified a few implementation problems of PBL which will be explored further. The costs of PBL may slow its

implementation in schools with class sizes larger than 100. While weaknesses in the criteria used to assess the outcomes of PBL and general weaknesses in study design limit the confidence one can give conclusions drawn from the literature, the authors recommend that caution be exercised in making comprehensive, curriculum-wide conversions to PBL until more is learned about (a) the extent to which faculty should direct students throughout medical training, (b) PBL methods that are less costly, (c) cognitive-processing weaknesses shown by PBL students, and (d) the apparent high resource utilization by PBL graduates.

In summary, despite their methodological differences, the two reviews achieved similar conclusions regarding the superiority of PBL. There appears to be increased interest among medical educators in the use of PBL. Many of the educational principles and methods incorporated in PBL were advocated by the General Professional Education of the Physician (GPEP) report (Muller, 1984). The meta-analyses of evaluative research discussed indicate that it is unlikely that students will suffer detrimental consequences from exposure to PBL programs.

Implementation Problems of PBL

Though PBL has produced some very positive outcomes in schools that have studied its effects, a number of questions and concerns have been identified in the literature that warrant attention (Albanese & Mitchell, 1993). One question that must be asked before implementing any new educational innovation is whether the costs of changing the curriculum and then maintaining the new program will be justified in terms of learning effectiveness and efficiency. There are many factors to consider in assessing cost (e.g., time

commitments of faculty and students, requirements of support personnel, costs for instructional materials, and necessary physical supports).

The results of the review by Albanese and Mitchell (1993) show that for fewer than 40 students and for perhaps up to 100, the cost in terms of faculty time for preparing lectures and giving them is equal to or greater than the time that would be spent tutoring small groups. While the total number of PBL students may be increased by changing the number of students in each small group or using circulating tutors, there is insufficient research on optimal group size or other factors to make clear recommendations.

In terms of costs in instructional efficiency, content is covered in PBL at a rate 82% as fast as in the conventional curriculum. The rate of content coverage in small groups can be increased up to 100% by having the tutors adopt directive teaching strategies; however, this may interfere with the goal of having students develop self-directed learning approaches. Yet the studies of more directive PBL curricula do not appear to show any decrease in objective measures of self-directed learning, such as library usage, suggesting that such fears may not be as serious as some believe. There is some indication that while PBL students may cover less content per unit time, they do, however, retain a greater proportion of what they learn (Coulson, 1983).

Another issue concerns the design of appropriate PBL problems since the core of PBL is the use of problems to focus learning. Several authors have established criteria they feel PBL problems should fulfill, based on the experience in developing problems (Majoor, Schmidt, Snellen-Balendong, Moust, & Stalenhoef-Halling, 1990; Neame, 1981; Sibley, 1989; Thomas, 1992). Bordage (1987) states that the cases should be prototypical. He cites evidence that students have greater recall and quicker and more accurate classification of

prototypical cases. Barrows (1986) suggests that problems that are relatively unorganized, unsynthesized, and open-ended will better promote the application of clinical reasoning skills, structuring of knowledge in useful contexts, and the development of self-directed learning, and will also be more motivating. Other schools, however, have designed problems that are more structured. The Focal Problem developed at Michigan State, for example, also provides a written narrative of a clinical problem as it unfolds in a real-life setting (Jones, Bieber, Echt, Scheifley, & Ways, 1984). These varied problem designs may all be suitable for PBL. On the other hand, it may be that some designs are better for certain circumstances. Clearly, there are many considerations concerning the design of the problems that form the foundation for PBL. Little research has been conducted that will provide more than intuitive guidelines for developers of PBL problems

The issue of content coverage in PBL may be critical for some in deciding whether and to what extent to implement PBL. Ensuring content coverage by introducing pertinent problems would appear difficult to accomplish for two reasons. First, it requires that faculty select appropriate numbers and types of problems that will encompass sufficient content areas. This in itself is an overwhelming task. Furthermore, there is no assurance that just because a problem could lead to the discovery of a content area, students will discover it. Therefore, some mechanism must be in place to ensure that students also identify those areas. There is evidence that students are uncomfortable with this aspect of PBL. Over half the graduates of McMaster University, for the period of 1972 through 1977, identified the lack of a precise definition of core material as a deficiency of the curriculum (Woodward & Ferrier, 1982).

Besides, the role of faculty in directing learning is very much subject to debate. Several authors (e.g., Barrows, 1985; Kaufman, 1985; Neame, 1989; Walton & Matthews, 1989) stress that PBL is facilitated when it is student-centered and self-directed, meaning that students take an active role in determining what their learning objectives will be, deciding how they will learn them, and evaluating what they have learned. However, it is possible for PBL to occur in a teacher-centered environment. Indeed all PBL curricular are teacher-centered to the extent that faculty design and sometimes choose the problems to be used, presumably with some idea of what content areas they expect the problems to encompass.

At the same time, all PBL curricula are student-centered to the extent that during the course of discussing the problem, students can identify knowledge deficiencies on their own. Coulson (1983) considers this the process of self-directed learning. In his description of the process, students working through a problem will hit obstacles to their progress due to lack of knowledge. Each time they reach an obstacle they make note of what they need to learn and continue with the problem until progress is topped. At this point, students develop a learning 'prescription' with help from their tutor, access learning resources to acquire the knowledge they need, and then return to the problem either to start over or to pick up where they stopped. The question of how faculty tutors should function in the learning process in PBL has only recently been targeted for study. There is not enough evidence to provide prescriptions for how problem-solving sessions should be directed.

It would appear that to obtain tutors of the type required for an ideal PBL program, faculty responsive to the role should be recruited and should undergo careful, perhaps in-depth, training. Even with these preparations, it will probably be necessary to carefully

monitor the performance of the tutors. The potential for a 50% time saving by being directive (Gruppen, Traber, Paine, Woolliscroft, & Davis, 1992) may be difficult for many tutors to resist. There may be some tutors who will be directive not only because of their own needs for control or desire to share their knowledge, but also because they may feel it an injustice to students if they do not direct them in ways they feel students should go.

Related to the question of how much direction faculty should give is the question of whether tutors must be experts in the subject matter at hand in order to function effectively. Several studies suggest that expert tutors will be more directive in their management of the small-group interactions in PBL (De Volder, 1982; Silver & Wilkerson, 1991). This seems to be considered undesirable by the planners and director of PBL, but students rate expert tutors as much more effective than other tutors (Davis, Nairn, Paine, Anderson, & Oh, 1992; Eagle, Harasym, & Mandin, 1992). While tutors with subject-matter expertise tend to be less facilitative, they appear to better enable students to identify relevant learning issues and correct gaps in knowledge and errors in processing. Patel, Groen, and Norman (1991) suggest that the higher error rate of PBL students compared with that of conventional students on a clinical care problem may be because non-expert tutors leave errors uncorrected, leading to misconceptions. Thus, while non-expert tutors may be more facilitative of student-centered, self-directed learning, it could be at the expense of perpetuating misconceptions arising during self-directed learning.

Finally, there is research evidence substantiating the worries that PBL could not develop in students an adequate cognitive scaffolding to assimilate new information and that it fosters over dependence in small group environment, making PBL students difficult to function in solo practice. The data from cognitive-processing studies suggest that PBL

students have gaps in their knowledge structures and ability to engage in forward reasoning (Gilhooly, 1990; Patel et al., 1991). The data on physician services utilization reported by Woodward, Ferrier, Goldsmith, and Cohen (1988, 1990) indicates a higher cost per patient resulting from greater use of psychotherapy services by PBL graduates compared with matched controls. While there are other competing explanations, this finding could be attributable to PBL graduates' having a more difficult time achieving diagnosis and resorting to using psychotherapy services to contend with environmental stressors. This explanation would also be consistent with the fact that the PBL graduates saw fewer patients. Tolnai (1991) also reported that McMaster graduates (PBL) were less likely to be in solo practice or practicing in a rural setting. The conventional curriculum for all of its faults, tends to leave the student to contend with his or her learning as an individual effort. While one can argue that this does not build the skills it takes for students to operate as part of a team, one can also argue that the skills learned in PBL teams are not the same as those required for real world health care teams. In a multidisciplinary health care team, members have different roles because of their expertise and responsibilities. Members of a PBL group have no such predetermined roles. Thus, the group dynamics are different, and it is not entirely assured that the skills learned in the PBL group will transfer to a health care team.

PBL in a Chinese Culture

Besides the myriad of implementation problems explored earlier, Walker, Bridges and Chan (1996) delve deeper into possible cultural variables that may present difficulties in adopting PBL. Based on experience gained in instituting PBL in a master's level course in educational administration at the Chinese University of Hong Kong, these authors identified a number of tensions that emerged from an eastern learning environment which counteract

the underlying philosophy of PBL. Except for some investigation into PBL in developing countries by Hallinger and his colleagues (1994), this is the first study of PBL reported in non-Western educational leadership settings.

The first tension identified was a common belief among Chinese students that the teacher or professor is the "wise person" or the giver of wisdom. From this perspective on education, all knowledge flows from the teacher to the student. Students accept the teacher's words as absolute expressions of what is right or wrong. Yet, the philosophy underlying PBL represents the antithesis of this belief. The educational philosophy of PBL can be summarized simply as "wisdom cannot be told;" PBL proponents assert that for learning to be meaningful it must be discovered by participants. In PBL, learning occurs as students explore significant administrative problems, applying understandings gleaned from varied resources while developing acceptable solutions. Within this instructional environment, the teacher's role becomes one of a guide or facilitator rather than giver of knowledge.

Accentuating this tension was a dominant and all too common view that learning is an individual rather than a group activity. Although group assignments have become more common as part of an overall grade within the Chinese University programme, both assessment and reward structures still largely assume that learning is something students do on their own, formally and informally, and in an isolated fashion. PBL, however, is fundamentally a co-operative learning activity. It promotes collective exploration of problems and team learning in a self-guided group setting. Similarly, assessment generally incorporates a significant group component as part of the individual student's grade.

Closely allied to the first tension, teachers throughout the institution were somewhat skeptical that students could take responsibility independently for their learning without

close guidance and considerable teacher-imposed structure. There also appeared to be a common conviction among faculty that the conceptual content needed to be presented before the problem in order for students to learn. This reflected an underlying belief in the teacher as the source of knowledge. Thus the predominant approaches to teaching in courses within the faculty were lecture, lecture-discussion and some case study work. There was considerable skepticism as to whether learning would occur without substantial 'front-end' input from the teacher. Such beliefs are again at odds with a PBL approach. In PBL the problem is the stimulus for learning. As such, the problem is almost always presented before students are exposed to the relevant content to be learned. This is a fundamental tenet of PBL across domains of professional education and runs directly counter to traditional philosophy strongly embedded in the cultural norms held by both university teachers and students.

Experience gained

Several authors have put forward valuable suggestions that would resolve or at least ease some of the implementation wrestles of PBL. Most are based on first hand experience in using PBL for different programmes (e.g., leadership education, educational administration, liberal arts, and architecture) (Bridges & Hallinger, 1996; Chenoweth & Everhart, 1994; Fiddler & Knoll, 1995; Kingsland, 1996; Walker, Bridges & Chan, 1996).

Time commitments

PBL methods have often been criticized because of the way they increase staff and student workloads. Lovie-Kitchin (1991) reported that students felt that PBL required more time, but fewer felt that it was too time consuming. Kingsland (1996) reiterated that the total workload, although high, is not the problem. Despite high workloads, students are very

satisfied with the PBL teaching method. Of more concern to students was the timing of activities, the availability of complete workload information at the beginning of projects, and the availability of appropriate, dedicated working spaces. Time expenditure is only one component of workload and this must be recognized when designing a PBL curriculum. Care should be exercised that all components are coordinated with the central project scenario and contribute to the students' learning needs.

Faculty attitudes

Chenoweth and Everhart (1994) suggested that one should not adopt a PBL approach like adopting a book for use in a course. The decision to change the pedagogy of a course requires first a change in the philosophical orientation of the instructors who propose to teach the course. For using PBL, instructors must begin to view their role as one of coaching, collaborating, steering, and facilitating; all of which means moving away from lecturing, dominating, managing, and directing the class. The instructor must recognize that learning that occurs in the context of its application is usually qualitatively superior to learning that occurs out of the context of application. Acceptance of this premise changes everything else that follows. Pedagogically, instructors in a PBL course need to view themselves less as virtuosos and more as orchestra directors. In an orchestra, virtuosos are considered talented individuals who know how to read music and who are accomplished with their parts. Yet, they often need practice blending and shaping a collective project. The orchestra leader does not help virtuosos achieve this end by playing their notes for them or by berating and failing those whose performance needs improvement. Rather, the director helps musicians to use their talents in new ways or to develop talents to a new level. Practice is the performance in music just as in a PBL class, working together to solve a problem is the performance.

Instituting PBL tests both the patience and confidence of instructors. According to Bridges and Hallinger (1996), a PBL project seldom runs smoothly. Students typically experience considerable confusion mixed with a measure of nervousness about the approach of the professor and the ambiguity of the situation. They may become frustrated and direct their hostility toward the instructor. It is important that instructors must maintain a vantage point above the affective and cognitive turmoil that students experience. They need to preserve the perspective that for students being lost at sea is part of the journey; not far off, near the horizon, are calmer waters that lead toward the desired destination (Bridges & Hallinger, 1995). With this perspective, instructors may actually feed the students' anxiety or may take a more active role, thus undermining the self-directed learning process.

Easing the Transition

Instructors can facilitate the transition to PBL and reduce frustration in various ways. To inform students clearly about PBL and build their confidence foster understanding of and appreciation for PBL. Instructors can also ease the transition by gradually increasing the complexity of the projects. Finally, instructors can promote student success by having students learn skills in project and meeting management, problem-solving, consensus building, and oral presentation (Bridges & Hallinger, 1996). By introducing these skills early, the instructor provides students repeated opportunities to practice and refine these sills. Dumping students into PBL without attending to this transition may lead to disastrous results.

Front-loading Effort

PBL requires considerably more time and attention initially than instructors are accustomed to in conventional courses (Chenoweth & Everhart, 1994). Front-loading takes several forms: Creating or selecting the learning materials, reviewing and preparing PBL

project materials for student use, and attending to the numerous logistical details, for example, preparing the physical environment, assigning students to teams and roles, identifying consultants, and providing equipment. Inadequate advance attention to these issues decreases the efficiency and the effectiveness of student's learning.

Developing Classroom Norms

To facilitate learning in a PBL environment, it is important to develop several classroom norms. One of the most important norms relates to how mistakes are viewed. Instructors should establish an environment in which mistakes are learning opportunities. There are few safe havens for leaders or educators and prospective leaders to acquire new skills and knowledge and to practice using them without fear of unleashing irreversible consequences. In PBL courses, the greatest learning occurred when students experience something akin to failure and reflect on how and why that happened. This, however, places a much greater premium on providing constructive feedback. Other norms relate to time use, developing a problem-focused orientation to learning, personalizing learning, resourceful learning, and self-monitoring (Brideges & Hallinger, 1995).

For the present study, PBL appeared to offer attractive premises for the training of teachers of students with E/BD in Hong Kong who have already acquired a wealth of experience serving in the field. They are well aware of the demands of classroom chores in different special education facilities. It is believed that the essence of training at this level is not to impart expert knowledge. In actual fact, there is no mysterious magic technique for students with E/BD but the refinement of good teaching methods geared to their needs. The essence of training should be to facilitate the learner to construct knowledge for application in challenging classroom situations.

Some of the features of PBL environment are that the learners are actively engaged in working at tasks and activities that are authentic to the environment in which they would be used. The focus is on learners as constructors of their own knowledge in a context similar to that in which they would apply that knowledge. Students are encouraged and expected to think both critically and creatively and to monitor their own understanding. This type of simulated learning should be of particular relevance to teachers of students with E/BD in Hong Kong.

To the best knowledge of the author, this approach has not been employed in training teachers of students with E/BD in any country. It is important that special heed be paid to the implementation problems raised earlier.

