Journal of Research in Rural Education, Fall, 1996, Vol. 12, No. 2, 76-82

Action Research for Quality Development in Rural Education in Scotland

Judith W. George
Open University in Scotland

The professional development of teaching staff is a critical issue for all educational institutions. In the UK, the focus of quality assurance and assessment has been articulating the criteria of excellent performance, collecting appropriate data, and producing a self-judgement. This has been challenging, particularly in the context of distance education. Rural tutors in the UK Open University, working in the Highlands and Islands of Scotland, feel that their isolation from colleagues makes it very difficult for them to be certain of the benchmarks of good work. Their uncertainty has made them all the more interested in exploring ways of assessing their work in terms of insights into the learning experience of their students. This article describes the Action Research Programme that the Open University in Scotland has been running to provide tutors with the tools of such evaluation.

The Challenge

Distance educators concentrate much energy on improving the learning conditions of the isolated, rural student. What does not receive much attention is the working conditions of the isolated rural tutor. Despite such neglect, it is this group of tutors in the Open University (OU) in Scotland that has benefited most from the increased stress on establishing quality assessment/quality assurance frameworks for higher education. The rationale of these frameworks is to encourage academic units and individuals to examine their teaching, to identify the criteria of excellence, to collect the relevant data, and to proffer self-assessments of merit—with the expectation that excellence will be recognised. These frameworks have set a higher value on teaching than hitherto, and encouraged the exploration of techniques whereby formative evaluation becomes more than the collection of questionnaire feedback but, in addition, seeks qualitative feedback about the nature of the learners' experiences (Parlett & Hamilton, 1972). This article examines the part that action research can play in curriculum, institutional, and staff development with respect to remote, rural staff.

In the OU in Scotland, almost all our tutors and counsellors are part-time staff who, in their first 2 years of employment, must go through a programme of induction as distance educators. They are subsequently given regular support from their academic line managers, and would normally expect to work from a study centre, where they would meet colleagues and be visited by full-time staff. Practically and psychologically, this contact is of great importance for morale, identity, ongoing professional development, and quality assurance.

But what happens to "remote" tutors, the 100 or so of our 700 part-time staff who work in isolation? They do indeed attend the preliminary briefing sessions, and they are in regular phone contact with their academic managers and with a mentor for the first year. But for the majority of them, there is no possibility of having a chat in the corridor with a peer or a visit from the academic line manager on anything like a regular basis. At Level 1 study,[1] where there are more students and consequently more tutors, it is likely that tutors in a rural area may have a colleague within occasional visiting distance with whom to exchange experiences, to explore good ways of tackling a teaching problem, and so on. But at Level 2 or above, there may only be three tutors for the same course in the whole country, so that the one who lives on an island in the north will seldom, if ever, be able to meet for the kind of informal developmental contact that the two in the populated central belt can share. Nor can isolated tutors receive many visits from full-time academic colleagues to ensure continuing professional development and quality in student support.

Yet it is part of the mission of the British Open University (UKOU) to bring higher education to those who would not otherwise have that opportunity. That is why rural students, and the potential rural student, are accorded a level of priority far beyond the provision appropriate to our average unit of resource. A complementary philoso-

Correspondence concerning this article should be addressed to Judith W. George, Open University in Scotland, 10 Drumsheugh Gardens, Edinburgh, Scotland EH3 7QJ. (j.w.george@open.ac.uk)

[1]Level 1 courses represent the first undergraduate level of study in the OU, but not necessarily a student's first year of study since many students enter at a higher level. Level 2 would be roughly equivalent to second year of study, and Levels 3 and 4 to Honours Level work in the UK.

phy, in the OU in Scotland, has led us to give priority to isolated tutors in our planning of innovative staff development.

