This paper describes a joint venture between the Queensland Primary Education Division and the Department of Education at the University of Queensland that has attempted to improve teacher inservice education through the use of participative decision-making processes. First stage of the program involved the collection of data from a representative sample of Primary Education Division personnel and analysis of those data to produce 64 working statements that summarized respondents' statements on inservice education. Those working statements were then grouped into four categories and the statements in each category were ranked into hierarchies by ten working groups of Primary Education Division personnel. The resulting hierarchies were then used as one basis for the formulation of policy guidelines on inservice education for the Primary Education Division. Following adoption of these guidelines by the Director of Primary Education, the planning and implementation of inservice education strategies for the division was begun. (JG)
Establishing Priorities for In Service Programs Through Participatory Decision-Making Using An Interpretive Structural Modelling Approach

by

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INTRODUCTION

Teachers as a body do not see themselves as being very highly involved in educational policy formation at the system level. Policy formation and the implementations of new policies is usually seen by them as the function of administrators high in the educational hierarchy. This paper describes a project in participative policy formation that has just entered its second phase and was carried out as a joint venture between members of the Primary Education Division in the State Education Department and members of the Department of Education at the University of Queensland.

Maintaining Quality of Service

The quality of educational service offered by a school system to its community is closely related to the quality of the professional competence of the staff employed within that system. The level of professional competence is partly dependent on the teacher education program undertaken by staff, both pre-service and in-service. No matter how efficient the pre-service phase of teacher education might be, it can have only limited effect on the quality of the total teaching staff and therefore on the quality of service offered. Professional socialisation during the early years of full-time teaching and the way a teacher himself was taught seem to exert as great, and perhaps greater influence on a teacher's cognition of teaching and classroom practices than his pre-service experiences. (Wright and Tuska, 1968; Lortie, 1969). Therefore, if the quality of teaching within a system is of low quality, the yearly influx of novitiates from the pre-service institutions will do little per se to raise that quality. Also due to constant societal and educational change much of what is learnt during pre-service becomes obsolete and each one of us faces constantly the need to develop new skills, to gain new knowledge and to re-assess our value positions. To raise and to maintain the quality of professional competence of the staff within a system some form of continuous education is necessary for everyone engaged in that system, both the school-locussed staff (teachers, principals, etc.) and the system-locussed staff (advisory teachers, inspectors, etc.).

IN-SERVICE - PRINCIPLE AND PRACTICE

The importance of in-service education, long the Cinderella of teacher education, has recently been sanctioned as a priority area in a number of reports on Australian education, for example (Schools Commission, 1975; Karmel, 1973; Neal - Radford, 1972). Educational writers are nearly unanimous in their support for in-service education and those who do not whole-heartedly support it are merely more cautious in their approach, seeing in-service education as only one factor in the improvement of schooling. (Jackson, 1971).

Briody (1974) reports:

Teachers have no doubt of their needs for in-service education. To the question, "Do you consider that you would benefit from in-service training of any sort?", the overwhelming response was "Yes" (1145); against "No" (8).
However, while there is almost universal support for in-service education in principle, there is also almost universal agreement on its inappropriateness, inadequacy and ineffectiveness in practice. (Watkins, 1973; Nagle, 1972; Goodlad, 1970; Hoyle, 1970; Johnson, 1969; Hartley, 1969; Harris, Bessant and McIntyre, 1969). Until recently, most employer-conducted in-service education programs in Australia were characterised by short duration, minimal resources and little or no post-course support. As a result, expository methods were commonly used, teacher participation was low; and little consideration was given to catering for teacher individual differences. The cause of this was mainly the lack of resources available. For example, in financial year 1966/67 the total expenditure on in-service education for government employed teachers in primary schools was $8,679.00. In the 1976 calendar year the estimated budget for primary in-service education was $320,000.00. Yet, some of the above elements probably still characterise some employer-initiated teacher development experiences. Such programs may heighten teacher awareness and foster the development of facile skills but the resultant behaviour change is usually of short duration, and such courses tend to promote negative attitudes toward in-service education and innovation when they are the only or the main form of program offered. Participants leave such courses aware of alternative modes of behaviour but with little knowledge of the theoretical rationale or of the value systems on which the alternatives are based. Therefore they lack sufficient knowledge to rationally adapt, adopt or reject these alternatives, to assimilate or to accommodate them into their own philosophy, or to generate new alternatives based on theory and experience and through this generative process become more professionally self-sufficient. A typical post course behaviour pattern after a short information transfer type course is for the teacher to try, or more correctly trial, the new techniques or behaviours, find them too difficult, or to use up all of the ideas gained very quickly, so revert to the more comfortable known old behaviours. This pattern is most likely to occur when the teacher is in an environment which supports his retention and when he has limited or no access to a means which supports the new behaviours.

