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TRAINING TECHNICIANS OR EDUCATING TEACHERS:

AN INTERNSHIP PROGRAM FOR TEACHER EDUCATORS IN PAPUA
NEW GUINEA

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In 1987, the Bachelor of Education (Tertiary) became operational at the University of Papua New Guinea (UPNG). This "offers a three year program to prepare experienced Community School teachers for positions as lecturers in Community Teachers Colleges" (UPNG 1988, 42). The second year of the program is a supervised internship in one of these teachers colleges, a year which is intended to be one means among others of stimulating quality education in Papua New Guinea (Kenehe, 1981:13).

This paper aims to present a theoretical rationale for the internship year, to explain how its design is intended to work towards the achievement of the goal of qualitative improvement in Papua New Guinea education.

AIM OF THE PROGRAM

Within Papua New Guinea, the need for increased relevance and improved quality in teacher education has been pointed out both on philosophical grounds (Matane, 1986) and in terms of planning for manpower needs (Parry, 1987). The quality of the teachers graduating from colleges has a direct influence on national planning. "An important way in which the higher education sector itself may influence these developments, however, is through the preservice training of teachers for the primary and secondary levels of education" (Parry, 1987:11). Implicit in such discussion is the assumption that the status quo is not satisfactory, and that change is necessary to stimulate quality education. Also assumed is that quality change will be positively correlated with quality tertiary-teacher education (Maraj, 1974:147).

If improvement in educational quality depends upon a change in the status quo, then teacher educators, if they are to be regarded as high calibre or 'quality', need to be capable of those processes that can initiate and sustain change. Hence any program of educating tertiary teachers must have as a major aim the promotion of teachers with that capability, and must incorporate those structures necessary for the accomplishment of that aim.

It has been argued that although teacher education programs have a mixture of perspectives embedded in their practices, usually only one of them is significantly emphasised, to the neglect of all others (Zeichner, 1983). As a result of that exclusive emphasis, a program has an identifiable philosophical colouring. Either it deliberately inducts the novice teacher educator into the logic of the present social and educational climate; or it attempts to stimulate a process

whereby educators can deal critically with that reality in order to improve it (Crittenden, 1973).

Logically, quality education would require a program that opts for the latter direction. Ironically though, both in this country and elsewhere, many teacher education programs are based on the status quo or apprenticeship model.

THE APPRENTICESHIP MODEL : ASSUMPTIONS AND LIMITATIONS

Learning to be a teacher educator in Papua New Guinea has utilized an apprenticeship model (Stones, 1987:681-682; Ross, 1987). This model has its genesis in the 19th century when industrialized countries began educating their population. Teachers responded to this pressure by recruiting promising students as apprentices or pupil teachers. "The master teacher told the student what to do, showed them how to do it, and the students imitated the master" (Stones, 1987:682).

However, research evidence asserts that the experience itself of participation in an internship cannot guarantee that the apprentice will be an effective teacher or become one over time (Howey and Gardner, 1983). Ironically, despite these and similar data, most teacher education institutions implicitly believe that the experience itself has a beneficial impact (Turney, 1982:12 ff).

The apprenticeship model is not an efficient process of educating students to be teachers, since it is "found to be wasteful of time and effort" (Stone and Morris, 1972:5). More importantly, such a process can offer a student only a limited number of skills, beliefs and attitudes. Moreover, the repertoire of skills is for the most part a reflection of the supervisor's values, experience and personality:

It was the master teacher cloning his apprentices. However, my concern was with my own former practices and few alternatives beyond them were encouraged or envisaged (Diamond 1986:5).

The apprenticeship model is essentially a conservative approach characterized by an accumulation of uniformity and imitation (Mouton and Blake, 1984), a phenomenon which might describe teacher education practice in Papua New Guinea (Kenehe, 1981:48-49; Wingfield, 1987:3, No. 22). There is at present pressure for even more standardization. "There is a commonly held, although not unanimous, view within the Department that the present independence of CS (community school) teachers colleges has led to a lack of uniformity in the quality and style of teacher training" (Markis, 1987:10). This perspective has been challenged as inappropriate for contemporary tertiary education in this country (Cox, 1987:13).