We feel strongly that our isolated tutors deserve our very best attention. At the same time, we are conscious of the tactical advantage for research of the limited number of study subjects provided by such a grouping and of subjects whose lifestyle epitomises the independence, self-reliance, and flexibility that are the essential characteristics of successful innovators. And so it has been that, in opting for action research as a basis for both staff and educational development, we have concentrated on our rural tutors, their teaching, and their students (though not, of course, to the exclusion of urban tutors). Their reward, and ours, has been the emergence of a group of rural tutors in the OU in Scotland at the sharp edge of innovation.

Our Policy

Within a single-mode distance teaching institution such as the UKOU, great care is given to every detail of curriculum design to ensure that the teaching and support that a *student* needs is provided in a distance format. The course content is presented to students in print, on audio and videocassette, by computer, CD-ROM, or whatever format is appropriate to stimulate active learning of that particular course material. Careful attention is paid to translating into the distance learning mode all the admissions guidance and all the ongoing course management information (about residential schools' attendance, exams, finance, and so on) that a conventional student would receive face-to-face in a college or university. Support includes tutorial contact and counselling throughout a student's study with the University. Over and above this, particular attention is paid to the needs of "remote" students—through audio-conference tutorials, for example, or day schools in remote areas—at comparatively great cost to the university.

Our challenge was to create the equivalent distance "support" for the 100 *tutors* who are equally remote from their peers. As one tutor wrote:

> Tutors, like students, are forced into learning to deal with and overcome their own isolation, both academic and educational. This is worth noting, since educators in a traditional setting often pass on their own educational experience without formal or conscious effort." (Reid, Geddes, & Wood, 1996, p. 85)

How could the benefits of academic community be made available to them? How could any sea change in the educational environment and expectations be passed on to them? In the past, we had simply attempted to give what support was possible by creating opportunities for rural tutors to meet and to network: regular residential staff meetings, devoting a high proportion of staff travel resource to travel to remote locations, audio-conference, one-to-one telephone calls, and so on.

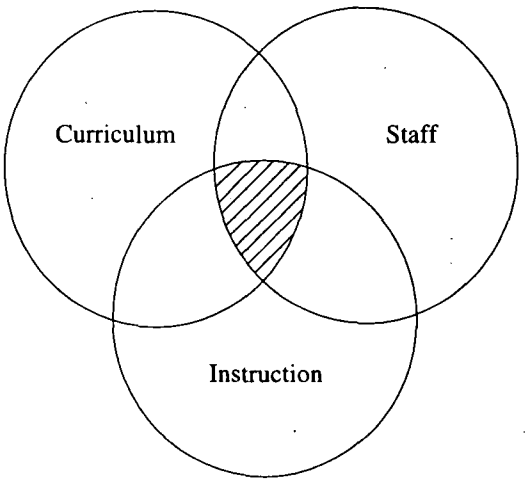

Figure 1. Interlocking circles of development.

But the recent demands of quality assessment and assurance require enhanced professional expertise and a significant change in attitude in tutors to their own role and accountability. The university teacher must be Schön's professional, reflecting on action in action (Schön, 1993)—a person who, as a matter of professional habit, reviews and critiques his or her own practice. This is a requirement for which many university teachers in Britain are not prepared. They may be good teachers, and they may seek and obtain feedback informally. But they do not do so systematically, and certainly not in the rigorous fashion that such a view of their professionalism demands.

In this context, our decision has been to prompt rural tutors with ideas about (a) how to increase their self-sufficiency, and (b) how to engage in their own action research for professional growth and curriculum development. Our pilot scheme is an action research programme into relevant aspects of learning and teaching, particularly as they apply to remote students and their tutors.

Action Research

We anticipate the strongest potential for change in areas where development occurs simultaneously within the curriculum, the institution, and for the individual staff members (see Figure 1).

Though purposeful activity, including research, can bring about development in any of these areas individually, the strongest effect is gained where the implications of the data are teased out simultaneously in all areas, thus creating a synergy.

It may be useful at this point to give a working definition of what we mean by "action research" and how we understand action research to relate to the complementary but different activities of "research" and of "obtaining feedback."