Some specific criticisms of in-service education are:

1. the low involvement of teachers in decision-making in respect to planning, execution and evaluation;
2. the passive role assigned to teachers during courses;
3. the lack of attention given to individual differences amongst teachers;
4. the lack of evaluation of in-service education programs;
5. the lack of adequate follow-up support in the school setting;
6. the lack of suitable personnel to conduct in-service education;
7. the perceived irrelevancy of many programs;
8. the lack of presentation to teachers of working models for observation and analysis; and
9. the lack of understanding by participants of the goals of programs and of what they are expected to do as a result of it. (Logan, 1975).
Stage 1

PHASE 1
Generation

- Opinion Generation

PHASE 2
Refinement

- Content analysis of process statements

INTER-STAGE CONNECTOR
Comparative - Stability. Historical relationship between Past and Present.

INFORMATION THRUST

- Information gathering phase
  - Solicitation of Opinions

- Refinement process of items

LINKAGES

- Categorisation into sets
  - Subsumation

- Perceived needs as generated (recent)
- Perceived needs as generated (past)
The Purpose of the Study

The study was conducted under the auspices of the Standing Committee for Primary In-Service Education. The purpose of the study was to ascertain the most appropriate and most effective employer-initiated and or supported teacher development programs in order to improve the quality of primary education in Queensland. Neither the research team nor the Standing Committee had any executive function. Both were advisory bodies only; the research team to the Standing Committee, the Standing Committee to the Director of Primary Education.

The study contained four main stages:

1. Collection of data from a representative sample of primary division personnel;
2. The development of policy guidelines on the basis of the above and other relevant data;
3. The development of strategies for the implementation of this policy; and
4. The development of an evaluation and monitoring system to determine strategy and policy effectiveness.

The four stages and procedures are illustrated in Table 1.
STAGE 2

NEEDS PRIORITIZATIONS

Group Formation; Group Interaction; Identification of Individual Group Hierarchical Ordering of Elements

Unification of Group Findings

Group Hierarchies as Distinct Entities

Disparate Group Comparisons

STAGE 3

REPORT PREPARATION

Formation of Composite Hierarchies

Analysis of Hierarchies Report Preparation for possible implementation

STAGE 4

Monitoring/Evaluation

Evaluation of Policy Effectiveness

Evaluation of Strategies employed
Definition of Terms

For the purposes of the study inservice education is defined as those activities which provide the opportunity for teachers to structure and/or restructure their cognition of their professional behaviour through critical analysis based on their own experiences and relevant knowledge; and which provide the opportunity for the teacher to develop the necessary professional self-confidence and the requisite abilities to enact this cognition in his educational context.

Unless otherwise stated "teacher" is used to describe all professionally registered school-locussed staff.

Methodological Procedures

At the beginning of the study there were three basic questions identified as being critical to the entire study. Those questions were:

1. What are the perceived needs for inservice education?
2. What is the stability of the perceived needs at present compared with those of the past through reported studies?
3. What are the actual needs for inservice education?

Questionnaire

A questionnaire was designed to comprise five sections. These were:

1. Background information.
2. Two-open-ended items requesting the statement of:
   (a) the three perceived needs for self; and
   (b) three perceived needs for others in respect to inservice information and the reasons for those statements.
3. Two items based on the Briody Report data.
4. Three-open-ended items on teacher involvement in and with inservice education.
5. Two open-ended items on the future direction of inservice education.