The apprenticeship model views the student more as a passive and reactive learner and does little to stimulate reflection, understanding, and analysis of learning and teaching. The supervisor, through experience and education, has knowledge which needs to be imprinted into a learner who is still a neophyte

(Freire, 1974:246). This contradicts research which strongly suggests that knowledge is comprehended, internalized and regenerated only through "action and reflection on reality, not by transmitting or extending knowledge" (Freire). Diamond, in reflecting on his developmental life as a teacher educator comments:

In contrast, I had yet to consider that all conceptual frameworks, especially our own, can be developed and even be replaced by better ones. As learners, our life long task is first to create our own theories, but then to critically demolish or replace them (Diamond, 1986:6).

The apprenticeship model is unable to stimulate such a process, since it fosters habits of thought and action which mute continued learning from teaching:

In learning to teach, neither first hand experience nor university instruction can be left to work themselves out by themselves. Without help in examining current beliefs and assumptions, teacher (educator) candidates are likely to maintain conventional beliefs and incorporate new information or puzzling experiences into old frameworks (Feiman, Nemser and Buchmann, 1985:29).

The point being made is that to students, methodology, techniques and styles in teaching are viewed as ends in themselves, rather than a means towards some clear educational purpose. There is preoccupation with "technology", itself becoming by default the purpose of teaching. Guthrie records such a situation among student teachers at Goroka Teachers' College:

To them (overconfident males), standing up in front of a class is no problem at all, but they can confuse their self confidence with good teaching. They may become the centre of the classroom, ignoring the pupils, and forgetting that teaching and learning are two way processes between teacher and pupil. (Guthrie, 1978:47).

Similar observations of PNG classrooms noting this emphasis on "technical rationality" (Schon, 1983) have been made by Donohoe (1974:18), Lancy (1979:89), Maioni (1982:5), Markwell (1975:84), Otto (1989), Pearse (1988), Roberts and Kada (1979:196) and Smith (1975). "Technical rationality" has been even articulated as a worthwhile objective for future PNG teacher educators by Ministry officialdom:

We are concerned to employ officers with subject speciality knowledge, a variety of tertiary level methods and a good industrious attitude (Memorandum, 1987).

The main danger with such an intense focus is that appropriateness of curriculum and its effectiveness to educational aims are not considered. Moreover, another problem with this perspective is that the internship experience is likely to be viewed as the limit of what is possible. If a creative internship program had been planned by some dynamic supervisor then there is an enriching experience.

The opposite is true for a less dynamic supervisor. A successful internship program should be to a large degree independent of college based supervisors for its empowerment.

Ross (1987) has made an extensive evaluation of the Teacher Education Training Program operating in Papua New Guinea teachers' colleges. The aim of that program was to educate selected graduates as tertiary teachers and a major means of achieving this objective had been a year long practicum or internship. Conceptually this program manifests all the characteristics of the apprenticeship model. Ideally, each student had a tailored "curriculum" designed for him/her, but in reality, the focus for the program was not on the planned experiences of the curriculum, but on the quality of the supervisor:

An analysis of the programs devised by supervisors reveals considerable variation, ranging from little more than timetables of activities or loose statements such as "discover any area of need on the part of the associate" to checklists and programmes and detailed behavioural objectives and corresponding achievement levels for the recording of progress (Ross, 1987:26).

The main criticism of such a model is that it creates structures and habits of thought that retard continued learning from teaching. This is the very point that has been identified as a weakness in the professional behaviour of Associate Lecturers. "It was obvious from the reports sighted that fellows found self evaluation difficult" (Ross 1987:33). Checklists, pro forma reports, questionnaires or other instruments from a behaviouristic perspective are simplistic structures which attempt, sadly unsuccessfully, to achieve this elusive goal (Paul, 1984).