CHAPTER 3

METHODOLOGY

This research attempted to implement Problem-Based Learning (PBL) on a trial basis for training teachers of students with emotional and behavioral disorders (E/BD) in Hong Kong and to track the process and outcomes of the approach. Because of the exploratory nature of the project and anticipated cultural tensions, it was deemed necessary to make slight modifications in the original version of PBL (Barrows, 1986). The main modifications were that PBL would be introduced in the existing modular curriculum and additional front-loading effort would be made to support teachers. Qualitative data were considered more useful although some quantitative measures were also explored.

Specifically, the main purpose of the research was (a) to acquire data on the training needs of teachers of students with E/BD in Hong Kong; and (b) to explore the effectiveness of PBL in preparing teachers of students with E/BD to be successful practitioners.

This chapter delineates the sequence, materials, and procedures to be implemented for the research study. The following areas are addressed: (a) research questions, (b) subjects, (c) setting, (d) implementation procedures, and (e) data collection and analysis.

Research Questions

This study attempted to identify the training needs of teachers of students with E/BD in Hong Kong and the perception of these teachers of the effectiveness of

Problem-Based Learning as compared to traditional lecture methods in preparing them to be effective practitioners. The following research questions addressed the two purposes of the study:

1. In what areas do teachers of students with E/BD need to learn regarding teaching students with E/BD?
2. What are the learning outcomes of problem-based learning in the training of teachers of students with E/BD?
3. What are the skills developed through the problem-based learning approach?
4. What are the merits/demerits of problem-based learning in training teachers of students with E/BD as compared to traditional lecture methods?

The predictor variable was the PBL learning experience. Possible confounders examined were the educational background of students, gender, and setting served.

Subjects

The subjects selected for the present study were 15 experienced teachers serving in a variety of special education facilities for children with emotional and behavioral problems in Hong Kong (e.g., special schools for social development, practical schools, hospital schools and boys' and girls' homes). They had all been recommended by their employers to attend the two-year in-service course for Teachers of Children with Special Educational Needs for the academic years 1998-2000 at the Hong Kong Institute of Education. Their area of specialism was "Education of Maladjusted and Socially-Deprived Children".

A recent development in Hong Kong in the E/BD field is the creation of new types of schools for new labels of students. Besides the long established special schools

for maladjusted and socially-deprived children recently renamed as special schools for social development, a new category of school called practical schools have been created for students identified to be unmotivated but with the ability to cope with school work. Skills Opportunity Schools, on the other hand, are for those unmotivated but without the ability to cope with an academic curriculum. Boys' and girls' homes are facilities for retention of juvenile offenders. The Government special education services center operates short-term special classes for students with problems to attend apart from their own school. For children hospitalized in psychiatric units, they are also required to attend classes conducted in the hospital schools.

Setting

The Hong Kong Institute of Education is the sole organization charged with the responsibility of training special education teachers in Hong Kong. Currently, it offers a two-year course in special education, embracing a one-year full-time theoretical study followed by a year of professional development activities in the trainees' schools.

The curriculum of the theoretical study is organized into ten modules or units of study. Three of them are core modules which deal with generic issues common to all categories of special education. They are compulsory for all special education teachers. Four are electives and the remaining three are specialization modules which are geared to the different categories of children with special educational needs in Hong Kong (e.g., Education of Children with Learning Difficulties, Mentally Handicapped, Physically Handicapped, Hearing Impaired, Speech Problems).

Serving special education teachers with recommendations from the employers may apply to the Course. Once accepted, they will be sponsored by the Hong Kong Government

of the Special Administration Region (SAR) to attend on a fully paid basis. In addition, teacher graduates will be awarded two additional increments on their pay scale on successful completion of the course.

For the specialty "Education of Maladjusted and Socially-Deprived Children", the three specialization modules, MAL 1, MAL 2 and MAL 3, focus on acquiring an understanding of behavioral problems, management strategies, and teaching techniques respectively. The main delivery methods involve lectures, case studies, discussions, and school visits. There are two 13- week semesters in an academic year and MAL 1 will be offered in the first semester, while MAL 2 and MAL 3 will run concurrently in the second semester.

Implementation Procedures

The design of this research exercise was intended to simulate, and engage the teacher-in-training of students with E/BD in the problem-solving behavior, in which a practicing teacher of students with E/BD would be engaged. The entire problem-solving process was designed to aid the teacher-in-training in developing the hypothetico-deductive problem-solving skills centered around hypothesis generation and evaluation.

To achieve the above aim, problem-based learning was implemented on a 4-week trial basis to teach part of the module "MAL 3- Teaching of students with E/BD" in the second semester, from mid-January to end February, 1999. Slight modifications were made in the version of PBL described by Barrows (1986) to suit the learning style and needs of teachers of students with E/BD in Hong Kong. PBL would be introduced in the existing modular curriculum. No attempt would be made to restructure the curriculum of

the course but faculty would try to integrate learning issues to support PBL. The key features of the PBL adopted that were explained to student teachers include:

- a problem is a starting point for learning new knowledge and is one that you are apt to face in your present or future professional roles;
- the knowledge students are expected to acquire and to use in dealing with the problem is organized around the problem, rather than the disciplines;
- the major goal of problem-based learning is the application of knowledge, students acquire new knowledge and learn how to use it;
- most of the learning occurs within the context of small groups, rather than lectures;
- students, individually and collectively, assume major responsibility for their own instruction and learning;
- the role of the instructor is not a lecturer but a facilitator.

Learning objectives

The learning objectives related to the problem-relevant knowledge that was the project focus, as well as the knowledge and skills needed to complete the product. Although the author, as problem designer, had specific learning objectives per problem in mind, it was important that student teachers be given the opportunity to personalize their learning by focusing on those objectives that pertain to gaps in their own professional background.

Problem generation

The problem used in the present study was developed according to two guiding principles. First, the problem must raise the concepts and principles relevant to the

content domain. Thus, the process began with first identifying the primary concepts or principles that a student must learn. This was achieved by polling and discussing with faculty concerned to identify the most important concepts in the area. Second, the problem must be 'real'. There were three reasons why the problem must address real issues. First, because the students were open to explore all dimension of the problem, there would be real difficulty in creating a rich problem with a consistent set of information. Second, real problems tended to engage learners more since there was a larger context of familiarity with the problem. Finally, students wanted to know the outcome of the problem. These outcomes were not possible with artificial problems.

In accordance with the above guiding principles, it was planned to video tape a real and natural chaotic classroom scenario typical of students with E/BD in Hong Kong to be used as the problem of the study. The teacher and students concerned were not informed of the purpose of the recording and were requested to teach or learn as they normally would. Arrangements were made with a special school for social development in Hong Kong to video tape a 35-minute lesson in January 1999. The task, however, turned out to be more difficult than was anticipated. The author had to use almost two weeks to make several recordings before she could obtain a 'suitable' problem lesson. There were several reasons for this. First, students with E/BD were not consistent in exhibiting particular behavior patterns. They could be well behaved in one lesson but suddenly turned bizarre in the next. In the first few recordings, the lesson recorded failed to create the necessary conditions for problem-based learning, as students did not exhibit the range of challenging behaviors the author intended to embrace. Secondly, the teaching strategies and activities conducted by the teacher concerned were also considered a part of the problem issue to be studied. Again, the

author had to record several lessons before she could secure one that contained meaningful issues in relation to teaching methods that were worth exploring. Finally, the recording process itself was found to be a disturbing factor for student behavior. There were no observation rooms in the school and the author could only resort to doing more recordings so as to fade out the novel effect of the activity. The English lesson for primary five students (age 10-11) recorded on 13 January 1999 was at last selected as the problem lesson for this research.

Easing the transition

In view of the fact that students typically experience considerable confusion and anxiety about a new approach, prior to actual implementation, several measures were taken to ease the transition to PBL. Of greatest concern to students was complete workload information, timing of activities, availability of resources and faculty support. Good advanced planning and clear information helped to build up the confidence of students in the approach. Besides, it was important to develop several classroom norms for PBL. One of the most important norms related to how mistakes were viewed. For PBL, mistakes were learning opportunities for students to reflect on how and why that happened. Developing group process and meeting management skills was a precursor to effective PBL and small group work. Hence, before introducing PBL, some time was spent with the class reviewing with students the rationale for introducing PBL, details of the arrangements and how to identify, prevent, and correct behaviors that tended to produce conflict and disharmony. Students showed interest in the approach and they all agreed to participate. The only worry they expressed was that the assessment guidelines were insufficiently not detailed. These guidelines were revised with further details and

were given to them a week before starting PBL (Appendix A). Some tacit ground rules about behavior to avoid was also formed with the class.

Procedures

The whole PBL process was carried out in four weeks, from 18th January to 22nd February 1999. In the first week, a 3-hour session was used for problem presentation, which was followed by two weeks of self-directed learning. In the fourth week, there were three sessions for report back and evaluation, each lasting three hours. Details of the teaching schedule were as follows:

Week 1: Encountering the problem (3-hour-session)

The first stage of this 3-hour-session was devoted to problem presentation. Students watched the video tape together. Students began the problem 'cold'. They did not know what the problem was until it was presented. Two critical issues were involved in presenting the problem. First, if the students were to engage in authentic problem-solving, they must own the problem. This step in the PBL process of 'bringing the problem home' was critical. Students must perceive the problem as a real problem and one which has personal relevance. Also central was the fact that students must have ownership of the problem, they were not just trying to figure out what the instructor wanted. After the video was shown, details of the recording were disclosed to the student teachers. Most of them associated the behavior of the students and the difficulties of the teacher in the video as similar to what they had experienced. A second critical issue in presenting the problem was to make certain that the data presented do not highlight critical factors in the case. Too often when problems are presented, the only information that is provided is the key information relevant to the desired solution.

The second stage was hypotheses generation. Students discussed the problem, generated hypotheses based on whatever experience or knowledge they had, identified relevant facts in the case, and learning issues. The learning issues were topics of any sort deemed of potential relevance to the problem and which students felt they did not understand as well as they should.

The first session was not completed until each student had an opportunity to verbally reflect on his or her current beliefs about the diagnosis (i.e., commit to a temporary position), and assumed responsibility for particular learning issues that were identified. Note that there were no pre-specified objectives presented to the students. The students generated the learning issues (objectives) based on their analysis of the problem. After a lengthy challenging discussion, students generated four different hypotheses. Those who shared the same opinion were grouped together and there were altogether four groups of three students each. Each group was given two weeks to work on the problem. Their main task was to diagnose the problem, to provide a rationale for that diagnosis and a recommended strategy.

Week 2-3: Self-directed learning

After the first session, students engaged in self-directed learning. There were no assigned texts. Rather, students were encouraged to gather information from the available library and computer database resources. If required, they could approach faculty members for the following resources: books, articles, and films on E/BD. Additionally, particular faculty members were designated to be available as consultants. The students may go to the consultants to seek information.

During the self-directed learning period, most students requested further opportunities to view the problem lesson. Some students even viewed the video six times and

observed every interaction between the teacher and students in the video. They also reported insufficient local resources on E/BD, which was a problem Hong Kong had to resolve.

Week 4: Report back (3 sessions)

After self-directed learning, the students met again in the fourth week. There were three report back sessions of three-hours each. Each of the four groups had to report what they had learned. They began by evaluating resources: what was most useful and what was not so useful. The hypothesis that each group had formulated would be reexamined with this new level of understanding. The norm for PBL was that 'silence means agreement'. The hypothesis and opinions of each student were subject to challenge and debate. This process of debate and discussion was found to be useful as well as difficult. It exposed the value judgement of students and the controversies of different approaches in dealing with behavior problems. Each group had to evaluate the opinions presented by the class but there was no need for them to reach a consensus. Based on their diagnosis, students had to propose strategies for action. Assessment at the end of the process was in terms of evaluation in two areas: self-directed learning and problem-solving. There were no tests.

Facilitator role

There is much debate in the literature about the extent to which facilitator should take a passive versus active role and whether they should provide content specific responses to student questions. At this level of their training, it was conceived that E/BD student teachers may relish the lack of teacher intervention. By not providing data or answers, the instructor permitted the students to become more self-directed. However, flexibility was exercised in this research depending on the reaction of student teachers and there were occasions which required the instructor to be more directive.

Throughout a session, the facilitator modeled higher order thinking by asking questions which probed students' knowledge deeply. To do this, the facilitator often asked "Why?" "What do you mean?" "How do you know that's true?" The facilitator's interactions with the students were often at a metacognitive level. As far as possible, she avoided expressing an opinion or giving information to the students. The facilitator had also refrained from using her knowledge of the content to ask questions that would lead the students to the 'correct' answer.

A second tutor role was to challenge the students' thinking. The facilitator and the other students in her collaborative environment often attempted to ask: 'Do you know what that means? What are the implications of that? Is there anything else?' Superficial thinking and vague notions should not go unchallenged. Students that said nothing about another member's facts or opinions was the same as saying "I agree." Similarly, the responsibility for a flawed diagnosis was shared by everyone in the group. The facilitator attempted to challenge both the level of understanding and the relevance and completeness of the issues studied.

Data Collection and Analysis

Data for research questions one and two were collected via a questionnaire (Questionnaire B, Appendix B). In designing the questionnaire, the author had considered adopting the knowledge/skills statements of the Council for Exceptional Children (Swan & Sirvis, 1992) and the 201 statements proposed by Bullock et al. (1994) for teachers of students with E/BD. However, she was alert to the need to gather the specific views of Hong Kong teachers through discussion with local professionals in the field of E/BD. An instrument designed to tape local needs was thus considered more important.

In order to provide a framework for Hong Kong teachers to express opinions freely, questionnaire B was designed through two stages. First, teachers were invited to respond to an open-ended question on important knowledge/skills areas in Questionnaire A (Appendix C). They could write down, in their own words, knowledge/skills areas they felt important. The results of Questionnaire A were complied. The knowledge/skills areas were carefully reviewed by the author, duplicates were eliminated, and some statements were combined into a single statement. A total of 31 areas were listed to form Questionnaire B (Appendix B) which was administered to all 15 teachers before the implementation of PBL in early January. Using a likert scale of (5) highest to (1) lowest, teachers were asked to determine the knowledge/skills areas that they felt were (a) most important for teachers of students with E/BD, and (b) those at which they felt most proficient.

As for research questions three, four and five, information was collected from a number of sources:

Facilitator observation

All the teaching sessions were videotaped, transcribed and summarized for purposes of analyzing students' reaction and involvement in PBL as observed by the facilitator.

Semi-structured interview

All 15 subjects were interviewed individually after the last session. Interview questions focussed on students' satisfaction with PBL and their perceived learning outcomes.

Questionnaire

Questionnaire C was administered at the close of the last session to the 15 students (Appendix D). The instrument was designed to (a) document previous experience with PBL teaching methods, (b) detect attitudes regarding PBL compared with traditional methods, (c) provide feedback regarding course structure, and (d) collect suggestions for improving PBL.

Data collected from the various sources were combined and analyzed in response to the respective research questions. Quantitative data was analyzed using multivariate analysis of variance and univariate tests. Responses to open-ended questions were categorized based on common patterns that emerged form the data. Facilitator observations and semi-structured interviews were used to reinforce, refine or collapse categories as the basis for issue identification and comparison.

CHAPTER 4

ANALYSIS OF RESULTS

This study represented a pioneer attempt in Hong Kong to introduce Problem-Based Learning (PBL) in preparing teachers of students with emotional and behavioral disorders (E/BD), to explore its perceived value and the specific training needs of this group of teachers. The experience and insights derived from this research exercise should be valuable for guiding future efforts. Because of the exploratory nature of the study, it was considered important to analyze the process as well as the outcomes of the approach. This chapter attempts to summarize the results of the following areas: (a) Problem-Based Learning process, and (b) findings of the various research questions. It further highlighted the contributions this study had made in the development of training programs for teachers of students with E/BD.