The questionnaire was sent to approximately 1,000 members of the Primary Division. The sample included members from all divisional levels, classroom teachers, principals, advisory teachers, inspectors, regional directors and officers from the Central Office. The respondents were representative of all grade classifications of schools and of geographical location.

Opinion Generation

The purpose of the initial phase was to generate opinions to the major questions which, when received, could be arranged to form process statements to be used for reduction to form operative working statements representative of the opinions generated.
The collection of opinions generated were subjected to content analysis. Because ideas arise from impressions, it is possible for contiguity and succession to occur within a number of statements that are addressed to the same focus. Each idea taken separately, or in combination, could establish a third element, a likely connection between two or more ideas, from which a sequential chain could be recognized. When two ideas are closely related there may be a simultaneous occurrence or relationship, an elaboration of one which will incorporate the other, or a sequence of ideas which will have connective linkages with another. A linkage of ideas (statements) as entities, can occur through similarity of intent of meaning. An idea absorbing another idea within its intent of meaning may be subsumed within the broader context. The third possibility arising in linkage is the idea which is partly contained in each of two statements, but with sufficient differences not to be considered as separate. Such is the purpose of content analysis. (Miller, 1973)

PROCESS STATEMENTS

The content analysis of the generated statements enabled a workable reduction to 162 items to be made. These became process statements which were again subjected to a content analysis. The content (and implied intent) of each statement was examined for the attachment it could have with other statements based on definitional, logical decisional or casual relationship. The 162 process statements were related so that the accomplishment of one would result in the attaining of another. A number of those process statements were sequentially chained, a number of others were subsumed. This was achieved by induction subsuming them into more universal statements to produce the working statement. The working statements were then grouped according to the theme to which they were addressed. Within those categories were contained all the process statements that inferential relationship, and likewise contained were the original opinion generated items.

WORKING STATEMENTS

Each statement as it related to another was examined in terms of agreement, difference, agreement and difference, concomitancy and residue. Having categorized the process statements subsequent to the content analysis to determine the statement interrelationship, a reduction of the 162 items was able to be made to produce 64 working statements.

The working statements were representative statements incorporating the intent of meaning of the 162 process items.

The four categories and the working statements were:

Category 1

ORGANIZATIONAL DEVELOPMENT

Working Statements:

1. To provide for increased parent-teacher communication.
2. To provide for increased communication between staff and inspectors.
3. To facilitate communication between school and the State Department.
4. To facilitate communication between teachers within a school.
5. To provide programs to establish and maintain a healthy school climate.
6. To encourage participation by staff in decision-making.

Category 2

CLASSROOM PRACTICES

Working Statements:

1. To know about commercially produced materials for teaching.
2. Knowledge of approaches to teaching an integrated program.
3. Having knowledge of how to apply small group methods.
4. Having knowledge of how to maintain individual classroom records.
5. Having knowledge of how to prepare materials for classroom use.
6. Having knowledge how to make best use of school resources.
7. Having knowledge of how to work in a team teaching situation.
8. Having knowledge of how to maintain individual class records.
9. Having knowledge of how to conduct field trips.
10. Having knowledge of how to teach for concept development.
11. Having knowledge of how to teach for value development.
12. Having knowledge of how to teach for particular subject skills.
13. Having knowledge of new programs introduced by the State Department of Education.
14. How to plan and implement a student evaluation program.
15. How to construct an appropriate task.
16. Have the ability to diagnose learning difficulties.
17. How to set reasonable goals for student achievement.
18. Have the ability to cater for the high and low achiever.
19. Have the ability to cater for the handicapped child.
20. Have the ability to cope with disruptive behaviour.
22. How to personalize teaching.
Category 3
QUALIFICATIONS AND STAFF RETRAINING

Working Statements:

1. To provide refresher courses for people re-entering the profession.
2. To have access to special information on the use of audio-visual equipment.
3. To have access to programs to develop skills in the use of audio-visual equipment.
4. Upgrading of qualifications 1 to 3 years.
5. Upgrading of qualification of 2 to 3 years.
6. Upgrading of qualifications of 3 to 4 years.
7. To provide refresher courses for administrators, for example, inspectors and principals.
8. To provide courses for those moving into new roles.
9. To provide programs to assist the first year teacher.
10. To study underlying theoretical background to innovations and new programs.
11. To study modern psychology.
12. To develop skills in curriculum development for teachers.
13. Having knowledge of how to motivate statements.
14. Having the opportunity to update knowledge in a particular subject area.
15. How to analyze one's own teaching performance.