The direction towards a possible answer, is in the further exploration of the complex area of adult learning processes in teacher development (Clark and Lampert, 1986), a move recommended by Cox (1985:24-26) in his report for better learning and teaching at the University of Papua New Guinea.

One natural consequence of the apprenticeship model in teacher education has been the lack of an explicit curriculum for the practicum - internship experience (Turney, 1985:6ff). Within the PNG context, Ross, in his evaluation of the Associate Program, recommended that the internship curriculum be a means to improve program quality (Ross, 1987:26-27). Research acknowledges that practicum curricula do evolve, but seldom is there articulated any theoretical basis for the selection and organization of such practicum experiences (Davis, 1982).

The theoretical rationale for the first year of the B.Ed (Tertiary) Program is based in a cognitive development framework which essentially addresses the teacher as an adult learner (McLaughlin, 1988a). This second year internship program attempts to build on this ground work, but the emphasis now is placed on an inquiry orientated model. This model acknowledges the importance of competent pedagogical development but focuses squarely on the dynamics of

the individual's needs, capabilities, intentions and institutional constraints.

INQUIRY-ORIENTATED TEACHER EDUCATION

Zeichner (1986), in assessing the contents and contexts of the internship as occasions for learning to teach more insightfully, highlights the clearly active and 'reflexive' focus of the inquiry originated model in comparison with the passive 'received' focus of the apprenticeship model:

An inquiry - oriented approach to teacher education stresses the development of orientations and skills which will enable prospective teachers to exercise reasoned judgements about which educational goals are to be achieved and which teaching methods and contexts are conducive to the achievement of these ends. Here, there is also a concern for enabling prospective teachers to suspend judgement about some aspects of teaching and its contexts to consider alternatives to conventional practice. In addition there is a concern for helping prospective teachers to master various models of inquiry (e.g. curriculum analysis, action research) through which various areas of the problematic are explored. The development of technical skill in teaching and the mastery of content knowledge is also addressed in this approach within a broad framework of critical enquiry and is viewed as a program of mastery which will enable the achievement of worthwhile ends (Zeichner, 1986:14).

Consequently it will be argued that the enquiry orientated model best articulates a rationale and structures to foster the development of quality teacher educators, who will be more capable of stimulating educational independence and liberation from among those whom they might influence. This is a specific goal for the philosophy (c.f. Matane, 1986:11-12) underpinning the direction of PNG education.

If the possibility for change to enhance quality is to occur, then teacher educators must possess capabilities of becoming more aware of their subjective beliefs about teaching and its contexts; of investigating such issues, so that subjectively held beliefs and assumptions become objective if verified or changed if inconsistent the evidence."...Confrontation with the teaching self is the result of allowing practices which had previously been taken for granted to be seen as problematic and requiring evidence" (Diamond, 1986:10-11).

Hence, in the development of a curriculum, this proposition is an aim and the implementing structures are particularly chosen to achieve it. Such a stand is at odds with the effects of more traditional internship experiences.

GOAL OF INQUIRY-ORIENTATED TEACHER EDUCATION

The priority goal from this perspective, is to develop, exercise and evaluate future teacher educators' capacities for "reflective action" (Dewey, 1933). Educators in general, and PNG teachers in particular (c.f. Lineberger 1980; Roberts 1981), tend to perceive the status quo - the everyday reality - as given, clearly defined "and in need of no further verification beyond its simple presence" (Zeichner, 1981:5). [For a cultural interpretation of this conservative stance, see Young, 1977; McLaughlin, 1988b]. Hence, there is a definite reluctance to attempt to envisage other equally valid alternatives. This adherence to the status quo is prompted by tradition, authority, official pronouncements and circumstance. Such a process clearly acknowledges "means" as problematic but generally takes for granted the ends towards which they are directed. A classic example of this in PNG is the Basic Skills program and examination operating in teachers colleges (McLaughlin, 1988c), where "it appears that the exam 'tail' is wagging the course 'dog'" (Yeoman, 1988:74).