We think of these three activities in ascending order of both rigour and generalisability: *Feedback* reports opinions, or preferably data on existing practice, to enable practitioners to reassure themselves that what they planned or expected has occurred; it also leads to fine-tuning and adjustment to ensure that aims and objectives are met more effectively. The most common mechanism used is the questionnaire. For example, students may be given a mid-course questionnaire about the relevance and effectiveness of audio-conferences in order to ensure or enhance the quality of that mode for the rest of the year. Another example of feedback might be an analysis of performance to identify topics that most of the group clearly had, or had not, mastered.

Action research uses, and may even devise, research methodologies to explore the nature of the learning experience for a particular group of students with a particular teacher in a particular context. It asks questions for which the likely nature of the answer is not always obvious to the questioner. It seeks change and enhancement of practice as an outcome, but not as an immediately transferable outcome in that it has been derived from a particular context with a particular group of students. It is often qualitative and illuminative, rather than quantitative.

For example, a colleague might act as my researcher, gathering data about my students' expectations of the learning experience during an audio-conference tutorial and the extent to which these expectations were met. The data produced would be useful for my self-improvement, but also useful in stimulating tutors using this medium to survey their own practice in the light of mine. They might be prompted to consider different strategies as potentially useful ones to adopt or existing ones as possibly weak ones to avoid in the future.

Research produces through a range of rigorous methodologies, both quantitative and qualitative, generalisable outcomes of use beyond the practice of a single practitioner. An example of research would be a detailed study of the affective, cognitive, and interpersonal gains made by students in a representative sample of audio-conference tutorials in comparison with those in face-to-face tutorials.

Our Programme

The starting point of our action research programme has been the desire to go beyond the mediated data produced by questionnaires, by which the actual experience of the student is washed through at least two stages of interpretation—that of the researcher asking questions (either personally or by questionnaire) and that of the student responding in categories of thought and vocabulary determined by the researcher.

Consequently, we sought a range of techniques that our tutors could use and through which they could gain insight into their students' experience (Parlett & Hamilton, 1972). At the same time, we sought a framework that would support tutors and encourage them to apply these techniques into areas of student support that interested them.

In the UKOU, the amount of student support for which part-time staff are contracted is never enough, especially in respect of isolated students. So it was unreasonable and impracticable to expect staff to give up some of their basic allocation to do developmental work. In order to encourage action research, we felt we had to provide resource as well as inspiration and support. For resource, we have topsliced the Scottish tuition budgets for some 5 years now, each year setting aside a modest sum and calling for bids from staff who would like to explore new approaches on a small scale, especially in the area of support for remote, rural students. Any such work had to be appropriately evaluated and written up, so that the insights and the advice gleaned from the experience could be made available to other interested staff, anywhere throughout the University.

Bids have generally been modest—usually for less than £1,000. But this expenditure, which also pays for the tutor's time, is sufficient to enable her/him to try out a new idea, to evaluate it, and to produce a report that will disseminate the findings. On occasion, the ideas have been simple: designing a visual display to aid understanding of the atomic elements or using acetate grids to overlay visual material such as maps or site plans for ease of reference in telephone tutorials. In other cases, approaches have been more complex.

Getting Started

To set the wheels in motion, to provide an exemplar, and to establish standards, we ourselves (in our additional capacity as part-time tutors with isolated students!) carried out an early project, building a "toolkit" of simple evaluation techniques that could be used by tutors on their own or with the help of colleagues (Cowan, George, & Kerr, 1988). We explored (a) the use of mind-maps to outline the learning that occurred in a tutorial; (b) the "dynamic list" design of a tutorial, which built-in the students' agenda to the workshop/tutorial and gave the tutor the means of checking progress on the agenda; and (c) an adaptation of Kagan's Interpersonal Process Recall technique (Kagan, 1975), by which an enquiring colleague could obtain immediately after the tutorial a "stream of consciousness" account of a student's or students' thoughts and feelings as the tutorial had progressed (Cowan, George, & Kerr, 1988). When these findings were reported to tutors as data for consideration,

any significant points could then be triangulated back with the experience of the class as a whole, if appropriate.