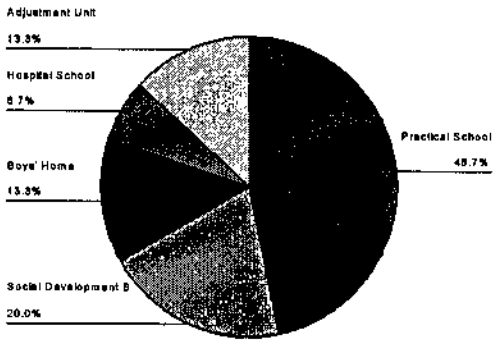
Problem-Based Learning Process

Background of subjects

All the 15 teachers of students with E/BD in training for the academic years 1998/2000 at the Hong Kong Institute of Education participated in this research. These participants ranged in age from 20 to 41+, with the largest number (46.7%) falling into the 31-35 year age brackets; 7 were females and 8 were males; 10 were qualified teachers with recognized training in education and 5 were unqualified. They served in different special education settings for students with E/BD in Hong Kong; Fig A shows the distribution. None of the subjects had any experience in PBL.

Fig. A

Distribution of Settings Subjects Served



PBL PROCESS

The whole PBL process described in Chapter III was conducted in Chinese which was the medium of instruction of the training course. It was video taped, transcribed and summarized in this section. Part of the transcription was also translated to English. There were four tapes, one for the session 'Encountering the problem' and three for the 'Report back sessions'. The transcriptions were long and for the sake of clarity and brevity, they were organized and presented in table forms to show the gist of the process under two headings: (a) problem lesson, and (b) reaction of students.

Problem lesson

The lesson was conducted for a class of six primary five students (age 10-11). The seating arrangement was shown in Appendix E. It was a 35-minute English lesson and the objective was to introduce to students the sentence pattern, 'Would you like.....'. Although it was an English lesson, Chinese was often used as the medium of instruction. To depict this 35-minute classroom scenario, the interactions between

the teacher and the students were transcribed, translated to English, and presented as episodes following the sequence of the lesson. There were altogether 27 episodes as shown in Appendix F. The activities the teacher and students were engaged in during each episode were summarized in Table 1.

Table 1

Activities Observed in Problem Lesson

Description	Number of Activities
Teaching a sentence pattern/vocabulary	15
Sharing information/personal experience with students	5
Trying to motivate students' interest in learning by referring to their daily experience	4
Helping a student to complete the worksheet	2
Giving more information to students	1
Giving positive reinforcement to students	2
Maintaining class discipline	5
Losing control of class discipline	2
Correcting misbehavior of individual students	1
Responding to problem behavior in a inconsistent manner	2
Giving instruction to students	1
Taking care of individual students	1
Correcting student error	2
Total:	43

The major activities the teacher, in interacting with students, was engaged in were teaching a sentence pattern (15 activities), and dealing with problem behavior (10 activities). The problem behavior observed included the use of inappropriate language and Chinese foul language, talking without permission, out of seats, inattentiveness, unmotivated to learn, and failure to comply with teacher's instruction. The teacher had to devote a great proportion of the teaching time to deal with problem behavior and these behaviors were of a trivial but persistent nature. This lesson represented what typically happens in classes for students with E/BD in Hong Kong. The need to train teachers of students with E/BD to be competent in resolving such situations was highlighted.

Reaction of students

Students exhibited diverse reaction to the lesson presented. The problem-solving session that followed consisted of discussion centered around four main themes or lines of thought: (a) Should the lesson be classified as a 'problem lesson' or a 'normal lesson' for E/BD students? (b) Who should be blamed or take the responsibility? (c) What would happen if the teacher had responded differently? (d) What measures should be taken to resolve the problem situation?

At the beginning of the discussion sessions, most students adhered to their own thinking, particularly in regard to ways of handling students with E/BD. They were also reluctant to challenge others' ideas. It was evident that students had already acquired a mindset of how students should be managed. The chief reason could be that students were in-service teachers who had taught students with E/BD for some time. It was hard to break their established perspectives. Their views were widened, however,

as the discussion proceeded. At the end of session one, students concurred that there were four main hypotheses or areas they could work on: (a) classroom management skills; (b) teaching methods; (c) curriculum reform; and (d) teacher attitude and characteristics. Those who generated the same hypothesis were grouped together to explore resources and to recommend strategies. The results were presented, discussed and challenged in sessions two to four. Table 2 summarized the discussion. The proposed action listed in the left-hand column corresponds directly to the cause of the problem listed in the right-hand column.

Table 2

Subjects' Perceived Problem Cause and Recommended Action

Cause of problem	Proposed action
Management skills of teacher	
Not proactive in dealing with disruptive behavior	Set up classroom rules and a discipline plan
Not consistent or assertive in maintaining classroom rules	Be consistent and assertive in dealing with problem behavior
	Develop positive interactions with students
Reinforce attention-seeking behavior and ignore silent misbehaving students	Be alert to student misbehavior
	Response cost
	Develop a whole-school approach to discipline

Cause of problem	Proposed action
	Use positive reinforcement to encourage positive behavior
Teaching skills of teacher	
Adopt a 'chalk and board' conventional approach Insufficient variation in teaching approach	Use a variety of teaching methods, particularly those which encourage student participation
Select teaching materials that do not relate to students' daily experience	Provide and create successful learning experience for students to substantiate their interest in learning.
Does not cater for individual differences in learning.	Use direct or active instruction
Does not encourage active student involvement in the learning process	Provide guided and independent practice
	Provide modeling and demonstration
	Review with students the objectives for learning the topic to arouse their incentive
Students lack motivation and confidence in learning	
Apathetic and uninterested in learning English	Respond to students' individual learning styles

Cause of problem	Proposed action
Day dreaming and refrain from participating	Use motivation strategies
Not following instructions in comprehending learning materials given	Use cooperative learning method
	Use peer tutoring method
	Use mastery learning
	Tailor the curriculum according to students' abilities and interest
	Involve students in curriculum planning
	Select teaching materials that are functional and relate to the practical needs of students so that they understand the purpose of learning
	Teaching approach should be flexible, interesting and gear to individual needs
	Use task analysis and precision teaching to help students master the learning material step by step.
	Use service learning to provide successful experience for students
Students lack self-control	

Cause of problem	Proposed action
Create noise and chatter repetitively	Specify behavior expectations
Burst out foul language	Develop a discipline plan for the class
Shout out from their seats and talk without permission	Behavioral modification program
Swing in seats	Promoting self control program
Off seats	Social skills training
	Provide training for students to work collaboratively with others
	Teach students how to express opinions and emotions
	Enhance self esteem and self confidence of students

Findings of Research Questions

Research Question 1: In What Areas Do Teachers of Students with E/BD Need to Learn Regarding Teaching Students with E/BD?

Data collected from questionnaire B were subject to several analyses. The first analysis was conducted to determine the areas that teachers felt were the most important and those at which they felt were most proficient. To do this, the mean responses for the 31 areas were computed using a SPSS program. These means were then ordered from the highest (5) to lowest (1). A second analysis was conducted to

determine differences in the mean ratings and rankings between the educational settings the subjects served, gender and educational background of subjects.

Teachers of students with E/BD in Hong Kong perceived that the top six most important areas they needed to learn were classroom teaching techniques, crisis management, classroom management, social skills training, whole school approach to discipline and promoting positive attitude (see Table 3). The mean ratings for these six areas ranged from 4.53 to 4.47. Training areas ranked as least important were first aid, model programs of other countries, psychology, and integrating students to the mainstream.

TABLE 3

Rank Order and Means for Importance and Proficiency of Knowledge/skills Areas for Teaching Students with E/BD

	Importance		Proficiency	
	Rank	Mean	Rank	Mean
Behavior characteristics of students with E/BD	11	4.20	16	3.07
Understanding behavior problem	7	4.40	11	3.13
Whole school approach in discipline	2	4.47	7	3.20
Setting up behavior norms in a new school	20	4.13	18	3.00
Discipline students with E/BD	25	3.93	18	3.00
Classroom management	2	4.47	4	3.40
Rules to modify deviant behavior	8	4.33	5	3.33
Management procedures when presented with	25	3.93	11	3.13

	Importance		Proficiency	
	Rank	Mean	Rank	Mean
a spontaneous problem				
Classroom teaching techniques	1	4.53	1	3.47
Curriculum approaches	11	4.20	18	3.00
Motivation strategies	11	4.20	7	3.20
Communication skills with students	11	4.20	6	3.27
Building up rapport with students	11	4.20	1	3.47
Handling problems in the classroom	8	4.33	7	3.20
Crisis management	2	4.47	16	3.07
Promoting positive student attitude	2	4.47	11	3.13
Counseling skills	20	4.13	11	3.13
Group intervention methods	24	4.00	25	2.73
Social skills training	2	4.47	23	2.80
Developing personal responsibility of students	11	4.20	11	3.13
Facilitating personal growth of students	11	4.20	21	2.93
Utilizing teaching resources available	27	3.87	25	2.73
First aid	31	3.07	28	2.67
Psychology	29	3.47	25	2.73
Integrating students to the mainstream	28	3.53	30	2.33
Model programs of other countries	30	3.40	31	2.13
Parent teacher relationships	20	4.13	23	2.80
Working with parents	11	4.20	28	2.67

	Importance		Proficiency	
	Rank	Mean	Rank	Mean
Role of a E/BD teacher	8	4.33	1	3.47
Personal growth of E/BD teacher	20	4.13	21	2.93
Stress management for E/BD teacher	11	4.20	7	3.20
Average		4.12		3.01

Analysis of responses of teachers from different special educational settings revealed marked differences in training priorities. Because of the small sample size, it was difficult to employ statistical analysis or to achieve statistically significant results. However, a pattern of priorities in relation to the specific needs of the setting could be clearly discerned (see Table 4). Practical Schools, from which the majority of teachers came, were newly established schools for unmotivated students in Hong Kong. Teachers of these schools ranked crisis management and promoting positive attitudes of students as most important. They were less concerned about integrating students to the mainstream or model programs of other countries. It could be that in the new Practical Schools, teachers had to struggle to establish a structure and a behavior norm for students and they were apparently at a loss in dealing with crisis. The Social Development Schools, on the other hand, were well established. Teachers form Social Development Schools conceived that integrating students back to the mainstream, facilitating personal growth of students, classroom management techniques as most important. They were less concerned about parent-teacher relationships or how to work with parents, areas that teachers from Boys' home considered as important. For teachers from Hospital Schools, a whole school approach to discipline and the

behavior characteristics of students with E/BD were important areas. Hospital schools were catered for psychiatric students and those who were seriously disturbed in Hong Kong. Hence, teachers may feel the need to learn more about behavior symptoms or manifestations of problem behavior. In this setting, teaching was often conducted on a one-to-one or small group basis, teachers may not feel the need to learn about different curriculum approaches or developing personal responsibility of students. For Adjustment Units, teachers ranked counseling skills, handling problems in the classroom and building up rapport with students as very important. These units were for students with adjustment problems to attend on a short-term basis and teachers had to conduct behavior intervention programs, counseling and rapport building were a prerequisite.

Table 4

Rank Order and Means for Importance of Knowledge/Skills Areas for Different Settings

	Practical Schools n=7		Social Development Schools n=3		Boys' Home n=2		Hospital Schools n=1		Adjustment Units n=2	
	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean
Behavior characteristics of students with E/BD	11	4.25	7	4.50	16	4.00	1	5.00	24	3.50
Understanding behavior problem	1	4.50	1	5.00	12	4.50	3	4.00	24	3.50
Whole school approach in discipline	1	4.50	23	4.00	1	5.00	1	5.00	16	4.00

	Practical Schools n=7		Social Development Schools n=3		Boys' Home n=2		Hospital Schools n=1		Adjustment Units n=2	
	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean
Setting up behavior norms in a new school	22	4.00	7	4.50	16	4.00	3	4.00	4	4.50
Discipline students with E/BD	26	3.88	23	4.00	16	4.00	3	4.00	16	4.00
Classroom management	7	4.38	1	5.00	12	4.50	3	4.00	4	4.50
Rules to modify deviant behavior	17	4.13	7	4.50	1	5.00	3	4.00	4	4.50
Management procedures when presented with a spontaneous problem	17	4.13	23	4.00	26	3.50	19	3.00	16	4.00
Classroom teaching techniques	1	4.50	1	5.00	1	5.00	3	4.00	16	4.00
Curriculum approaches	7	4.38	7	4.50	1	5.00	27	2.00	24	3.50
Motivation strategies	11	4.25	7	4.50	12	4.50	19	3.00	16	4.00
Communication skills with students	17	4.13	7	4.50	16	4.00	3	4.00	4	4.50
Building up rapport with students	11	4.25	7	4.50	30	3.00	3	4.00	1	5.00
Handling problems in the	11	4.25	7	4.50	16	4.00	3	4.00	1	5.00

	Practical Schools n=7		Social Development Schools n=3		Boys' Home n=2		Hospital Schools n=1		Adjustment Units n=2	
	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean
classroom										
Crisis management	1	4.50	23	4.00	1	5.00	3	4.00	4	4.50
Promoting positive student attitude	1	4.50	1	5.00	1	5.00	27	2.00	4	4.50
Counseling skills	22	4.00	7	4.50	26	3.50	3	4.00	1	5.00
Group intervention methods	27	3.75	7	4.50	16	4.00	3	4.00	4	4.50
Social skills training	1	4.50	7	4.50	12	4.50	3	4.00	4	4.50
Developing personal responsibility of students	17	4.13	7	4.50	1	5.00	27	2.00	4	4.50
Facilitating personal growth of students	22	4.00	1	5.00	16	4.00	3	4.00	4	4.50
Utilizing teaching resources available	22	4.00	23	4.00	16	4.00	19	3.00	24	3.50
First aid	29	3.25	29	3.50	26	3.50	27	2.00	31	2.00
Psychology	28	3.50	7	4.50	30	3.00	19	3.00	30	3.00
Integrating students to the mainstream	31	2.88	1	5.00	1	5.00	19	3.00	24	3.50

	Practical Schools n=7		Social Development Schools n=3		Boys' Home n=2		Hospital Schools n=1		Adjustment Units n=2	
	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean
Model programs of other countries	30	3.13	23	4.00	16	4.00	19	3.00	24	3.50
Parent teacher relationships	11	4.25	29	3.50	1	5.00	19	3.00	16	4.00
Working with parents	17	4.13	29	3.50	1	5.00	3	4.00	4	4.50
Role of a E/BD teacher	7	4.38	7	4.50	1	5.00	19	3.00	16	4.00
Personal growth of E/BD teacher	7	4.38	7	4.50	26	3.50	27	2.00	4	4.50
Stress management for E/BD teacher	11	4.25	7	4.50	16	4.00	3	4.00	16	4.00

The responses of qualified teachers with recognized training in education and those who were unqualified are shown in Table 5. Qualified and unqualified teachers appeared to have different opinions regarding training priorities. Qualified teachers unanimously expressed that classroom teaching techniques, crisis management and promoting positive attitude of students as most important. Unqualified teachers, on the other hand, wanted to learn more about behavior problems, how to communicate and build up rapport with students. Both groups of teachers thought that knowledge about integrating students to the mainstream, first aid and model programs of other countries were least important areas. It is surprising to note that while qualified teachers

regarded knowledge to work with parents as important, the unqualified teachers did not.