(i) Reflective Action

In contrast to "routine action" that is characteristic of the apprenticeship model is "reflective action". It incorporates "active, persistent and careful consideration of any belief or supposed form of knowledge "in the light of the grounds that support it and the further conclusions to which it tends" (Dewey, 1933:9). Consequently the internship year will focus students' attention on the appropriateness and relevance of curriculum and methodology, and in addition reflect upon the ethical and political issues embedded in their everyday thinking and practice. Moreover, so will the internship process and its coordinator be subject to the same scrutiny.

The internship program has not been generated by a concern to develop a focus on "a variety of tertiary level methods" (Memorandum, 1987) which might too easily lead to:

the formation of habits of work which have an empirical, rather than a scientific sanction. The student adjusts his actual methods of teaching, not to the principles which he is acquiring, but to what he sees succeed and fail in an empirical way from moment to moment: what he sees other teachers doing who are more experienced and successful in keeping order than he is; and to the injunctions and directions given him by others (Dewey, 1904:14).

(ii) Teaching Skills

However, this should in no way be interpreted as a diminution of the importance placed on the acquisition of effective adult teaching skills. Clearly, this is a major aim and courses conducted in the first year of the BEd (tertiary) program - Seminar in Tertiary Teaching and Issues in Teacher Education in Papua New Guinea - focus on, among other things, the teaching and learning skills involved

in adult education. The internship is not aiming to produce "technicians" (c.f. Adler and Goodman, 1986), but to initiate development of adult educators, who hopefully will not only have the incipient skills to teach effectively but also the skills "to analyse what they are doing and the habit of mind to do so" (Zeichner and Teitelbaum, 1982:103).

(iii) Levels of Reflectivity

The inquiry - orientated paradigm in the internship program attempts to stimulate a critical orientation towards tertiary teaching and the contexts that surround it. Van Manem's (1977) analysis of "levels of reflectivity" provides a helpful framework to explain the quality of enquiry that is being attempted, as the basis for the internship year. Van Manem has identified three "levels of reflection", each one describing different criteria for choosing among alternative courses of action.

Level One - "technical rationality"

The primary emphasis here is with the efficient and effective application of educational knowledge for the purpose of attaining given ends. The ends are taken for granted and not questioned. The processes involved are helpful but the emphasis here is on technical efficiency. Reflection anchored at this level maintains an efficient machine but never enquires about purpose (Sawada and Caley, 1985:14-15).

Level Two - "practical reflection"

A second level is based upon practical action. The task of inquiry involves anticipating and clarifying the assumptions that are the basis of practical action. The educator should decide the worth of competing educational goals and experiences, and not just harness energies for their attainment, a phenomenon witnessed in the failure of some PNG education innovations (Lancy 1983:174-176; Souviney, 1981:3; Field, 1980). Those who do attempt to enquire and are critical of the validity of set goals may be reprimanded, as was the case of critics of PNG's Basic Skills Course in teacher education. "It is clear that at least one of you does not identify with the joint nature of our efforts....you are part of the joint agreement and should feel so" (EC 6-4-2; 21 Sept. 1987).

Level Three - "critical reflection"

This level of reflection is essentially focused upon the way in which goals and practices become systematically and ideologically distorted by forces and constraints at work in educational settings.

A relevant and topical issue that would invite such an exercise at this level of reflection is the current Basic Skills Program in teachers' colleges (c.f. Principals of Teachers' Colleges Conference, 1979; Yeoman, 1986:42; Parry, 1987:12; Wingfield, 1987; Yeoman, 1988; McLaughlin, 1988a).

The curriculum that has evolved for the internship year is designed to stimulate reflection about teacher education at all three levels. A "reflective teacher", the literature suggests, is one:

who assesses the origins, purposes and consequences of his or her work at all three levels. However because of the historically dominant concern with technical rationality and with instrumental criteria of success in teacher education programs, a particular emphasis is placed here on encouraging reflection that employs educational moral criteria (Zeichner and Liston, 1987).