When tutors used these techniques, they found themselves working with findings that they invariably judged to be rich in the kind of insight that they could not have obtained any other way and that prompted them to adapt their style or strategies to respond more effectively to student need. A simple example stems from a comment obtained from a student through Interpersonal Process Recall (IPR) in a Level 1 Social Science tutorial. The tutor normally started the week's tutorial by asking if the students had any questions arising from the week's work. When questions had been dealt with, the tutor then made a businesslike summary before moving on to the evening's agenda. Information from the IPR, which was checked against other students' experience, revealed intense frustration in the group after the summary. Students found that they had follow-up questions to ask prompted by the summary, but they also said that they would not for the world have said anything directly to the tutor because they so appreciated his enthusiasm and kindness and would not have wished to appear in the least critical of him or to disrupt his plan for the evening. This information had not come to the surface in the normal course of events, nor would it have through any interview or questionnaire. But, once the tutor had the information, he naturally and simply changed the format of the introductory session, circling the group till all follow-up questions were exhausted, and then moved on to the new agenda. It was a simple piece of information, but it made an important difference in the effectiveness of his tutorials. We have many similar examples of such mismatches as well as of correlations between the perceptions of tutors and students as revealed by these action research techniques, in some cases leading to change and in other cases reinforcing the tutor in what they could then be sure was good practice.

The Next Stage

The projects that have been undertaken by part-time staff have been diverse, from the use of various media in support of rural students (computer-mediated conferencing, electronic whiteboards, and faxes used in conjunction with telephone tuition) to the experience of women in the Strathclyde Region returning to school. However, action research in three particular areas has contributed significantly to our understanding of isolated student needs and of how tutors can respond more effectively.

Correspondence Tuition

The first area that aroused interest for investigation was that of correspondence tuition, which is central to the quality of student learning in the UKOU's distance system. There is a folk wisdom of long standing about how correspondence tuition should be carried out, and actual assignment marking is carefully monitored across the University according to these criteria. It worried us, however, that this folk wisdom was based largely on full-time academic staff perceptions of what they *think* works, albeit with feedback from students. But some of our more isolated tutors felt that there might be significant insights gained into what students have found really helpful, which would enable tutors to enhance what were perceived as good skills already.

In a series of complementary projects, data were obtained that produced insights about their students' learning from their correspondence tuition (Cowan, 1994a; Hogg & Cowan, 1994; Pottinger & Kerr, 1994; Smith, 1994; Weedon, 1994). This has led to significant changes in the style and effectiveness of correspondence tuition, at least in terms of the tutors involved as action researchers

In general, the approaches used depended on Kelly's Repertory Grid (Kelly, 1955), whereby students were given a facilitative framework within which they could systematically identify in their own words and from their own perspective the features of correspondence tuition that were significant to them and the nature of this significance. These findings were then relayed to their tutor. The findings identified types of tutor comment that students valued highly. The indentified comments were often predictable choices, but had interesting and valuable variations through which a tutor could modify marking approaches. The tutor's comment rated most positively in one case, for example, was not the comment that simply praised, but the one that offered encouragement whilst also observing where improvements could be made. In another example, the comment that praised and explained why praise was merited rated well above mere praise. And in a third case, it was criticism plus a note of what was lacking that was valued more than praise and a note of what was right (Weedon, 1994).