Table 5

Rank Order and Means for Importance of Knowledge/Skills Areas by Qualified and Unqualified Teachers

	Unqualified Teachers n=5		Qualified Teachers n=10	
	Rank	Mean	Rank	Mean
Behavior characteristics of students with E/BD	5	4.40	17	4.10
Understanding behavior problem	1	4.80	13	4.20
Whole school approach in discipline	5	4.40	4	4.50
Setting up behavior norms in a new school	21	4.00	13	4.20
Discipline students with E/BD	23	3.80	22	4.00
Classroom management	5	4.40	4	4.50
Rules to modify deviant behavior	12	4.20	7	4.40
Management procedures when presented with a spontaneous problem	12	4.20	28	3.80
Classroom teaching techniques	12	4.20	1	4.70
Curriculum approaches	5	4.40	17	4.10
Motivation strategies	2	4.60	22	4.00

	Unqualified Teachers n=5		Qualified Teachers n=10	
	Rank	Mean	Rank	Mean
Communication skills with students	2	4.60	22	4.00
Building up rapport with students	5	4.20	13	4.20
Handling problems in the classroom	5	4.40	11	4.30
Crisis management	12	4.20	2	4.60
Promoting positive student attitude	12	4.20	2	4.60
Counseling skills	12	4.20	17	4.10
Group intervention methods	21	4.00	22	4.00
Social skills training	2	4.60	7	4.40
Developing personal responsibility of students	23	3.80	7	4.40
Facilitating personal growth of students	12	4.20	13	4.20
Utilizing teaching resources available	23	3.80	26	3.90
First aid	30	3.40	31	2.90
Psychology	23	3.80	29	3.30
Integrating students to the mainstream	31	2.80	26	3.90
Model programs of other countries	28	3.60	29	3.30
Parent teacher relationships	23	3.80	11	4.30

	Unqualified Teachers n=5		Qualified Teachers n=10	
	Rank	Mean	Rank	Mean
Working with parents	28	3.60	4	4.50
Role of a E/BD teacher	12	4.20	7	4.40
Personal growth of E/BD teacher	12	4.20	17	4.10
Stress management for E/BD teacher	5	4.40	17	4.10

As regards gender differences, both male and female teachers shared similar opinions about knowledge areas that deserved least significance. They differed, however, in their choice of important areas with the male group favoring emphasis on understanding behavior characteristics and whole school approaches, and the female group wanting to learn more about counseling skills, social skills training and classroom teaching techniques (see Table 6). The main reason could be that most of the male teachers who participated in the research were from more restrictive settings. There was a greater need for them to learn more about behavior characteristics of students and whole school approaches.

Table 6

Rank Order and Means for Importance of Knowledge/Skills Areas by Gender

	Female n=7		Male n=8	
	Rank	Mean	Rank	Mean
Behavior characteristics of students with E/BD	26	4.00	1	4.38
Understanding behavior problem	15	4.43	1	4.38
Whole school approach in discipline	9	4.57	1	4.38
Setting up behavior norms in a new school	15	4.43	17	3.88
Discipline students with E/BD	24	4.14	19	3.75
Classroom management	5	4.71	4	4.25
Rules to modify deviant behavior	15	4.43	4	4.25
Management procedures when presented with a spontaneous problem	24	4.14	19	3.75
Classroom teaching techniques	2	4.86	4	4.25
Curriculum approaches	15	4.43	12	4.00
Motivation strategies	15	4.43	12	4.00
Communication skills with students	15	4.43	12	4.00
Building up rapport with students	23	4.29	8	4.13

	Female n=7		Male n=8	
	Rank	Mean	Rank	Mean
Handling problems in the classroom	9	4.57	8	4.13
Crisis management	5	4.71	4	4.25
Promoting positive student attitude	1	5.00	12	4.00
Counseling skills	9	4.57	19	3.75
Group intervention methods	15	4.43	25	3.63
Social skills training	2	4.86	8	4.13
Developing personal responsibility of students	2	4.86	25	3.63
Facilitating personal growth of students	15	4.43	12	4.00
Utilizing teaching resources available	26	4.00	19	3.75
First aid	30	3.71	31	2.50
Psychology	28	3.86	29	3.13
Integrating students to the mainstream	28	3.86	28	3.25
Model programs of other countries	30	3.71	29	3.13
Parent teacher relationships	9	4.57	19	3.75
Working with parents	5	4.71	19	3.75

	Female n=7		Male n=8	
	Rank	Mean	Rank	Mean
Role of a E/BD teacher	9	4.57	8	4.13
Personal growth of E/BD teacher	5	4.71	25	3.63
Stress management for E/BD teacher	9	4.57	17	3.88

The 31 knowledge/skills areas indicated as important by teachers of students with E/BD in Hong Kong were compared to the CEC statements (Swan & Sirvis, 1992) and the 201 statements addressed in the study of Bullock et al. (1994). The knowledge areas stated by Hong Kong teachers fell into similar categories, but three areas mentioned were clearly ignored by Hong Kong teachers. They were (a) screening/assessment, (b) evaluation, research, and technology, and (c) consultation and collaboration.

Research Question 2: In Which of the Areas Do Teachers of Students with E/BD Perceive Themselves to be Weak?

The average mean for perceived proficiency and importance was 3.01 and 4.12 respectively (see Table 3). A much lower mean for proficiency implied that teachers did not feel competent in using the knowledge areas stated though they perceived them as important. Areas in which teachers of students with E/BD in Hong Kong felt most competent were building up rapport with students, classroom teaching techniques, role of a E/BD teacher and classroom management. The weak areas, on the other hand,

included using group intervention methods, working with parents, integrating students to the mainstream and model programs of other countries. These areas should be given more emphasis in the training program to better equip teachers.

Analysis of the differences in settings teachers served showed that while the competent areas expressed by teachers were similar across settings, there were some differences in the less proficient areas (see Table 7). In addition to the common weak areas stated above, preparation programs for teachers of students with E/BD should pay special attention to the specific weak areas teachers from various settings had indicated. Teachers from Practical Schools were less proficient in social skills training and utilizing teaching resources available. For Social Development Schools, parent-teacher relationships and a whole school approach to discipline were weak areas. Setting up behavior norms, counseling skills, group intervention methods were noted by teachers of Boys' Home as weak. Teachers from Adjustment Units, on the other hand, indicated that they were not competent in using curriculum approaches, motivation strategies, and developing personal responsibility in students. These weak areas were also indicated by teachers from Hospital Schools. In addition, they felt less proficient in crisis management and management procedures when presented with a spontaneous problem.

Table 7

Rank Order and Means for Proficiency of Knowledge/Skills Areas for Different Settings

	Practical Schools N=7		Social Development Schools n=3		Boys' Home n=1		Hospital Schools n=1		Adjustment Units n=2	
	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean
Behavior characteristics of students with E/BD	15	3.00	1	3.50	16	3.00	3	3.00	9	3.00
Understanding behavior problems	10	3.13	20	3.00	10	3.50	3	3.00	9	3.00
Whole school approach in discipline	10	3.13	27	2.50	1	4.50	19	2.00	2	3.50
Setting up behavior norms in a new school	23	2.75	1	3.50	24	2.50	3	3.00	1	4.00
Discipline students with E/BD	21	2.88	1	3.50	16	3.00	3	3.00	9	3.00
Classroom management	1	3.50	1	3.50	10	3.50	3	3.00	9	3.00
Rules to modify deviant behavior	4	3.38	1	3.50	10	3.50	3	3.00	9	3.00

	Practical Schools N=7		Social Development Schools n=3		Boys' Home n=1		Hospital Schools n=1		Adjustment Units n=2	
	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean
Management procedures when presented with a spontaneous problem	6	3.25	1	3.50	16	3.00	19	2.00	9	3.00
Classroom teaching techniques	4	3.38	1	3.50	1	4.50	3	3.00	9	3.00
Curriculum approaches	10	3.13	20	3.00	5	4.00	19	2.00	28	2.00
Motivation strategies	6	3.25	1	3.50	5	4.00	19	2.00	24	2.50
Communication skills with students	6	3.25	1	3.50	16	3.00	3	3.00	2	3.50
Building up rapport with students	1	3.50	1	3.50	10	3.50	3	3.00	2	3.50
Handling problems in the classroom	15	3.00	1	3.50	10	3.50	3	3.00	2	3.50
Crisis management	21	2.88	20	3.00	1	4.50	19	2.00	9	3.00
Promoting positive student attitude	15	3.00	1	3.50	5	4.00	19	2.00	9	3.00
Counseling skills	6	3.25	20	3.00	24	2.50	3	3.00	2	3.50

	Practical Schools N=7		Social Development Schools n=3		Boys' Home n=1		Hospital Schools n=1		Adjustment Units n=2	
	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean
Group intervention methods	25	2.63	20	3.00	24	2.50	3	3.00	9	3.00
Social skills training	27	2.50	1	3.50	16	3.00	3	3.00	9	3.00
Developing personal responsibility in students	15	3.00	20	3.00	1	4.50	3	3.00	24	2.50
Facilitating personal growth of students	23	2.75	1	3.50	16	3.00	3	3.00	9	3.00
Utilizing teaching resources available	29	2.38	27	2.50	5	4.00	19	2.00	2	3.50
First aid	25	2.63	20	3.00	24	2.50	31	1.00	2	3.50
Psychology	27	2.50	1	3.50	24	2.50	1	4.00	24	2.50
Integrating students to the mainstream	31	1.88	1	3.50	10	3.50	19	2.00	28	2.00
Model programs of other countries	30	2.13	27	2.50	24	2.50	19	2.00	31	1.50
Parent teacher relationships	15	3.00	27	2.50	16	3.00	19	2.00	24	2.50

	Practical Schools N=7		Social Development Schools n=3		Boys' Home n=1		Hospital Schools n=1		Adjustment Units n=2	
	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean
Working with parents	15	3.00	27	2.50	30	2.00	19	2.00	24	2.50
Role of a E/BD teacher	1	3.50	1	3.50	5	4.00	3	3.00	9	3.00
Personal growth of E/BD teacher	10	3.13	1	3.50	30	2.00	19	2.00	9	3.00
Stress management for E/BD teacher	10	3.13	1	3.50	16	3.00	1	4.00	9	3.00

Responses from qualified and unqualified teachers in regard to perceived areas of weaknesses were similar (see Table 8). Analysis of gender difference in response revealed little between group differences (see Table 9).

Table 8

Rank Order and Means of Proficiency of Knowledge/Skills area of Qualified and Unqualified Teachers

	Unqualified Teachers n=5		Qualified Teachers n=10	
	Rank	Mean	Rank	Mean
Behavior characteristics of students with E/BD	12	3.20	15	3.00
Understanding behavior problems	12	3.20	8	3.10
Whole school approach in discipline	21	3.00	4	3.30
Setting up behavior norms in a new school	12	3.20	17	2.90
Discipline students with E/BD	12	3.20	17	2.90
Classroom management	1	3.60	4	3.30
Rules to modify deviant behavior	1	3.60	7	3.20
Management procedures when presented with a spontaneous problem	7	3.40	15	3.00
Classroom teaching techniques	7	3.40	1	3.50
Curriculum approaches	12	3.20	17	2.90
Motivation strategies	7	3.40	8	3.10

	Unqualified Teachers n=5		Qualified Teachers n=10	
	Rank	Mean	Rank	Mean
Communication skills with students	1	3.60	8	3.10
Building up rapport with students	1	3.60	2	3.40
Handling problems in the classroom	7	3.40	8	3.10
Crisis management	21	3.00	8	3.10
Promoting positive student attitude	1	3.60	17	2.90
Counseling skills	12	3.20	8	3.10
Group intervention methods	21	3.00	26	2.60
Social skills training	26	2.80	21	2.80
Developing personal responsibility in students	12	3.20	8	3.10
Facilitating personal growth of students	12	3.20	21	2.80
Utilizing teaching resources available	28	2.60	21	2.80
First aid	26	2.80	26	2.60
Psychology	28	2.60	21	2.80
Integrating students to the mainstream	30	2.40	30	2.30
Model programs of other countries	30	2.40	31	2.00

	Unqualified Teachers n=5		Qualified Teachers n=10	
	Rank	Mean	Rank	Mean
Parent teacher relationships	12	3.20	26	2.60
Working with parents	21	3.00	29	2.50
Role of a E/BD teacher	1	3.60	2	3.40
Personal growth of E/BD teacher	7	3.40	25	2.70
Stress management for E/BD teacher	21	3.00	4	3.30

Table 9

Rank Order and Means for Proficiency of Knowledge/Skills Areas by Gender

	Female N=7		Male N=8	
	Rank	Mean	Rank	Mean
Behavior characteristics of students with E/BD	16	3.00	8	3.13
Understanding behavior problems	13	3.14	8	3.13
Whole school approach in discipline	4	3.43	14	3.00
Setting up behavior norms in a new school	7	3.29	26	2.75

	Female N=7		Male N=8	
	Rank	Mean	Rank	Mean
Discipline students with E/BD	16	3.00	14	3.00
Classroom management	4	3.43	3	3.38
Rules to modify deviant behavior	13	3.14	1	3.50
Management procedures when presented with a spontaneous problem	7	3.29	14	3.00
Classroom teaching techniques	1	3.86	8	3.13
Curriculum approaches	13	3.14	20	2.88
Motivation strategies	2	3.57	20	2.88
Communication skills with students	7	3.29	6	3.25
Building up rapport with students	4	3.43	1	3.50
Handling problems in the classroom	16	3.00	3	3.38
Crisis management	16	3.00	8	3.13
Promoting positive student attitude	16	3.00	6	3.25
Counseling skills	7	3.29	14	3.00
Group intervention methods	27	2.57	20	2.88
Social skills training	23	2.71	20	2.88

	Female N=7		Male N=8	
	Rank	Mean	Rank	Mean
Developing personal responsibility in students	7	3.29	14	3.00
Facilitating personal growth of students	23	2.71	8	3.13
Utilizing teaching resources available	29	2.43	14	3.00
First aid	23	2.71	28	2.63
Psychology	27	2.57	20	2.88
Integrating students to the mainstream	30	2.00	28	2.63
Model programs of other countries	31	1.86	31	2.38
Parent teacher relationships	22	2.86	26	2.75
Working with parents	23	2.71	28	2.63
Role of a E/BD teacher	2	3.57	3	3.38
Personal growth of E/BD teacher	16	3.00	20	2.88
Stress management for E/BD teacher	7	3.29	8	3.13

Research Question 3: What are the Learning Outcomes of Problem-Based Learning in the Training of Teachers of Students with E/BD?

The overall results of PBL, which would be delineated under research questions three to five, were very encouraging. Quantitative data collected through questionnaire

C were computed using a SPSS program. Subjects' mean ratings on a likert scale of 5 (highest) to 1 (lowest) for each question were presented in Table 10. Qualitative data, which included the free comments of questionnaire C, opinions obtained from interviews, and observations of the facilitator during the teaching sessions, were analyzed and translated to English. The expressions teachers used were retained as far as possible but similar ideas would be combined together. These comments were presented as quotations to reflect clearly what Hong Kong teachers felt. Because of the exploratory nature of the study, the opinions of teachers were considered valuable.

Table 10

Results of PBL

								Mean
1. Did you find the learning approach interesting?	very much	5	4	3	2	1	not at all	3.67
2. Have you enjoyed the learning process?	very much	5	4	3	2	1	not at all	3.8
3. Did you find that focusing on real problems made the training more relevant to teachers of students with E/BD?	very much	5	4	3	2	1	not at all	4.3
4. Did working in groups mean that you learned from each other?	very much	5	4	3	2	1	not at all	3.67

								Mean
5. Have you understood the learning material better than if it had been lectured in the conventional way?	much better	5	4	3	2	1	not at all	3.87
6. Do you think you have learned as much as you would on a conventional lecture course?	much more	5	4	3	2	1	not at all	3.4
7. Considering the material you have learned, do you think you have learned it more thoroughly than you would on a conventional course?	much better	5	4	3	2	1	not at all	3.8
8. Has this approach taken you more or less time in preparation work than other conventional lecture methods?	Much more	5	4	3	2	1	not at all	4.2
9. Has this approach helped you to develop self-directed learning skills effectively?	very much	5	4	3	2	1	not at all	4
10. Does this approach facilitate improved use of information resources?	very much	5	4	3	2	1	not at all	3.67
11. Does this approach encourage you to explore deeper into issues than the	much more	5	4	3	2	1	not at all	4

								Mean
conventional lecture courses?								
12. Is the problem lesson selected appropriate?	very appropriate	5	4	3	2	1	not at all	3.93
13. Do you agree to introduce more problem-based learning into the training course?	very much	5	4	3	2	1	not at all	4.13
14. Are you satisfied with the assessment methods used?	very much	5	4	3	2	1	not at all	3.6
15. Do you receive sufficient direction during the learning process?	very much	5	4	3	2	1	not at all	3.34

As shown in Table 10, questions 1-3, teachers found the PBL approach very interesting. They enjoyed the learning process and found it of high relevance to training teachers of students with E/BD. The mean ratings were 3.67, 3.8 and 4.3 respectively. For question 13, the mean rating was 4.13, showing that teachers highly recommended PBL for training teachers of students with E/BD in Hong Kong. The free comments of teachers were very revealing. Comments expressed by over 46% of teachers were quoted below:

(a) 'A lively approach that makes you think deeply, involve personally and participate actively'.