THE PAPUA NEW GUINEA CONTEXT

The question to be considered is: is such a curriculum appropriate for contemporary Papua New Guinea teacher educators? The literature documents the inappropriateness of the uncritical transfer of western models of curriculum (Crossley, 1984) and pedagogy (Illich, 1973) to developing nations. In a recent evaluation of the Professional Studies Department at Goroka Teachers' College, Jordan (1987:6) argued:

....At this stage of development, it is inappropriate to present 'western' theory and then apply it to the situation in Papua New Guinea.

In a well-reasoned discussion on teaching styles and their application to Papua New Guinea, Guthrie (1981:164) exposed the contradictions of teachers' abilities, the aims of government policy, and the teaching strategies employed in schools. He suggested that a way through the dilemma might be to incorporate "a more liberal approach in national high schools and tertiary education..." (p.164), while maintaining, for the present, formal styles in primary and secondary schools, an observation supported by two recent reports on teaching and learning in tertiary institutions in Papua New Guinea (Cox, 1985; Jordan, 1987:13). The aim is to promote meaningful education in contrast to rote and routine:

The essence of stage IV, (stage of meaning),....is that meaning and understanding play an increasing part in the (student's) day. Since passive understanding is thin and narrow, the (student) is encouraged to build up, by his own mental activity, the intricate web of relations that constitute real meaning; in other words he is taught to think (Beeby, 1966:67).

This internship curriculum aims at, and provides structures, that attempt to do just that. Such a direction also has support from Cox (1985), who acted as a consultant concerning learning and teaching at the three campuses of the University of Papua New Guinea:

Like universities throughout the world, they (lecturers) must be teaching for change itself, encouraging students to be able to cope with situations

and to be adaptable and flexible in the face of new technologies and new social constraints and opportunities. At the cognitive level, students need to be able to develop creatively a wide variety of problem solving skills for acquiring new information and new ways of dealing with problems which are as yet unseen (Cox, 1985:13).

Not contented with merely suggesting directions for more effective tertiary teaching and learning for PNG, Cox also suggests the means towards attainment:

Above all it requires ability to be self critical.....this is an important theme, which requires a fundamental shift in the nature of what is taught and the way in which it is taught (Cox).

And again:

I felt that many staff within the universities feel that what he (Freire, 1972) said about adult literacy would apply to many areas. "It is not a matter of memorising and repeating given syllables and phrases rather of reflecting critically on the process of reading and writing itself and the profound significance of language". This emphasis upon critical reflectiveness is stressed by many modern writers about university education and indeed about the nature of professional life in general and is expressed very forcefully in Donald Schon's 'The Reflective Practitioner' (1983). It may be thought of as idealistic in terms of PNG education but the alienating effects of education in terms of transmission of knowledge to a passive object is a central theme throughout the world. It follows that I view this current analysis as something that has been put forward for critical reflection but even if much of it is accepted the really difficult part is translating it into creative educational practice (Cox, 1985:18).

It seems to me, as co-ordinator, that this is the way forward to implement the aim of the Bachelor of Education (tertiary) program, and that the curriculum so designed may be the start of addressing the really difficult part of translating it into creative educational practice.

CONCLUSION

The rationale for the B.Ed (Tertiary) Internship Curriculum has attempted to give a reasoned theoretical perspective for the structures embedded in the curriculum. It is clearly recognised that its aim is ambitious and it is difficult to monitor. Education programs expressed in behavioural terms produce technicians and clearly the aims of this program are more complex, as are the processes, and as a consequence harder to quantify, though they can be monitored.

The preparation of reflective teacher educators is difficult, but is a necessary first step if the quality of education in PNG is to be enhanced. Such a prognosis echoes the ideals envisioned for future PNG teachers by the first national Director of Education at the time of independence:

So far as teacher preparation is concerned, for the student teachers to reflect upon, and think about, what they are attempting to do and the way they are doing it, is more likely to prove helpful than following set methods (Tololo, 1976:215).