Category 4
PLANNING AND EXECUTION

Working Statements:

1. The State Education Head Office to initiate inservice programs.
2. The regional office to initiate programs.
3. The school to initiate inservice programs.
4. The inservice programs to be offered in a tertiary institution.
5. The inservice programs to be offered in a teachers centre.
6. The inservice programs to be offered in your school.
7. The program to be conducted through face to face sessions.
8. The programs to be offered through packaged materials.
9. Inservice work to be carried out through external consultants.
10. Inservice work to be carried out through practising teachers.
11. Inservice work to be carried out through whole school withdrawal.
12. Inservice work to be carried out through single teacher withdrawal.
13. Inservice work to be carried out through inspectors in consultation with staff.
14. Inservice work to be carried out by teachers through their own initiative.
15. Inservice work to be carried out through teacher visitations.
16. To provide for teachers from different schools to exchange ideas.
17. To provide information about new ideas in education.
18. To have access to consultant help on demand.
19. To have access to all types of information through a general information service.
20. To have available support for school conducted inservice work.

It has been the practice in the past when seeking to set priorities to have participants rank-order items and then to seek the degree of coherence among the participants by using frequency counts. This procedure has the serious flaw that the basis used by each respondent for rank ordering the items is not known. To overcome this problem, a technique, called interpretive structural modelling (ISM) was developed. The procedure is used to establish a hierarchy of importance among the items by recording individual pair-wise comparisons of the elements. A computer programme tracks the progress of the participating group's decisions and guides the group as to which pair-wise comparisons need to be made as the session progresses. The work session is really a computer-managed small group workshop, with man making the decisions and the machine doing the housekeeping and bookkeeping chores.

The relational statement that was used in the pair-wise comparisons was as follows:

**RELATIONSHIP STATEMENT**

To improve the quality of primary education through inservice work, we agree that

| ELEMENT X | (e.g. Having knowledge of how to teach for concept development) |

is more important than

| ELEMENT Y | (e.g. Having knowledge of how to teach for value development) |
The statements within each of the categories, organizational development, professional development and staff retraining, classroom practices and planning and execution of inservice education, were built into separate hierarchies by ten different groups who took part on different occasions in the work sessions. The groups represented teachers from urban schools (two groups), teachers from isolated schools, innovative teachers, teachers who had never voluntarily attended any inservice course, inspectors, head office staff, principals, advisory teachers and Queensland Teachers Union representatives. The groups were homogeneous within themselves, in that only principals attended one work session, advisory teachers another session and so on. Typically a work session lasted between six and seven hours including refreshment breaks.

All individual hierarchy building sessions followed the same format. The group discussed the relative importance of each pair of items within the context of the relational statement given above under the leadership of a member of the research team until either a consensus was achieved or the group resorted to a vote. The leadership role of the research team member was to help interpret meaning, to ensure consistency of definition and to encourage the continued active participation of all group members in the decision making process.

Each of the individual hierarchies represented graphically the priorities within each of the four categories as seen by each of the ten groups: To obtain the composite viewpoint of all the groups it was necessary to combine the individual hierarchies into composite hierarchies. This was done mathematically. The resultant composite hierarchies represent the priorities on which all the individual groups agree and therefore represent the priorities set by the composite membership of the primary education division rather than those set by any single group within it.

HIERARCHIES SHOWING COMPOSITE PRIORITIES
FOR INSERVICE EDUCATION INTERPRETING THE HIERARCHIES

The hierarchies can be interpreted in terms of priority setting, for relationships between the statements and to identify the potential influence of action based on a statement. Level 1 indicates the area of greatest priority with statements on the same level being considered of equivalent priority. Statements are linked in respect to their relationship, for example in Hierarchy A below the statement "Determining teacher effectiveness" is directly related to staff involvement in decision making but not with increasing parent-teacher communication. A statement's potential influence is indicated by its level. For example the statement (Hierarchy A) "To facilitate communication between the school and the State Department" (level 5) has less potential to influence the school's climate than encouraging staff to participate in decision making (level 2).