(b) 'It is very good for training teachers of students with E/BD; it puts you into the situation and makes you work'.

(c) 'Since this is a new approach, we get lost at first. Gradually, we built up immense interest in it'.

(d) 'Having a problem as the focus of learning gives you a sense of direction for exploration'.

(e) 'As students had to search for the knowledge and the answer, this gives us personal relevance and meaning in learning'.

(f) 'The lesson chosen is real, unrehearsed, and very typical of E/BD classes'.

(g) 'With PBL, students have to face real practical issues in the classroom, propose practical solutions to resolve them'.

(h) 'This approach creates group dynamics. Not every member of the class views the same. Through bombarding others' ideas, we learn much more'.

(I) 'For some areas, like classroom management, there are a lot of materials. This PBL makes you focus on selective aspects of classroom management. The materials become more relevant to you'.

(j) 'We have to use more time but at the same time we gain more'.

Research Question 4: <u>What are the Skills Developed Through the Problem-Based Learning Approach?</u>

The specific skills developed through PBL included the skills involved in group learning, self-directed learning, use of information resources and problem-solve, analytical skills (questions 4, 9-11 of Table 10). Teachers rated as high as 3.67, 4, 3.67,

4 on average for these skills respectively. Over 80% of teachers made the following comments:

(a) 'This method not only encourages students to use knowledge to solve problem, it helps self-initiation in learning'.

(b) 'It helps to develop students' cognitive ability, especially high-level cognitive function'.

(c) "Students will learn 'how to learn' which is more important than learning 'knowledge'".

Research Question 5: <u>What are the Merits/Demerits of Problem-Based Learning in Training Teachers of Students with E/BD as Compared to Traditional Lecture Methods?</u>

The merits and demerits of PBL were expressed succinctly by teachers in the interviews. They also gave high ratings to questions 5-8, as shown in Table 10, showing that with PBL, they understood learning materials much better, learned more than conventional lecture method and learned more thoroughly. PBL, however, took them more time in preparation work. The free comments expressed by the majority of teachers were grouped under (a) satisfying aspects, (b) dissatisfying aspects, and (c) suggestions for improvement.

<u>Satisfying aspects</u>

(a) 'Compare to conventional approaches, PBL gives you more sensory input and opportunities for application of knowledge'.

(b) 'We get exposed to more knowledge than ordinary lecture methods'.

(c) 'This approach helps you to be analytical, insightful, and internalized knowledge'.

(d) 'With PBL, we have to brainstorm, challenge, reflect and apply knowledge; this is more beneficial to us'.

(e) 'Group learning is very valuable. Through group learning, you get exposed to more ideas and also the chance to correct one's own wrong beliefs'.

(f) 'With a problem as a focal point, learning becomes faster, and we gain much more'.

(g) 'Much of the learning process is controlled by the students, this is very good'.

Dissatisfying aspects

(a) 'At the beginning, the psychological preparation is not adequate. We are so used to conventional approaches'.

(b) 'We are not used to the rule, such as silence means agreement. We don't feel comfortable to be challenged. We need to learn the skills for PBL first'.

(c) 'Chinese people tend to be modest, cautious, respectful of others and do not like to challenge people. Hence, our classmates do not like to challenge ideas; maybe this is Hong Kong culture. Another underlying reason maybe that there are individual differences. Some classmates may be better in professional knowledge, they are afraid they may be laughed at by others'.

(d) 'There are not enough resources for PBL'.

Suggestions for improvement:

(a) 'This approach requires some basic knowledge of the subject. Moreover, we are not used to challenge others'.

(b) 'A lot of issues are related to the problem and there is not enough time to search for materials. The self-learning period should be extended'.

(c) 'We need more instructions. We felt at a loss at the beginning and a bit frustrated'.

(d) 'Should video several lessons of the class and the teacher, then we can make judgement as to how we should proceed'.

(e) 'Students are grouped together for self-learning and this may create problem as some classmates have higher abilities. It is not fair if you are grouped with one with a relatively low ability'.

In summary, the opinions of teachers obtained from the questionnaire, interview, and observations appeared to confirm that PBL was well received by teachers. Within a short trial period, teachers could already observe benefits of the approach on their professional training. They also put forward valuable suggestions for further research. It was the first time that teachers were invited to make suggestions in the design of training activities. Teachers felt that they could contribute to the development of the training program. The interest and initiation shown by teachers throughout the research process were very encouraging.

CHAPTER 5

SUMMARY AND RECOMMENDATIONS

This study grew out of a concern about deficiencies of current programs in higher education in preparing teachers of students with emotional and behavioral disorders (E/BD). Teachers were found to be inadequate in employing research based instructional and curriculum approaches even after training. It was hypothesized that the challenging classrooms for students with E/BD demanded a training strategy that promoted active engagement of teachers in constructing knowledge for application. The Problem-Based Learning (PBL) approach appears to offer attractive premises for training teachers of students with E/BD. This research was designed (a) to explore the perceived value of PBL, and (b) to acquire data on the training needs of teachers in Hong Kong.

This study had special meaning for the E/BD field in Hong Kong which is now at the crossroad. In an attempt to cope with behavioral problems in the mainstream, the Hong Kong Government of the Special Administrative Region creates new labels for students with E/BD to justify more segregated educational provisions, such as Practical Schools and Skills Opportunity Schools. These settings are staffed by teachers who have expressed inadequacies in handling students with E/BD. Educators responsible for training programs need to rethink how teachers of students with E/BD in Hong Kong should be trained rather than merely relying on approaches borrowed

from the west. Data accrued from this study should be valuable in guiding such efforts. This section delineates limitations, summarizes the results of the study and implications, and proposes areas for future research.

Limitations of the Study

The author recognizes the limitations inherited in the research design which leave findings open to questions. First, this study only assessed the perceptions of teachers to PBL. No effort had been made to evaluate the impact of the approach on the actual performance of teachers in the classroom. The author also recognizes that data were collected from a small group of teachers over a relatively short period of time. Besides, this study did not employ a control group; this raised the possibility of sample bias and problems with generalizability.

Despite the constraints, the author wishes to ascertain the value of the study. Since the subjects were all experienced teachers in the field of E/BD, they should be able to render fair judgement of the PBL approach. Teachers who participated in the research had served in different special education settings for students with E/BD, the specific needs of the various setting were well represented. Besides, the research was conducted in Hong Kong, the results obtained would thus be of high relevance to the local context. The implications for academicians and others involved in teacher preparation in the area of E/BD should not be neglected.

Summary of Results

Critical training elements

Since the first study in 1957 by Mackie et al. (1957), there has been a gradual increase in the number of competencies needed for teachers of students with E/BD.

Recently, Bullock et al. (1994) depicted 201 knowledge/skills statements and 11 knowledge/skills categories. The marked increase in the number of knowledge/skills needed highlighted complex demands of E/BD programs.

This research is the first attempt in Hong Kong to solicit opinions directly from frontline teachers working with students with E/BD. A total of 31 knowledge/skills areas were indicated. Compared with studies in America (e.g., Bullock et al., 1974; 1994), it may not be comprehensive enough for guiding the development of preparation programs. However, it represented the specific and selective needs of teachers from heterogeneous service environments in Hong Kong. Once identified, effort should be made to shape the content of preparation programs in accordance with the needs of teachers and develop appropriate resources for each of the training areas. Besides equipping teachers with the foundation knowledge, it is important to give consideration to the professional needs of teachers as relate to the setting they serve. Moreover, a continued dialogue should be maintained with frontline teachers to ensure the appropriateness of training.

The ranking or priorities expressed by teachers in Hong Kong denoted differences in emphasis between the two countries. Throughout the past three decades, the management of student behavior has been ranked high in importance for teachers working with students with E/BD in America (Bullock et al., 1994). Teachers in Hong Kong, however, gave equal emphasis to classroom teaching techniques and classroom management. This may be due to the fact that Hong Kong does not recommend individual education plans (IEPs) or behavior plans for students with E/BD and the main role of teachers of students with E/BD is to teach. This study further revealed

areas that teachers felt less proficient. The weak areas deserve special attention in the design of training activities.

As expressed earlier, the growth of E/BD programs in Hong Kong has exerted tension in teacher preparation programs. The problem is accentuated by the fact that many teachers are being employed under alternative certification programs. Almost one third of the subjects who were recommended by their school heads to undergo special education training in the Institute were unqualified teachers without training in education. The diverse background of teachers employed to work with students with E/BD implies that a comprehensive training curriculum is not sufficient for effective preparation of teachers. It is important that teachers should be given the opportunity to personalize their learning by focusing on areas that pertain to gaps in their own professional background. It calls for a training strategy that would facilitate the needs of teachers and the PBL approach displays such characteristics.

In concluding, the knowledge/skills areas identified in this study should be a valuable resource for educators involved in the preparation of teachers of students with E/BD. In Hong Kong, the in-service program for special education teachers as well as pre-service general education programs should give due consideration to these knowledge/skills areas.

Approach to training

The PBL experience rendered by this research offered insights to how teachers of students with E/BD should be trained in Hong Kong. As presented in Chapter IV, PBL was well received by the majority of teachers. Detailed analysis revealed that several reasons may account for the popularity of PBL:

1. Most teachers, in their second semester of training, were already fed up with the predominately lecture method and receiving prescriptions. They longed for a new approach and were delighted to participate in PBL.
2. There was a gap in the professional knowledge of teachers in the class. Some of them did not have any training in education and they appreciated a learning approach that would provide them with opportunities for sharing and learning from each other.
3. The problem lesson used in PBL arouses interest and incentive in teachers to explore reasons and possible action to resolve the situation. Many teachers viewed the video over and over in search of the answers. They also discussed with their partners with immense interest.
4. The PBL approach was considered challenging, useful and practical. It appeared that teachers of students with E/BD were more concerned with practical issues and teaching methods that could be conducted with their own students.
5. Most teachers were matured and experienced teachers. They enjoyed self-learning and more opportunities to search for resources in the library and computer databases that were of relevance to them.

Clearly, teachers of students with E/BD had unique training needs arising from diverse service settings, student behavior problems and characteristics and teachers' own background knowledge. They valued a training approach that would facilitate the construction and application of knowledge in practical classrooms for students with

E/BD. Moreover, the approach should be challenging, resourceful and enriching; the PBL approach appeared to be promising in these aspects.

Implications

The findings of this research study had implications for educators who are responsible for training teachers, heads of schools in charge of staff development and staff induction for E/BD programs, and teachers of students with E/BD in Hong Kong. The research had highlighted the fact that classrooms for students with E/BD were dynamic and challenging. Students with E/BD exhibited a range of problem behaviors which require teachers to respond spontaneously. Educators involved in planning programs for teachers of students with E/BD should:

1. Critically review the existing curriculum and training activities for programs at both pre-service and inservice level.
2. Consider seriously a change in paradigm or training strategy that facilitates teachers of students with E/BD to apply knowledge to classroom needs. The current lecture-based approach which focussed on giving prescriptions of effective teaching may not be effective in preparing teachers to respond to the needs of students with E/BD in Hong Kong.
3. Incorporate knowledge and skills in the training program that relate to the realities of classrooms for E/BD students.

At present, full training is only provided by the Government for teachers who have served in special education settings for students with E/BD for a period of time. Hence, before teachers have the chance to receive formal training, short induction program as well as on-going staff development program should be organized by heads

of schools. The training needs identified in this research study should be given due consideration by heads of schools in organizing programs for teachers.

In view of the changing needs of students with E/BD, it is important that teachers of students with E/BD should continue to apply problem-based learning techniques in their schools after training. These techniques should be valuable for teachers in attempts to handle behavior problems and other learning issues in the classroom.

Recommendations

From experience gained in this research study, a number of recommendations could be made for future efforts in PBL. First, if the problem to be studied was video taped, additional information about the class should also be provided for teachers. Most teachers in the research expressed that they could only observe the video lesson. They knew nothing about the class, the ethos of the school or the style of the teacher. Also, they were not provided with the lesson plan, teaching materials or worksheets. All these would affect their full understanding of the lesson. Besides, the lesson was recorded by a camera man in the classroom. To a certain extent, students were affected by the recording. However, teachers could not estimate the effect the recording had on the emotion and behavior of students. Would they behave differently if the lesson was not recorded?

Secondly, if PBL was to be carried out, the curriculum of the three specialist modules designed for teachers of students with E/BD need to be restructured. In studying the problem lesson, a lot of issues covered by the other specialist modules, such asthe management of problem behavior, working with parents, school ethos,

were also related. It gave more meaning to teachers in using PBL if the curriculum was integrated around problem issues. Preferably, these problems should represent what teachers in different settings had to resolve.

Thirdly, the majority of teachers involved in this research exercise had expressed that they were inadequate in analytical skills. Because of the Chinese culture, they found that they were reluctant to challenge others or their ideas. Most of them had the concept that several skills, such as analyzing and evaluating ideas, for PBL needed to be taught to students. They seemed to indicate that more preparation work was required for PBL to be conducted successfully.

Lastly, the impact PBL had on teachers' classroom performance should be evaluated. A one to two year follow-up study should be useful in evaluating the effects of the approach on teachers' responses to students with E/BD in Hong Kong.

In summary, although the PBL exercise initiated was the first trial and that students had not been fully prepared, it sparked off insightful review of how teachers of students with E/BD in Hong Kong should be prepared in the long run. During the research exercise, there were frequent professional exchanges between frontline teachers on training and educators responsible for designing the training program. It was conceived that the PBL approach was an effective means for educators and teachers to share, explore, and learn from each other how students with E/BD should be handled. This way, theories established and instructional and curriculum approaches derived from research in the E/BD field become more meaningful and personal to teachers.

APPENDIX

APPENDIX A

Assessment Guidelines for Problem-Based Learning

MAL 3

TEACHING STUDENTS WITH EMOTIONAL AND BEHAVIORAL PROBLEMS

Assignment (100%)

During the problem-based learning process, your task is to work with other students in groups of three to propose a strategy to resolve the learning situation presented in the video. You and your group members should make use of the self-directed learning period to explore and study resources available. The knowledge acquired by this study should be applied back to the problem to generate hypotheses. Hypotheses generated should be discussed and challenged, leading to new hypotheses and a final recommended solution.

The group should submit a report on the whole process. It is suggested that the report could include:

(a) An analysis of the learning situation presented in the video, highlighting learning characteristics of students and possible reasons that give rise to problems in the learning process;
(b) A comprehensive summary and an evaluation of the resources the group has studied;
(c) The various hypotheses the group has generated in regard to the problems identified and the action recommended. It would be meaningful if the group also try to evaluate the impact the action plan might have on the students and the teacher concerned.

Assessment will be based on students' performance in two main areas:

(a) self-directed learning
(b) problem-solving

This assignment is due on Week 11

APPENDIX B

Questionnaire B

Training Teachers of Students with Behavioral Disorders in Hong Kong

As teachers of students with emotional and behavioral problems (E/BD) in Hong Kong, you may encounter difficulties in handling students in schools. How could the training course help you and what learning areas should be included in the course? Please take a few minutes to complete this questionnaire. Your opinions are highly valued! They will help teacher educators in designing programs for teachers.

School: SOS / PS / SD / Boys' Home / Girls' Home / Hospital School

Teaching experience (no of years): .....

- Present teaching school ☐
- Other special education settings ☐
- Ordinary school ☐

Gender: F/M

Age range: 20-25 ☐
26-30 ☐
31-35 ☐
36-40 ☐
41+ ☐

Academic qualification:

- Teacher's certificate ☐
- Degree in education ☐
- Degree in other subject discipline ☐
- Post-degree qualifications ☐

For the learning areas listed below, use a 5-point scale to indicate:

(a) how important you believe each item is, and
(b) how proficient you feel in using them.