REFERENCES

- Annual Conference of Teachers' College Principals, (1979), Port Moresby: Department of Education.
- Adler, S. and Goodman, J. (1986). Critical theory as a foundation for methods courses, *Journal of Teacher Education*, July-August.
- Beeby, C.E. (1966). *Quality of Education in Developing Countries*. Cambridge, Massachusetts: Harvard University Press.
- Clark, C., and Lampert M. (1986). The study of teacher thinking: implications for teacher education. *Journal of Teacher Education*, Sept-Oct.
- Crittenden, B. (1974). Some prior questions in the reform of teacher education, *Interchange* 4 (2-3).
- Crossley, M. (1984). Strategies for curriculum change and the question of international transfer. *Journal of Curriculum Studies*, 16(1).
- Davis, B. (1982). Field experience: What is it? Why is it out there? ERIC ED 222447.
- Dewey, J. (1904). The relation of theory to practice in education. *The Third Yearbook of N.S.S.E.* Bloomington: Public School Publishing Co.
- Dewey, J. (1933). *How We Think*. Boston: D.C. Heath.
- Diamond, P. (1986). *Confessions of an Ex-Education Lecturer: A Developmental Agenda*. University of Queensland: Department of Education.
- Donohoe, D. (1974). Monitoring educational development in a foreign country - spotlight the problem areas. In *Educational Perspectives in Papua New Guinea*, Melbourne: Australian College of Education.
- Farrell, J. (1985). *Research Questions and Priorities for Teacher Education*. Port Moresby: Department of Education.
- Feiman, S. and Floden, R. (1980). A consumer's guide to teacher development. *Journal of Staff Development* 1 (1).
- Field, S. (1980). *Generalist Teaching Policy and Practice*. Port Moresby: University of Papua New Guinea, Education Research Unit.

- Glassberg, S. and Sprinthall, N. (1980). Student teaching: a developmental approach. *Journal of Teacher Education*, 31.
- Guthrie, G. (1981). Teaching styles. In P. Smith and S. Weeks (eds), *Teachers and Teaching*. Port Moresby: University of Papua New Guinea.
- Howey, K. and Garner, W. (1983). *The Education of Teachers*. New York: Longman.
- Illich, I. (1973). A "Convivial" society for Melanesia? In R. May (ed.), *Priorities in Melanesian Development*. Canberra: Australian National University Press.
- Jordan, D. (1987). *Evaluation of Professional Studies, Document I, at UPNG, Goroka College*. Adelaide: University of Adelaide.
- Katz, L. (1974). Issues and problems in teacher education. In B. Spodek (ed.), *Teacher Education: Of the Teacher, By the Teacher, For the Child*. Washington: NAEYC.
- Kenehe, S. (1981). (Chairman) *In Search of Standards*. Vol. 2, Port Moresby: Government of Papua New Guinea.
- Lancy, D. (1979). *Education Research, 1976-1979. Reports and Essays*. Port Moresby: Department of Education.
- Lancy, D. (1983). *Cross Cultural Studies in Cognition and Mathematics*. New York: Academic Press.
- Lineberger, J. (1980). Oro Community School field report. *Indigenous Mathematics Project, Working Paper No. 7*. Port Moresby: UNESCO/Education.
- Maioni, R. (1982). *Mathematics in Context*. Port Moresby: Department of Education.
- Maraj, J. (1974). *The Teacher Education*. In *Teacher Education in a Changing Society: Commonwealth Conference of Teacher Education*, Nairobi, 1973. London: Commonwealth Secretariat.
- Markis, P. (1987). *Report of the Task Force on the Philosophy of Education: Ministerial Committee Report*. Port Moresby: Ministry of Education.
- McLaughlin, D. (1988 a). *Will Things Improve A Little By (a) Degree: Teaching the Teacher Educators in Papua New Guinea*. Paper given at South Pacific Association for Teacher Education Conference. July, Sydney.
- McLaughlin, D. (1988 b). An education system with no critics. *Papua New Journal of Social Science and Humanities*.