Sometimes insights were contrary to commonly held belief and institutional expectation:

> Since in my marking, I gave the students who needed it the correct method for performing the calculation and invited them to contact me if they would like further guidance, I interpreted the lack of response as either the students having, at last, fully grasped the concept or having understood where they had made a careless mistake. I was rather shaken to discover that neither factor explained the lack of response; rather the students found it difficult to declare that they did not understand my comments. (Pottinger, 1994, p. 9)

> I feel now that I must give more thought to finding ways of allowing students to pinpoint weak-

> ness for themselves through the use of questions in my marginal notes. This would overcome the problem of giving them "advice" which may only confuse them if they do not understand why I am giving it and what I feel is the weakness in their understanding. (Kerr, 1994, p. 4)

On occasion, there were considerable mismatches of perception between tutor and student about the thrust of the tutor's comments. Sometimes these were as extreme as the student interpretation being "reassurance that I've got understanding of the course content—which was important to me," whilst the tutor's intention was "to indicate lack of understanding of the course material" (Weedon, 1994). Less disconcerting was the minor mismatch of the student's "recognising strength in presenting argument and/or summarising ideas" against the tutor's "recognising strength in content knowledge" (Weedon, 1994, p. 9). Thus the insight into what was happening in the student's learning experience and in the tutor/student interaction not only functioned as a diagnostic tool for the tutor's work with the particular student, but alerted them both to possible ambiguities and to the need for amplification or checking.

An unexpected benefit of this group of projects was that each initiative notably strengthened the learning relationship between tutor and students. Students realised that it really was acceptable to talk to their tutor about how they learned and the aspects of tuition that they found helpful or difficult. Consequently, the whole issue of process and learning skills became part of the regular tutorial agenda, both between tutor and students, and amongst the students themselves.

This line of development has since been taken one step further by Weedon, who has investigated with encouraging results the possibility of designing a self-administered Kelly analysis for use by students (Weedon, 1995).

Telephone Tuition

A natural focus of interest in a country where face-to-face tutorials are difficult in remote areas even at Level 1, and are virtually impossible for the still smaller enrollments of higher level courses, is the effectiveness of telephone tuition. This is a relatively cheap, accessible, and familiar medium, and one of which substantial use consequently is made. Over the years, the UKOU has put considerable effort into training tutors and counsellors in appropriate skills (George, 1983), but despite the long experience in Scotland in this area, we felt that the received wisdom on effective strategies is still very much in the arena of folk, rather than researched, wisdom.

In 1994, Cowan (1994b) therefore carried out a small project to adapt Kagan's IPR technique to audio-conferencing. As researcher, he taped a conference call, took advice immediately after the call from the tutor regarding passages the tutor wanted investigated, and then played back the relevant parts of the tape in short sections to two volunteer students and to the tutor, seeking recall of thoughts and feelings. As with the conventional IPR technique, the immediate replay of the call provoked rich recall of experience from the students, which was relayed to the tutor, after the tutor's recall had been established.

One striking feature of this enquiry was the immense variety of styles and strategies, even within one faculty. But the most noteworthy feedback, as in the case of the Kelly's grid analysis, was the incidence of mismatches in perceptions between student and tutor. Commonly, a tutor may feel that all is going well, when the students are totally baffled; equally, elsewhere in the same call, the tutor can be worried, and yet the students report satisfaction and confidence.

One tutor, for example, was mortified following the last tutorial before the examination, because she perceived she had monopolised the time at the end of the call, running through "do's" and "don'ts" for the dreaded day, instead of letting students steer the agenda with their own questions. On enquiry, however, it transpired that this input had had a most heartening and steadying effect on the students, and, in particular, had left them with a high level of confidence.

This project, however, raised far more questions than it answered about what is really effective and in what circumstances. At the same time, it was an extremely demanding form of investigation and required an experienced researcher to handle the process of enquiry effectively.

For both those reasons, action research into telephone support is continuing at the moment on a basis of telephone interviews across a range of faculty groups (Cowan, 1996a). The original intention of the current project was educational development, with enquiry into styles and strategies in telephone teaching and their related outcomes. Eight tutors were allocated in pairs, with cross-discipline matching. Each acted as enquirer for the students on the other's audio-conference tutorial, working through pre-determined questions with two of the student group immediately after the call. The tutor had declared his/her aims and objectives before the call, and then was asked a set of questions complementary to the students' ones, together with a question about the extent to which aims had been achieved. The students' comments were then relayed to the tutor. As in other action research projects, these comments sometimes provided reason for change, but sometimes confirmed the success of what the tutor did already. The findings from both tutor and students were recorded and then reported to the project leader. The project is about to move into a second round of investigation. But it is interesting to note that, whilst there

has been a significant educational development outcome, there has also been a powerful staff development impact on the tutors involved.