	5(high) Importance	1(low) Proficiency
Behavior characteristics of students with E/BD	☐	☐
Understanding behavior problems from a wider perspective	☐	☐
Whole school approach in disciplinary method	☐	☐
Setting up norms of behavior in a new school	☐	☐
Discipline students with E/BD	☐	☐
Classroom management	☐	☐
Behavior management with rules and positive/negative consequences to modify deviant behaviors	☐	☐
Management procedures when presented with a spontaneous management problem	☐	☐
Classroom teaching technique for students with E/BD	☐	☐
Curriculum approaches to students with E/BD	☐	☐
Motivation strategies for students with E/BD	☐	☐
Communication skills with students with E/BD	☐	☐
Building up rapport with students	☐	☐
Handling behavior problems in the classroom	☐	☐
Crisis management of students with E/BD	☐	☐
Promoting positive student attitude	☐	☐
Counseling skills	☐	☐
Group intervention methods	☐	☐
Social skills training for students with E/BD	☐	☐
Developing personal responsibility in students with E/BD	☐	☐
Facilitating personal growth of students with E/BD	☐	☐
Utilizing teaching resources from government or voluntary agencies	☐	☐
Fist aid	☐	☐
Psychology	☐	☐
Integrating students with E/BD to the mainstream	☐	☐
Model programs of other countries	☐	☐
Parent teacher relationship in a special school	☐	☐
Working with parents	☐	☐
Role of a E/BD teacher	☐	☐
Personal growth of teacher of EBD	☐	☐
Stress management and relaxation methods for teachers of students with E/BD	☐	☐

APPENDIX C

Questionnaire A

Teaching students with emotional and behavioral problems

Teaching experience (no of years):

Ordinary schools: _____
Special schools: _____

Age range:
20-25 _____
25-30 _____
30-40 _____
40+ _____

Academic qualification:
Teacher's certificate _____
Degree in education _____
Degree in other subject discipline _____
Post-degree qualifications _____

What areas do you think teachers of students with E/BD need to learn regarding teaching students with E/BD?

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Have you been involved in any problem-based learning activity? Yes _____ No _____

Have you ever heard of problem-based learning? Yes _____ No _____

APPENDIX D

Questionnaire C

Problem-based learning

After a 4-week session of problem-based learning, what do you think of this approach in the training of teachers of students with emotional and behavioral problems (E/BD) in Hong Kong. Please take a few minutes to complete this questionnaire. Your opinion will help in the future development of the Course. Thank You!

School: SOS / PS / SD / Boys' Home / Girls' Home / Hospital School / Adjustment Unit

Teaching experiences (no. of years):
- Present teaching school ☐
- Other special education settings ☐
- Ordinary school ☐

Gender: F ☐ M ☐

Age range:
- 20-25 ☐
- 26-30 ☐
- 31-35 ☐
- 36-40 ☐
- 41+ ☐

Academic qualifications:
- Teacher's certificate ☐
- Degree in education ☐
- Degree in other subject discipline ☐
- Post-degree qualifications ☐

Did you find the learning approach interesting? very much 5 4 3 2 1 not at all

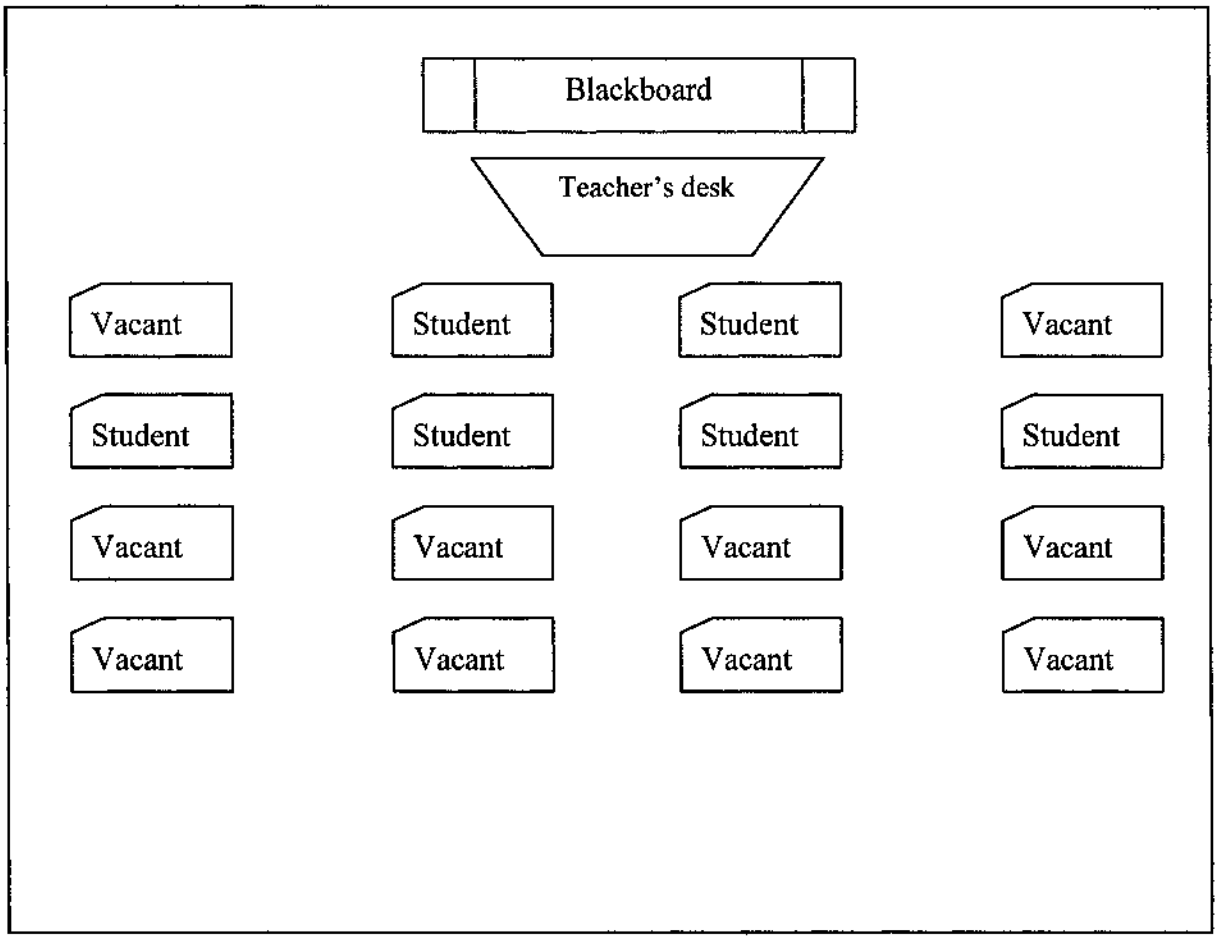
Have you enjoyed the learning process? very much 5 4 3 2 1 not at all

Did you find that focusing on real problems made the training more relevant to teachers of students with E/BD? very much 5 4 3 2 1 not at all

Did working in groups mean that you learned from each other?	very much 5 4 3 2 1 not at all
Have you understood the learning material better than if it had been lectured in the conventional way?	very much 5 4 3 2 1 not at all
Do you think you have learned as much as you would on a conventional lecture course?	very much 5 4 3 2 1 not at all
Considering the material you have learned, do you think you have learned it more thoroughly than you would on a conventional course?	very much 5 4 3 2 1 not at all
Has this approach taken you more or less time in preparation work than other conventional lecture methods?	very much 5 4 3 2 1 not at all
Has this approach helped you to develop self-directed learning skills effectively?	very much 5 4 3 2 1 not at all
Does this approach facilitate improved use of information resources?	very much 5 4 3 2 1 not at all
Does this approach encourage you to explore deeper into issues than the conventional lecture courses?	very much 5 4 3 2 1 not at all
Is the problem lesson selected appropriate?	very appropriate 5 4 3 2 1 not at all
Do you agree to introduce more problem-based learning into the training course?	very much 5 4 3 2 1 not at all
Are you satisfied with the assessment methods used ?	very much 5 4 3 2 1 not at all
Do you receive sufficient direction during the learning process?	very much 5 4 3 2 1 not at all

APPENDIX E

Seating Arrangement of the Lesson Recorded



Appendix F

Transcription of the Problem Lesson

	Summary of key teaching episodes (T = Teacher, S = Student)	Observation
1	T: What do you think his response is ?	
	T: I like …….	Teaching a sentence pattern
	T: What do you think she will choose?	
	T: I like strawberry ice cream.	Teaching a sentence pattern
2	T searching the answer from the blackboard	Helping students to complete the worksheet
	S: Le mon T: Lemon	Correcting students' error in pronounciation
	T: (Referring to a student) Go back to your seat.	Maintaining discipline in the classroom
3	T: I like mango very much	Sharing experience with students
	T: Mango desert	Giving more information
	T: What kind of drink would you like?	Teaching a sentence pattern
	S: 'all ling gue' T: Should be 'orange'	Correcting student error
	T: (Referring to a student) …Go back to your seat…..sit down	Maintaining discipline in the classroom
	S: X Y Z (Chinese foul language)….Sorry…..	
	T: (Laughing) OK, sit down. How can I not punish you. Your punishment is to copy your book. (Teacher does not give specifics or carry out the punishment)	Responding to problem behavior in a inconsistent manner
4	T: ……I like tea…..	Teaching a sentence pattern
	T: Student Ho Sze Chung is very good today. You are very smart today. Thank you	Giving verbal praise
5	(One student came out of his seat to ask the teacher about a word on the blackboard. Then he copied from the blackboard. Then he asked for teacher's permission to go to the washroom).	Helping a student to complete worksheet.
	T: You must return within 1 min 30 sec. Anybody got a stopwatch here?	Maintaining discipline
6	T: (Referring to a student) Ng Wing Yan, would you sit down.	Teaching a sentence pattern
	T: Would you like?	Teaching a sentence pattern

7	T: (Responding to a question raised by a student Chan Pak Kee) Sometimes in reading English, you have to blend some words, e.g. thank_you. Chinese is different. You have to read individual words, e.g. thank you	Taking care of individual students
8	T: What kind of food would you like?	Teaching a sentence pattern
	T: I like desert.	Sharing personal experience with student
9	T: What kind of desert would you like? S: Mango.	Teaching a sentence pattern
	T: Ho Sze Chung like mango ice cream.	Teaching a sentence pattern
	T: (Referring to a student) Chan Pak Kee, what kind of flavor you like for your ice cream.	Teaching a sentence pattern
10	(Students tried to respond to teacher's question) S: Mango, water melon (in Chinese)	Teacher a sentence pattern
	T: You like all kinds of ice cream	Teaching a sentence pattern
11	T: If you don't know the word in English, tell me the Chinese word. S: (In Chinese) iced red bean.	Trying to motivate students
	T: Iced red bean.... Not Mr. Bean.	Teaching a sentence pattern
12	S: Chocolate	
	T: Chocolate ice cream, Vanilla ice cream.	
	(Teacher discussed with students different ice cream flavour including ice cream cone).	Trying to motivate students' interest in learning by referring to their personal experience
13	T: Sundae S1: Sun means the sun. Sunday is 'Sunday' not ice cream. S2: Sundae means telephone. T: Sundae is ice cream with a biscuit on top.	Trying to arouse students' learning interest
14	(One student going to the back of the class to talk to the camera man) S: When do you start recording? Is it when we misbehave? S: (Looking at the camera, flicking) Can you see my eye?	Student exhibiting testing behavior
15	T: (Referring to a student) Wong Hon Ming, sit down.	Maintaining class discipline

16	T: I don't like to add milk to my ice cream.	Sharing personal experience with students
17	T: The sugar like substance should be read as 'Syrup'	Teaching a vocabulary
18	T: Do you like to go to McDonald? S: I go there every day. It is very good.	Trying to arouse students' interest by referring to their daily experience
	T: What kind of dessert would you like?	Teaching a sentence pattern
19	T: Anything else, what about pudding?	Sharing experience
	S: I have mentioned that already. S: I like to eat…… snake, dog meat, goat,……..	
20	T: Can you respect others and talk in turn please. Put up you hand when you want to say something.	Maintaining order in the classroom
	T: Keep quiet.	
	S: (Without putting up his hand as told) Milk. (However, teacher accepted his answer)	Responding to problem behavior in a inconsistent manner.
21	S1: (Whistling) Women's milk? S2: beancurb, sega.	Testing behavior of students
22	T: Time's up (Both teacher and students appeared to lose self-control) S: Camera man please record this.	Losing control of classroom order
23	T: Those who have not finished please continue tomorrow.	Giving instruction
24	S: Miss, how long does it take to go to Tuen Mun?	Sharing information with a student. Indication of good teacher student rapport
25	T: (referring to a student) you did very well to-day, very attentive.	Giving positive reinforcement
26	T: Hand in your book please. S: I have lost mine. T: You would be punished. (after a while) S: Miss, I found my book.	Correcting misbehavior of students

27	T: (about to make some announcements of the Sports day) S: Bishet. T: Is it that you don't want to go for your break? If not, please keep quiet? T: I must also announce the name of the student who will be nominated for "going out for lunch". T: Would you like to guess first? T: It is the student who has received the least punishment. He behaved well in the assembly from the beginning of the semester up to now. T: (Pointing to the student) You. S: Oh, me! T: Yes, you. T: The test tomorrow is on p. 16, Book 5A.	Losing control of classroom discipline

REFERENCES

Advocacy in action. (1995, November). CEC Today, 2, 4-5.

Albanese, M.A., & Mitchell, S. (1993). Problem-based learning: A review of literature on its outcomes and implementation issues. Academic Medicine, 68(1), 52-81.

Barrows, H.S. (1985). How to design a problem-based curriculum for the preclinical years. New York: Springer.

Barrows, H.S. (1986). A taxonomy of problem-based learning methods. Medical Education, 20, 481-486.

Barrows, H.S., & Myers, A.C. (1993). Problem based learning in secondary schools. Unpublished monograph. Springfield, IL: Problem Based Learning Institute, Lanphier High School, and Southern Illinois University Medical School.

Barrows, H.S., Myers, A., Williams, R.G., & Moticka, E.J. (1986). Large group problem-based learning: A possible solution for the '2 sigma problem'. Medical Teacher, 8, 325-331.

Barrows, H.S., & Tamblyn, R. (1980). Problem-based learning: An approach to medical education. New York: Springer.

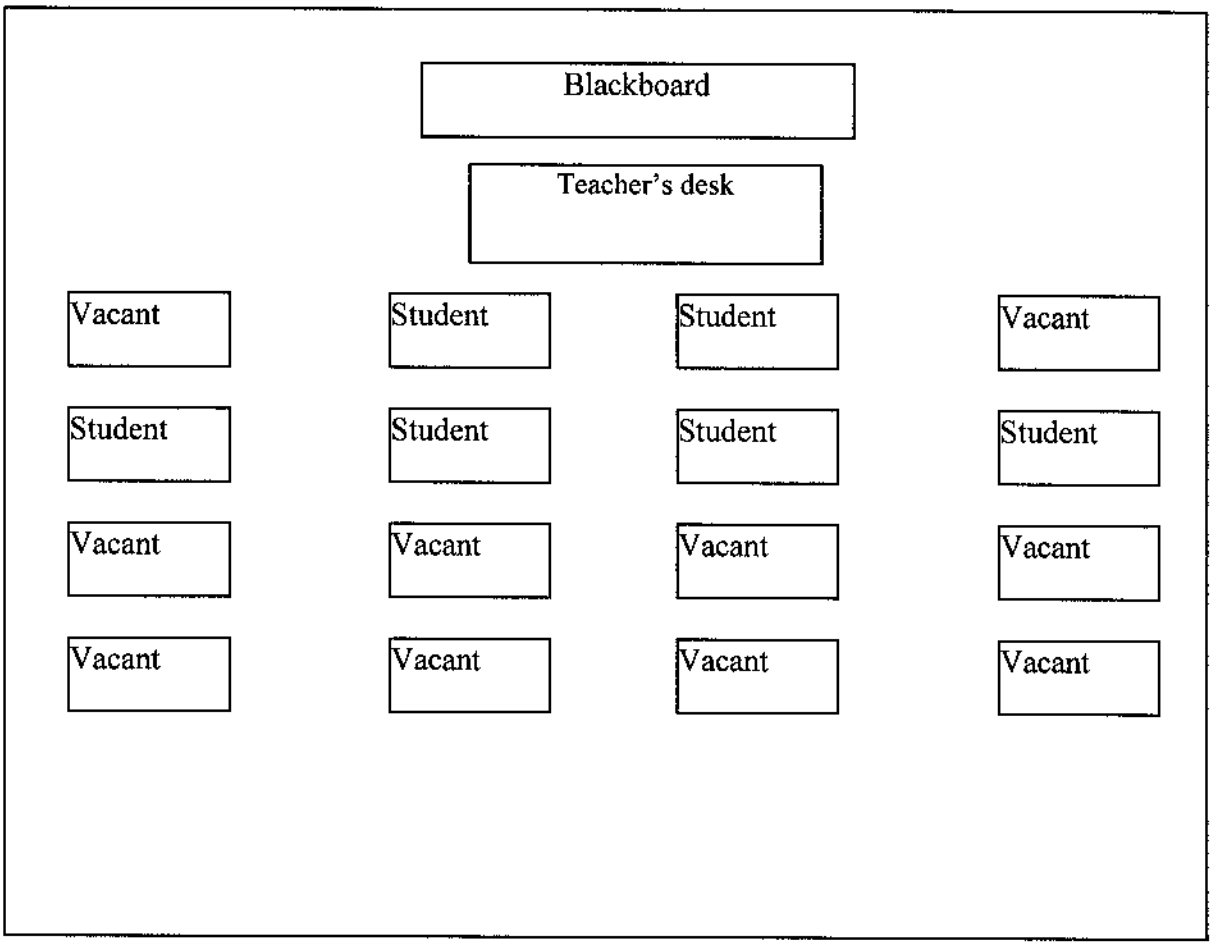
Benor, D.E. (1984). An alternative, non-brunerian approach to problem-based learning. In H.G. Schmidt, & M.L. de Volder (ed.), Tutorials in problem-based learning. Maastricht, The Netherlands: Van Gorcum, Assen.