A. Composite-Organizational Development Hierarchy

The major focus in this hierarchy is on communication within the school and between the school and its neighbourhood community rather than on more remote communication between the school and the "state system."
From the hierarchy one can see that effective communication is a basis for both a healthy school climate and staff participation in decision making. The position of these items at the top of the hierarchy indicates that the need to develop interpersonal communication skills and school-based communication networks is of high priority.

Because of lack of space the whole hierarchy for each of the remaining three categories is not presented.

B. Composite Classroom Practices Hierarchy

This is a double-headed hierarchy, with one branch concerned with learning difficulties and the other branch headed by the items concerned with teaching for value development and teaching for concept development.

The statement concerning diagnosis of learning difficulties was not interpreted in a narrow special education sense, but rather as the ability of a teacher to recognize a pupil's difficulty, and then to develop and to implement a suitable remedial programme. In order to carry out this diagnostic function, the teacher needs to be able to organize his time (level 2), use small group methods (level 3), and have knowledge of available commercially produced materials and how to use them (level 4).
The low position in the hierarchy of the statement, "Having knowledge of commercially produced materials" is particularly significant since the potential of any item to generate change is determined by its position. This indicates that simply supplying schools with materials need not per se affect any significant changes in teaching procedures unless some form of inservice education is also carried out on the use of such materials.

C. Composite Personal Qualifications and Staff Retraining Hierarchy

The portion of the hierarchy presented here, is only a small section of a complex association of items. The prime concern of teachers in this category is with how to analyze their own professional performance. The importance placed upon self-evaluation in this hierarchy contrasts with that placed upon evaluation by others for assessment purposes in Hierarchy A.

The items concerned with upgrading of qualifications shown above indicate that the upgrading of three year qualifications was of much greater concern than obtaining degree status, or four year qualifications. Throughout the work sessions little support was given to the establishment of programmes to gain four year accreditation as a major priority. All groups, however, agreed that refresher courses for administrators and orientation programmes for people moving into new roles are of high priority.
There was also general consensus that the curriculum materials generated by the Research and Curriculum Branch of the State Education Department, although based on "best current thought" were not introduced into the system efficiently. Teachers felt they did not receive adequate assistance in the interpretation of the curriculum guides, or in developing the necessary knowledge and skills so that the new materials could be used in the way intended by the developers.

D. Composite Planning and Execution of Inservice Hierarchy

This hierarchy has the same orientation as Hierarchy A in that the school is the major focus.

Chart 5

The two forms of inservice education most favoured are the school-based programmes, that is, a significant proportion of inservice programmes should be initiated and conducted at the "grass-roots" level. These data corroborate the recommendations from a workshop for teacher educators conducted at the Darling Downs Institute of Advanced Education in August 1975 which also stressed the need to promote school-based inservice work and to develop means of communication and the dissemination of information on teacher development programmes.

It is interesting to note that tertiary institutions (universities and colleges of advanced education) were given a low place in the hierarchy as locations for inservice work. Some reasons stated were the lack of understanding by lecturers of the teacher's needs, the language used and the ivory tower approaches adopted. This finding is in direct opposition to the current practice of having colleges of advanced education heavily involved in offering 12 week full-time study inservice programmes sponsored by the State Education Department.

SUBSEQUENT ACTION

A. Policy Guidelines

The above data provided one basis for formulation of policy guidelines for employer initiated or supported inservice education. However, it was necessary to take account of other factors such as the general policy of the State Education Department, the resources available, and other needs such as those generated by the introduction of any new curriculum guidelines. After considering all the available information a set of policy
guidelines was formulated. The principal statements were: (1) inservice education programmes should aim to develop and to capitalise on teacher strengths rather than concentrate on remedying teacher weaknesses; (2) inservice education experiences should be based on a problem-solving rather than on a solution giving model; (3) inservice education wherever practicable should be school-based and system-supported; (4) the locus of decision making power in respect to inservice education should be developed throughout the system; (5) two-way communication between all the different populations involved in inservice education should be improved; and (6) the introduction of new curriculum guides and/or materials should be done in conjunction with the necessary inservice experiences.