- McLaughlin, D. (1988 c). *Teacher Education by Teacher Educators: A Papua New Guinea Case Study*. Port Moresby: Ministry of Education Research and Evaluation Unit.
- Memorandum (1987). Ecb-4-19, 2 March.
- Mouton, J. and Blake, R. (1984). *Synergogy*. San Francisco: Jossey-Bass.
- Paul, R. (1984). Critical thinking : fundamental to education for a free society. *Education Leadership*, 42 (1).
- Parry, D. (1987). *Advisory Technical Assistance: Study on Higher Education in Papua New Guinea*. Port Moresby: Commission for Higher Education.
- Pearse, R. (1988). *Community School Teaching in the Central Province : an Observational Study*. Port Moresby, University of Papua New Guinea (Mimeo).
- Otto, P. (1989). *The Community Life Syllabus : How it is used in the classroom and how it affects community school leavers*. Port Moresby: National Research Institute. (Mimeo).
- Roberts, R. and Kada, V. (1979). The primary mathematics classroom. *Papua New Guinea Journal of Education*, 15.
- Roberts, R. (1986). *Primary Mathematics Teaching : Implications for Inservice Training*. Port Moresby: Education Research Unit, University of Papua New Guinea.
- Ross, A. (1987). *The Teacher Education Fellowships Training Component of the First Primary Education Project (1982-1987) : An Evaluation*. Port Moresby: Research and Evaluation Unit, Ministry of Education.
- Salzillo, F. and Van Fleet, A. (1977). Student teaching and teacher education : a sociological model for change. *Journal of Teacher Education*, 28.
- Sawada, D. and Caley, M. (1985). Dissipative structures : new metaphors for becoming in education. *Education Researcher*, 14 (3).
- Schon, D. (1983). *The Reflective Practitioner*. New York: Basic Books.
- Souviney, R. (1981). Teaching and learning mathematics in community schools of Papua New Guinea, *Indigenous Mathematics Project*, Port Moresby: Department of Education.
- Stone, E. (1987). Student practice teaching. In M. Dunkin (Ed). *The International Encyclopedia of Teaching and Teacher Education*, Oxford: Pergamon.
- Stones, E. and Morris, S. (1972). *Teaching Practice : Problems and Perspectives*. London: Methuen.

- Tololo, A. (1976). A consideration of some likely future trends in education in Papua New Guinea. In E. Thomas, *Papua New Guinea Education*. Melbourne: Oxford University Press.
- UPNG, (1980). *Education Faculty Handbook ,Port Moresby*. Port Moresby: UPNG.
- Van Manem, M. (1977). Linking ways of knowing with ways of being practical. *Curriculum Inquiry*, 6.
- Wingfield, R. (1987). *The English Language Programme of Community School Teachers' Colleges in Papua New Guinea*. Port Moresby: Department of Education.
- Yeoman, L. (1988). *The Structure and Impact of the Basic Skills Course and Examination at Community Teachers' Colleges*. Port Moresby: Research and Evaluation Unit.
- Young, R. (1977). Education and the image of western knowledge in Papua New Guinea. Part I. *Papua New Guinea Journal of Education*, 13 (3).
- Zeichner, K. (1981). Reflective teaching and field-base experience in pre-service teacher education. *Interchange*, 12.
- Zeichner, K. (1983). Alternative paradigms of teacher education. *Journal of Teacher Education*, 34 (3).
- Zeichner, K. and Teitelbaum, K. (1982). Personalized teaching and inquiry orientated teacher education : an analysis of two approaches to the development of curriculum for field-based experiences. *Journal of Education for Teaching*, 8 (2).
- Zeichner, K. and Liston, D. (1987). Theory and practice in the evolution of an inquiry-oriented student teaching program. *Harvard Education Review*, 57 (1).