Birch, W. (1986). Toward a model for problem-based learning. Studies in Higher Education, 11, 73-82.

Did working in groups mean that you learned from each other?	very much 5 4 3 2 1 not at all
Have you understood the learning material better than if it had been lectured in the conventional way?	very much 5 4 3 2 1 not at all
Do you think you have learned as much as you would on a conventional lecture course?	very much 5 4 3 2 1 not at all
Considering the material you have learned, do you think you have learned it more thoroughly than you would on a conventional course?	very much 5 4 3 2 1 not at all
Has this approach taken you more or less time in preparation work than other conventional lecture methods?	very much 5 4 3 2 1 not at all
Has this approach helped you to develop self-directed learning skills effectively?	very much 5 4 3 2 1 not at all
Does this approach facilitate improved use of information resources?	very much 5 4 3 2 1 not at all
Does this approach encourage you to explore deeper into issues than the conventional lecture courses?	very much 5 4 3 2 1 not at all
Is the problem lesson selected appropriate?	very appropriate 5 4 3 2 1 not at all
Do you agree to introduce more problem-based learning into the training course?	very much 5 4 3 2 1 not at all
Are you satisfied with the assessment methods used ?	very much 5 4 3 2 1 not at all
Do you receive sufficient direction during the learning process?	very much 5 4 3 2 1 not at all

APPENDIX E

Seating Arrangement of the Lesson Recorded



Appendix F

Transcription of the Problem Lesson

	Summary of key teaching episodes (T = Teacher, S = Student)	Observation
1	T: What do you think his response is ?	
	T: I like …….	Teaching a sentence pattern
	T: What do you think she will choose?	
	T: I like strawberry ice cream.	Teaching a sentence pattern
2	T searching the answer from the blackboard	Helping students to complete the worksheet
	S: Le mon T: Lemon	Correcting students' error in pronounciation
	T: (Referring to a student) Go back to your seat.	Maintaining discipline in the classroom
3	T: I like mango very much	Sharing experience with students
	T: Mango desert	Giving more information
	T: What kind of drink would you like?	Teaching a sentence pattern
	S: 'all ling gue' T: Should be 'orange'	Correcting student error
	T: (Referring to a student) …Go back to your seat…..sit down	Maintaining discipline in the classroom
	S: X Y Z (Chinese foul language)….Sorry…..	
	T: (Laughing) OK, sit down. How can I not punish you. Your punishment is to copy your book. (Teacher does not give specifics or carry out the punishment)	Responding to problem behavior in a inconsistent manner
4	T: ……I like tea…..	Teaching a sentence pattern
	T: Student Ho Sze Chung is very good today. You are very smart today. Thank you	Giving verbal praise
5	(One student came out of his seat to ask the teacher about a word on the blackboard. Then he copied from the blackboard. Then he asked for teacher's permission to go to the washroom).	Helping a student to complete worksheet.
	T: You must return within 1 min 30 sec. Anybody got a stopwatch here?	Maintaining discipline
6	T: (Referring to a student) Ng Wing Yan, would you sit down.	Teaching a sentence pattern

	T: Would you like?	Teaching a sentence pattern
7	T: (Responding to a question raised by a student Chan Pak Kee) Sometimes in reading English, you have to blend some words, e.g. thank_you. Chinese is different. You have to read individual words, e.g. thank you	Taking care of individual students
8	T: What kind of food would you like?	Teaching a sentence pattern
	T: I like desert.	Sharing personal experience with student
9	T: What kind of desert would you like? S: Mango.	Teaching a sentence pattern
	T: Ho Sze Chung like mango ice cream.	Teaching a sentence pattern
	T: (Referring to a student) Chan Pak Kee, what kind of flavor you like for your ice cream.	Teaching a sentence pattern
10	(Students tried to respond to teacher's question) S: Mango, water melon (in Chinese)	Teacher a sentence pattern
	T: You like all kinds of ice cream	Teaching a sentence pattern
11	T: If you don't know the word in English, tell me the Chinese word. S: (In Chinese) iced red bean.	Trying to motivate students
	T: Iced red bean.... Not Mr. Bean.	Teaching a sentence pattern
12	S: Chocolate	
	T: Chocolate ice cream, Vanilla ice cream.	
	(Teacher discussed with students different ice cream flavour including ice cream cone).	Trying to motivate students' interest in learning by referring to their personal experience
13	T: Sundae S1: Sun means the sun. Sunday is 'Sunday' not ice cream. S2: Sundae means telephone. T: Sundae is ice cream with a biscuit on top.	Trying to arouse students' learning interest
14	(One student going to the back of the class to talk to the camera man) S: When do you start recording? Is it when we misbehave? S: (Looking at the camera, flicking) Can you see my eye?	Student exhibiting testing behavior

15	T: (Referring to a student) Wong Hon Ming, sit down.	Maintaining class discipline
16	T: I don't like to add milk to my ice cream.	Sharing personal experience with students
17	T: The sugar like substance should be read as 'Syrup'	Teaching a vocabulary
18	T: Do you like to go to McDonald? S: I go there every day. It is very good.	Trying to arouse students' interest by referring to their daily experience
	T: What kind of dessert would you like?	Teaching a sentence pattern
19	T: Anything else, what about pudding?	Sharing experience
	S: I have mentioned that already. S: I like to eat…… snake, dog meat, goat,……..	
20	T: Can you respect others and talk in turn please. Put up you hand when you want to say something.	Maintaining order in the classroom
	T: Keep quiet.	
	S: (Without putting up his hand as told) Milk. (However, teacher accepted his answer)	Responding to problem behavior in a inconsistent manner.
21	S1: (Whistling) Women's milk? S2: beancurb, sega.	Testing behavior of students
22	T: Time's up (Both teacher and students appeared to lose self-control) S: Camera man please record this.	Losing control of classroom order
23	T: Those who have not finished please continue tomorrow.	Giving instruction
24	S: Miss, how long does it take to go to Tuen Mun?	Sharing information with a student. Indication of good teacher student rapport
25	T: (referring to a student) you did very well to-day, very attentive.	Giving positive reinforcement
26	T: Hand in your book please. S: I have lost mine.	Correcting misbehavior of students

	T: You would be punished. (after a while) S: Miss, I found my book.	
27	T: (about to make some announcements of the Sports day) S: Bishet. T: Is it that you don't want to go for your break? If not, please keep quiet? T: I must also announce the name of the student who will be nominated for "going out for lunch". T: Would you like to guess first? T: It is the student who has received the least punishment. He behaved well in the assembly from the beginning of the semester up to now. T: (Pointing to the student) You. S: Oh, me! T: Yes, you. T: The test tomorrow is on p. 16, Book 5A.	Losing control of classroom discipline

REFERENCES

Advocacy in action. (1995, November). CEC Today, 2, 4-5.

Albanese, M.A., & Mitchell, S. (1993). Problem-based learning: A review of literature on its outcomes and implementation issues. Academic Medicine, 68(1), 52-81.

Barrows, H.S. (1985). How to design a problem-based curriculum for the preclinical years. New York: Springer.

Barrows, H.S. (1986). A taxonomy of problem-based learning methods. Medical Education, 20, 481-486.

Barrows, H.S., & Myers, A.C. (1993). Problem based learning in secondary schools. Unpublished monograph. Springfield, IL: Problem Based Learning Institute, Lanphier High School, and Southern Illinois University Medical School.

Barrows, H.S., Myers, A., Williams, R.G., & Moticka, E.J. (1986). Large group problem-based learning: A possible solution for the '2 sigma problem'. Medical Teacher, 8, 325-331.

Barrows, H.S., & Tamblyn, R. (1980). Problem-based learning: An approach to medical education. New York: Springer.

Benor, D.E. (1984). An alternative, non-brunerian approach to problem-based learning. In H.G. Schmidt, & M.L. de Volder (ed.), Tutorials in problem-based learning. Maastricht, The Netherlands: Van Gorcum, Assen.

Birch, W. (1986). Toward a model for problem-based learning. Studies in Higher Education, 11, 73-82.

Blatt, B. (1976). On competencies and incompetencies, instruction and destruction, individualization and depersonalization: Reflections on the now-movement. Behavioral Disorders, 1, 89-96.

Bloom, R.B. (1979). Why that one? Some thoughts about instructional competencies for teachers of emotionally disturbed adolescents. In F.H. Wood (Ed.), Teachers for secondary school students with serious emotional disturbance: Content for programs. Minneapolis: Department of Psychoeducational Studies, University of Minnesota.

Bloom, L., & Bacon, E. (1995). Professional portfolios: An alternative perspective on the preparation of teachers of students with behavioral disorders. Behavioral Disorders, 20(4), 290-300.

Blumberg, P., & Michael, J.A. (1992). Development of self-directed learning behaviors in a partially teacher-directed problem-based learning curriculum. Teaching Learning Medicine, 4(1), 3-8.

Bordage, G. (1987). The curriculum: Overloaded and too general? Medical Education, 21, 183-188.

Boud, D., & Feletti, G. (1991). The challenge of problem based learning. New York: St Martin's Press.

Branda, L.A. (1990). Implementing problem-based learning. Journal of Dental Education, 54, 548-549.

Bridges, E.M., & Hallinger, P. (1992). Problem-based learning for administrators. Eugene, Oregon: ERIC Clearinghouse on Educational Management, University of Oregon.

Bridges, E.M., & Hallinger, P. (1995). Implementing problem-based learning in leadership development. Eugene, Oregon: ERIC Clearinghouse on Educational Management, University of Oregon.

Bridges, E.M., & Hallinger, P. (1996). Problem-based learning in leadership education. New Directions for Teaching and Learning, Win 1996(68), 53-61.

Brownell, M.T., & Smith, S.W. (1992). Attrition/retention of special education teachers: Critique of current research and recommendation for retention efforts. Teacher Education and Special Education, 15(4), 229-248.

Brundage, D., & MacKeracher, D. (1980). Adult learning principles and their application to program planning. Ontario, Ministry of Education.

Bullock, L., Dykes, K., & Kelly, T. (1974). Competency-based teacher preparation in behavioral disorders. Exceptional Children, 41, 192-194.

Bullock, L.M., Ellis, L.L., & Wilson, M.J. (1994). Knowledge/skills needed by teachers who work with students with severe emotional/behavioral disorders: A revisitation. Behavioral Disorders, 19(2), 108-125.

Bullock, L., & Whelan, R. (1971). Competencies needed by teachers of the emotionally disturbed and socially maladjusted: A comparison. Exceptional Children, 37, 485-489.

Candy, P. (1987). Evolution, revolution or devolution: Increasing learner-control in the instructional setting. In D. Boud, & V. Griffin (Eds.), Approaching adult learning: From the learners' perspective. London: Kogan Page.

Candy, P. (1991). Self-direction of lifelong learning: A comprehensive guide to theory and practice. San Francisco, CA: Jossey-Bass.

Chenoweth, T., & Everhart, R.B. (1994). Preparing leaders to understand and facilitate change: A problem-based learning approach. Journal of School Leadership, 4(4), 414-431.

Clarke, D.C. (1990). Conceptions of the principles and practices of effective staff development : A Caribbean perspective. Annual Meeting of National Reading Conference, Miami.

Cobb, H.B., Elliot, R., Powers, A.R., & Voltz, D. (1989). Generic versus categorical special education teacher preparation. Teacher Education and Special Education, 12(1-2), 19-26.

Colby, K.K., Almy, T.P., & Zubkoff, M. (1986). Problem-based learning of social sciences and humanities by fourth-year medical students. Journal of Medical Education, 61, 413-415.

Coles, C.R. (1990). Evaluating the effects curricula have on student learning: Toward a more competent theory for medical education. In Z.M. Nooman, H.G. Schmidt, & E.S. Ezzat (Eds.), Innovation in medical education: An evaluation of its present status. New York: Springer.

Conoley, J.C., Peterson, R., Etchison, D., & Lawson, S. (1989). A study of instructional environments and behavior of rural and urban special education children. Mimeograph available from the University of Nebraska-Lincoln.

Coulson, R.L. (1983). Problem-based student-centered learning of the cardiovascular system using the problem-based learning module (P.B.L.M.). Physiologist, 26, 220-224.

Davis, W.K., Nairn, R., Paine, M.E., Anderson, R.M., & Oh, M.S. (1992). Effects of expert and non-expert facilitators on the small-group process and on student performance. Academic Medicine, 67, 407-474.

Denny, R.K., Epstein, M., & Rose, E. (1992). Direct observation of adolescents with serious emotional disturbance and their nonhandicapped peers in mainstream vocational education classroom. Behavioral Disorders, 18, 33-41.

De Volder, M.L. (1982). Discussion groups and their tutors: Relationships between tutor characteristics and tutor functioning. Higher Education, 11, 269-271.

Doyle, D., & Straus, D. (1982). How to make meetings work. New York: Jove Books.

Duffy, T.M. (1994). Corporate and community education: Achieving success in the information society. Unpublished paper. Bloomington, IN: Indiana University.

Dunlap, G., & Childs, K.E. (1996). Intervention research in emotional and behavioral disorders: An analysis of studies from 1980-1993. Behavioral Disorders, 21, 125-136.

Eagle, C.J., Harasym, P.H., & Mandin, H. (1992). Effects of tutors with case expertise on problem-based learning issues. Academic Medicine, 67, 465-469.

Elliot, R., Cobb, H.B., Powers, A.R., & Voltz, D. (1991). Generic teacher preparation: Has the issue been resolved? Teacher Education and Special Education, 14(2), 140-143.

Ferrier, B.M. (1990). Problem-based learning: Does it make a difference. Journal of Dental Education, 54, 550-551.

Fiddler, M.B., & Knoll, J.W. (1995). Problem-based learning in an adult liberal learning context: Learner adaptations and feedback: Continuing Higher Education Review, 59(1-2), 13-24.

Fullan, M.G. (1993). Why teachers must become change agents. Educational Leadership, 50, 612-617.

Gable, R., Hendrickson, J., Young, C., & Shokoohi-Yekta, M. (1992). Preservice preparation and classroom practices of teachers of students with emotional/behavioral disorders. Behavioral Disorders, 17, 126-134.

George, N.L., George, M.P., Gersten, R., & Grosenick, J.R. (1995). To stay or to leave. An exploratory study of teachers of students with emotional and behavioral disorders. Remedial and Special Education, 16(1), 227-236.