Following the adoption of these policy guidelines by the Director of Primary Education, Stage III of the project, the planning and implementation of strategies was begun. Some of the current procedures required no modification, others appeared to need adjustment and the data suggested areas in which new initiatives needed to be taken.

B. Policy Areas

Four areas were selected for the application of these guidelines; (1) school based inservice education; (2) devolution of decision making; (3) the development of more effective communication; and (4) catering for special needs that had been identified.

(1) School Based Inservice Education

The major thrusts suggested were the need (1) to provide additional in-school expertise for continuing staff development; (2) to develop the managerial skills of school administrators so that they can facilitate such programmes; (3) to make available resource material which can assist schools to conduct their own programmes; and (4) to make financial assistance directly available to schools.

To provide additional expertise within the schools and to build a readily available in-school advisory resource, selected teachers have undertaken full time study courses conducted by State Education Department personnel based around the teaching of a single subject, for example mathematics or social studies or language arts. During the third term the resource work of these teachers within their own schools will be supported by Curriculum Development Teams which will work in the school for a period of up to seven days assisting the school staff to identify and to solve some of its problems. Courses of longer duration are also being conducted to train specialist teachers in music, and art.

Week long courses on communication and management have been conducted for principals of large schools and additional courses are being planned. Some resource materials have been produced on art for schools and individuals to use as part of their inservice program.

If funding is made available directly to schools it should be on a proposal basis with the sanctioning power over such funds at the regional level. Two advantages of making schools submit proposals for funds are (1) the school has to plan its programme in detail; and (2) financial assistance is seen as a privilege and not a right.

Finally, the whole school withdrawal strategy (see Administrators' Bulletin 7, 2) could be extended to include more schools since this has been a highly effective segment of a school-based inservice programme.
(2) Devolution of Decision Making

The ability to make and to implement decisions is closely allied to control over resources. Reference has been made above to some ways of increasing the school's decision making power. In order to increase the control of the regional office over resources and its opportunity to engage in long term planning, the following suggestions were made:

1. the direct inservice grant to each region should be increased by no less than 30%;
2. these grants be made on a rolling triennial basis; and
3. a special grants system to meet the costs of additional programs approved by the Director of Primary Education should be instituted.

(3) Communication System

A major communication block seems to exist between the head office of the Department of Education and the regional offices. Therefore, it is suggested that no decisions pertaining to inservice education which heavily involve regional resources should be taken by head office staff without consultation with the regional offices. In this way it is expected to avoid many of the misunderstandings that now arise.

The inspector has a key role in an inservice communication network. He usually has a fairly effective communication system established within his own district; he is involved in sanctioning, planning, implementing and evaluating the results of inservice at the classroom level; and he is in a unique position to monitor the effectiveness of longer term programmes and teacher needs across a number of schools. To assist the inspectorate to be better informed about inservice education, three suggestions were made: (1) the conduct of an annual conference on inservice education; (2) a regular publication for inspectors describing inservice activities within Queensland and elsewhere; and (3) the setting up of an information service in head office from which inspectors could seek advice on inservice. The inspectorate then is seen as having a key role in the two-way communication between the schools and other departmental agencies.

(4) Catering for Special Needs

In addition to the inspectorate, teachers in small schools seem to have a particular claim for inservice education. Two forms of assistance proposed for this latter group were some support for the mutual aid groups and the development of a mobile teachers' centre. The Media Services of the State Education Department suggested converting two railway carriages for use as a teachers' centre which would be situated in a suitable location for a period and then moved on.

Programmes to meet special needs such as remedial teaching and teaching for value development identified in the classroom practices hierarchy are being investigated.

(5) Follow Up

Continual monitoring of the policy guidelines and of the strategies for appropriateness and effectiveness is essential. A system to allow such monitoring is being developed so that the inservice programmes undertaken will provide a more efficient and effective service to teachers and assist them to improve the quality of education they offer to children.
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