Good, T., & Borphy, J. (1991). Looking in classrooms. New York: Harper & Row.

Goodlad, J.L. (1991). Why we need a complete redesign of teacher education. Educational Leadership, 49(3), 4-7.

Gilhooly, K.J. (1990). Cognitive psychology and medical diagnosis. Applied Cognitive Psychology, 4, 261-272.

Gunter, P.L., & Denny, R.K. (1996). Research issues and needs regarding teachers' use of classroom management strategies. Behavioral Disorders, 22, 15-20.

Hallinger, P., Bridges, E., Chantarapanya, P., Sriboonma, U., & Taraseina, P. (1994). Adapting problem-based learning for educational administration preparation in developing countries. Paper presented at the Fourth National Seminar on Educational Management, Institute Aminuddin Baki, Genting Highlands, Malaysia.

Hewett, F. (1996). A hierarchy of competencies for teachers of emotionally handicapped children. Exceptional Children, 33, 7-11.

Honebein, P., Duffy, T.M., & Fishman, B. (1993). Constructivism and the design of learning environments: Context and authentic activities for learning. In T.M. Duffy, J. Lowyck, & D.H. Jonassen (Eds.), Designing environments for constructivist learning. Berlin: Springer-Verlag.

Jack, S.L., Shores, R.E., Denny, R.K., Gunter, P.L., DeBeiere, T., & DePaepe, P. (1996). An analysis of the relationships of teachers' reported use of classroom management strategies on types of interactions. Journal of Behavioral Education, 6, 67-87.

Jones, J.W., Bieber, L.L., Echt, R., Scheifley, V., & Ways, P.O. (1984). A problem-based curriculum-Ten years of experience. In H.G. Schmidt, & M.L. de Volder (Eds.), Tutorials in problem-based learning. Maastricht, The Netherlands: Van Gorcum, Assen.

Kameenui, E.J., & Darch, C.B. (1995). Instructional classroom management: A proactive approach to behavior management. White Plains, NY: Longman.

Katsiyannis, A., Landrum, T.J., Bullock, L.M., & Vinton, L. (1997). Certification requirements for teachers of students with emotional and behavioral disorders: A national survey. Behavioral Disorders, 22(3), 131-140.

Kauffman, J.M. (1994). Places of change: Special education's power and identity in an era of educational reform. Journal of Learning Disabilities, 27(10), 612-628.

Kauffman, J.M. (1997). Characteristics of children's behavior disorders (6th ed.). Colombus, OH: Merrill.

Kauffman, J.M., & Wong, K.L.H. (1991). Effective teachers of students with behavioral disorders: Are generic teaching skills enough? Behavioral Disorders, 16(3), 225-237.

Kaufman, A. (1985). Implementing problem-based medical education: Lessons from successful innovation. New York: Springer.

Kaufman, A. (1989). The new Mexico experiment: Educational innovation and institutional change. Academic Medicine, 64, 285-294.

Kingsland, A.J. (1996). Time expenditure, workload, and student satisfaction in problem-based learning. New Directions for Teaching and Learning, Win 1996(68), 73-81.

Knitzer, J., Steinberg, Z., & Fleisch, B. (1990). At the school house door: An examination of programs and policies for children with behavioral and emotional problems. New York: Bank Street College of Education.

Liberman, A. (1995). Practices that support teacher development. Phi Delta Kappan, 76, 591-596.

Lovie-Kitchin, J. (1991). Problem-based learning in optometry. In D. Boud, & G. Feletti (Eds.), The challenge of problem-based learning. New York: St Martin's Press.

Mackie, R., Kvaraceus, W., & Williams, H. (1957). Teachers of children who are socially and emotionally handicapped. Washington, DC: U.S. Government Printing Office.

Maeroff, G. (1988). The empowerment of teachers: Overcoming the crisis in confidence. New York: Teachers College Press.

Majoor, G.D., Schmidt, H.G., Snellen-Balendong, H.A.M., Moust, J.H.C., & Stalenhoef-Halling, B. (1990). Construction of problems for problem-based learning. In Z.M. Nooman, H.G. Schmidt, & E.S. Ezzat (Eds.), Innovation in medical education: An evaluation of its present status. New York: Springer.

Maitland, B.S. (1991). Problem based learning for an architecture degree. In D. Boud, & G. Feletti (Eds.), The challenge of problem-based learning. New York: St Martin's Press.

McManus, M.E., & Kauffman, J.M. (1991). Working conditions of teachers of students with behavioral disorders: A national survey. Behavioral Disorders, 16(4), 247-259.

Meadows, N.B., Neel, R.S., Scott, C.M., & Parker, G. (1994). Academic performance, social competence, and mainstream accommodations: A look at mainstreamed and nonmainstreamed students with serious behavioral disorders. Behavioral Disorders, 19, 176-180.

Milter, R.G., & Stinson, J.E. (1994). Educating leaders for the new competitive environment. In G. Gijselaers, S. Tempelaar, & S. Keizer (Eds.), Educational innovation in economics and business administration: The case of problem-based learning. London: Kluwer

Moore, C.M., & Barnett, D.R. (1992). A problem-based learning approach to teaching medical genetics. American Journal of Humanistic Genetics, 51, 930-935.

Morsink, C., Fardig, D., Algozzine, K., & Algozzine, B. (1987). Competencies for teachers of students with high incidence handicaps. British Columbia Journal of Special Education, 11(2), 109-122.

Muller, S. (1984). Physicians for the twenty-first century: Report of the project panel on the General Professional Education of the Physician and College Preparation for Medicine, Journal of Medical Education, 59, Part 2.

Roschelle, J. (1992). Reflections on Dewey and technology for situated learning. Paper presented at annual meeting of the American Educational research Association, San Francisco.

National Agenda for Achieving Better Results for Children and Youth with Serious Emotional Disturbance. (1994). Washington, DC: U.S. Department of Education, Office of Special Education and Rehabilitative Services, Office of Special Programs.

National Clearinghouse on Professions in Special Education. (1992). Who will teach? Who will serve? Washington, DC: U.S. Office of Special Education Programs.

National Commission on Teaching and America's Future. (1996). What matters most: Teaching for America's future. Woodbridge, VA: Author.

Neame, R.L.B. (1989). Problem-based medical education: The Newcastle approach. In H.G. Schmidt, M.Lipkin, Jr., M.W. de Vries, & J.M. Greep (Eds.), New directions for medical education: Problem-based learning and community-oriented medical education. New York: Springer-Verlag.

Neufeld, V.R., Woodward, C.A., & MacLeod, S.M. (1989). The McMaster M.D. program: A case of renewal in medial education. Academic Medicine, 64, 423-432.

Norman, G.R. (1988). Problem-solving skills, solving problems and problem-based learning. Medical Education, 22, 279-286.

Norman, G.R., & Schmidt, H.G. (1992). The psychological basis of problem-based learning: A review of the evidence. Academic Medicine, 67, 557-565.

Nichols, P. (1991). Through the classroom door: What teachers and students need. Mountain Plains Information Bulletin. Mountain Plains Regional Resource Center.

Patel, V.L., Groen, G.J., & Norman, G.R. (1991). Effects of conventional and problem-based medical curricula on problem solving. Academic Medicine, 66, 380-389.

Peacock Hill Working Group. (1991). Problems and promises in special education and related services for children and youth with emotional or behavioral disorders. Behavioral Disorders, 16(4), 299-313.

Pullis, M. (1992). An analysis of the occupational stress of teachers of the behaviorally disordered: Sources, effects, and strategies for coping. Behavioral Disorders, 17(3), 191-201.

Putnam, M.L., & Habanek, D.V. (1993). A national survey of certification requirements for teachers of students with mild handicaps: States of confusion. Teacher Education and Special Education, 16(2), 155-160.

Rainbow, B. (1960). A proposal for a training program for teachers of the emotionally disturbed and the socially maladjusted. Exceptional Children, 26(6), 287-293.

Rangachari, P.K. (1991). Design of a problem-based undergraduate course in pharmacology: Implications for the teaching of physiology. Advanced in Physiological Education, 5, S14-S21.

Rehabilitation Division. (1998). The Hong Kong review of rehabilitation programme plan (1998/99). Hong Kong Government Secretariat: Author.

Reithlingshoefer, S.J. (1992). The future of nontraditional/interdisciplinary programs: Margin or mainstream. Fairfax: Geo. Mason University.

Ross, B. (1991). Towards a framework for problem-based curricula. In D. Boud, & G. Feletti (Eds.), The challenge of problem-based learning. New York: St. Martin's Press.

Ryan, G. (1993). Student perceptions about self-directed learning in a professional course implementing problem-based learning. Studies in Higher Education, 18(1), 53-63.

Savery, J.R., & Duffy, T.M. (1995). Problem based learning: An instructional model and its constructivist framework. Educational Technology, 35(5), 31-38.

Schmidt, H.G. (1983). Problem-based learning: Rationale and description. Medical Education, 17, 11-16.

Schwartz, R.W., Middleton, J., Nash, P.P., & Witte, F.M. (1991). The history of developing a student-centered, problem-based surgery clerkship. Teaching and Learning in Medicine, 3, 38-44.

Shores, R.E., Jack, S.L., Gunter, P.L., Ellis, D.N., DeBriere, T.J., & Wehby, J.H. (1993). Classroom interactions of children with behavior disorders. Journal of Emotional and Behavioral Disorders, 1, 27-39.

Shores, R.E., Roberts, M., & Nelson, C.M. (1976). An empirical model for the development of competencies for teachers of children with behavioral disorders. Behavioral Disorders, 1, 123-132.

Sibley, J.C. (1989). Toward an emphasis on problem solving in teaching and learning: The McMaster experience. In H.G. Schmidt, M. Lipkin, Jr., M.W. de Vries, & J.M. Greep (Eds.), New directions for medical education: Problem-based learning and community-oriented medical education. New York: Springer-Berlag.

Silver, M., & Wilkerson, L. (1991). Effects of tutors with subject expertise on the problem-based tutorial process. Academic Medicine, 66, 298-300.

Simpson, R.L., Whelan, R.J., & Zabel, R.H. (1993). Special education personnel preparation in the 21st century: Issues and strategies. Remedial and Special Education, 14, 7-22.

Singh, K., & Billingsley, B.S. (1996). Intent to stay in teaching: Teachers of students with emotional disorders versus other special educators. Remedial and Special Education, 17(1), 37-47.

Steinberg, Z. (1991). Pandora's children. Beyond Behavior, 2, 5-14.

Steinberg, Z., & Knitzer, J. (1992). Classroom for emotionally and behaviorally disturbed students: Facing the challenge. Behavioral Disorders, 17, 145-156.

Swinford, A.E., & McKeag, D.B. (1990). Incorporation of genetics into a problem-based medical school curriculum. American Journal of Humanistic Genetics, 47, 753-758.

Tanner, C.K., Galis, S.A., & Edward, P. (1997). Problem-based learning in advanced preparation of educational leaders. Educational Planning, 10(3), 3-12.

The Council for Exceptional Children. (1993). CEC policy on inclusive schools and community settings. Reston, VA: Author.

Thomas, R.E. (1992). Teaching medicine with cases: Student and teacher opinion. Medical Education, 26, 200-207.

Tolnai, S. (1991). Continuing medical education and career choice among graduates of problem-based and traditional curricula. Medical Education, 25, 414-420.

U.S. Department of Education. (1994). Sixteenth annual report to congress on the implementation of the Individuals with Disabilities Education Act. Washington, DC: Author.

U.S. Department of Education. (1995). Seventeenth annual report to congress on the implementation of the Individuals with Disabilities Education Act. Washington, DC: Author.

U.S. Department of Education. (1997). Nineteenth annual report to congress on the implementation of the Individuals with Disabilities Education Act. Washington, DC: Author.

Van Acker, R., Grant, S.H., & Henry, D. (1996). Teacher and student behavior as a function of risk for aggression. Education and Treatment of Children, 19, 316-334.

Vernon, D.T.A., & Blake, R.L. (1993). Does problem-based learning work? A meta-analysis of evaluative research. Academic Medicine, 68(7), 550-563.

Wagner, M. (1989). Youth with disabilities during transition: An overview of descriptive findings from the National Longitudinal Transition Study. Palo Alto, CA: SRI.

Wagner, M. (1991). Drops outs with disabilities: What do we know? What can we do? Menlo Park: SRI International.

Wald, J. (1996). Diversity in the special education teaching force. NCPSE News, 1, 1-6.

Walker, D.K., Singer, J.D., Palfrey, J.S., Orza, M., Wenger, M., & Butler, J.A. (1988). Who leaves and who stays in special education: A 2-year follow-up study. Exceptional Children, 54, 393-402.

Walton, H.J., & Matthews, M.B. (1989). Essentials of problem-based learning. Medical Education, 23, 542-558.

Walker, A., Bridges, E., & Chan, B. (1996). Wisdom gained, wisdom given: Instituting PBL in a Chinese culture. Journal of Educational Administration, 34(5), 12-31.

Waterman, R., Akmajian, P., & Kearny, S. (1991). Community-oriented problem-based learning at the University of New Mexico. Albuquerque, New Mexico: University of New Mexico School of Medicine.

Webber, J., & Scheuermann, B. (1997). A challenging future: Current barriers and recommended action for our field. Behavioral Disorders, 22(3), 167-178.

Wehby, J.H. (1997). Teacher interactions in SED classrooms: Implications for academic and social behavior. Paper presented at the 21st Annual Conference on Severe Behavioral Disorders in Children and Youth, Tempe, AZ.

Wehby, J.H., Symons, F.J., & Canole, J.A. (1998). Teaching practices in classrooms for students with emotional and behavioral disorders: Discrepancies between recommendations and observations. Behavioral Disorders, 24(1), 51-56.

Weinstein, C., & MacDonald, J. (1986). Why does a school psychologist need to know about learning strategies? Journal of School Psychology, 24, 257-265.

Whelan, R.J., & Simpson, R.L. (1996). Preparation of personnel for students with emotional and behavioral disorders. Perspectives on a research foundation of future practice. Behavioral Disorders, 22(1), 49-54.

Wilkerson, L., & Feletti, G. (1989). Problem-based learning: One approach to increasing student participation. In A.F. Lucas (Ed.). New directions for teaching and learning.(Vol. 37). San Francisco, California: Jossey-Bass.

Woodhouse, J.D. (1994). Inspection of education for maladjusted pupils in Hong Kong. Somerset: John Woodhouse Associates.

Woodward, C.A., & Ferrier, B.M. (1982). Perspectives of gradates two or five years after graduation from a three-year medical school. Journal of Medical Education, 57, 294-302.

Woodward, C., Ferrier, B.M., Goldsmith, C., & Cohen, M. (1988). Billing patterns of general practitioners and family physicians in Ontario: A comparison of graduates of McMaster medical school with graduates of other Ontario medical schools.

In Research in medical education, 1988: Proceedings of the twenty-seventh annual conference. Washington, D.C.: Association of American Medical Colleges.

Woodward, C.A., Ferrier, B.M., Cohen, M., & Goldsmith, C. (1990). A comparison of the practice patterns of general practitioners and family physicians graduating from McMaster and other Ontario medical schools. Teaching Learning Medicine, 2(2), 79-88.

Yell, M.L. (1996). Having to believe. In B.L. Brooks & D.A. Sabatino (Eds.), Personal perspectives on emotional disturbance/behavioral disorders. Austin, TX: Pro Ed.

Young, C.C., Gable, R.A., & Hendrickson, J.M. (1989). An ecological perspective to training teachers of the behaviorally disordered: Where are we now? Behavioral Disorders, 15(1), 16-20.

Zabel, M.K. (1992). Responses to control. Beyond Behavior, 4, 3-4.

Zabel, R.H. (1988). Preparation of teachers for behaviorally disordered students: A review of literature. Handbook of Special Education: Research and Practice (Vol.2). Elmsford, NY: Pergamon Press.

Zabel, R.H., & Zabel, M.K. (1982). Factors involved in burnout among teachers of exceptional children. Exceptional Children, 49, 261-263.