Transferable Skills Development in Science

A series of projects have explored ways of developing transferable skills in Level 2 science students and ways of training staff to be able to affect such development (Cowan, 1994c; Reid, 1994; Wood, Rowson, & Fraser, 1994). This is a classic example, again, of the needs of remote, rural tutors prompting development. Given the handful of students and tutors in science courses in the Highlands and Islands, easy access to a specialist tutor is rare, and so a science student needs to develop survival strategies for the particular discipline in order to become a successful, autonomous learner. In a similar situation of student rural isolation in the Scottish Borders, Cowan and George (1989) had much earlier developed cross-faculty learning skills workshops to strengthen students' ability to be resourceful and independent learners. The work in the Highlands moved beyond that, to look at transferable skills within a single discipline, at how these skills could be purposefully developed, and at the implications for staff in setting them that task with their students. This work has been recognised at a European level (Cowan, 1994d), with the result that two of these isolated rural tutors, who had never contributed to a staff development activity, were invited to Denmark to assist Cowan to develop in Aalborg University a scheme based on the Scottish project.

The fundamental idea behind this development was that there are some processes or procedures that a science student uses again and again, following the same cognitive process even when working with different subject matter. The quintet of tutors were persuaded by Cowan to explore the possibility that "doing science" centres on the frequent use of such multi-purpose skills or procedure: This conviction was linked to the belief that teaching and learning that concentrate on these processes, rather than on the content to which they are applied, leads to deep understanding, heightened competence,and to intellectual maturity and effectiveness.

The project began with a residential weekend attended by both tutors and students, working not in a parallel but in an interweaving design of programme to identify and articulate these science skills. The interaction between tutors and students was predicated on the innovative assumption that learning for both is pedagogically the same.

That initial event gave rise to a further year's work with students, as well as an evaluation project at the end of the year. The success of the project has demonstrated how and how well tutors can generate their own innovative staff development, whilst covering new pedagogic ground and giving students an enhanced educational experience. Whilst the project was rooted in the North of Scotland to begin with, it is noteworthy that this work on these core science skills has now been carried into the developmental work for the UKOU at large, on the new science Level 1 course to be delivered in 1998.

Conclusion

We judge that our action research initiative has proved valuable in each of the three circled areas in Figure 1—in curriculum, institutional, and in staff development—and most valuably where it has impacted on two or even three of the areas at the same time. The development of the transferable science skills, for example, has significantly affected the preparation of isolated rural students for the role of resourceful and independent learner; the design of the major new science course has been affected; and a new pattern of staff development has been formulated.

The action research programme, moreover, has been of particular value to isolated rural tutors. Confronted by the challenge of quality assurance and assessment and a changed academic culture, the forerunners have been encouraged (as all action researchers are) to take control of their own development as self-aware and self-critical professionals, able to assess their own work rigorously and creatively. And they have excelled in so doing.

The action research initiative has been important to tutors in enhancing understanding of their students and improving their own tutorial and student support skills. But, more than that, by its very nature, the initiative has set an appropriate context and culture for this sort of development. The criteria for achievement have been set by the tutors; the pattern of action has been worked out by them; the data collectedby them; and the judgement as to effectiveness and as to the improvements to be made passed by them.

We maintain, with a conviction based on the experience we have reported, that people cannot be told how to become independent self-developers, but that an action research programme can provide tutors, and rural tutors in particular, with the tools by which they can create their own path forward through rigorous experiential learning. It can vitalise their work as professionals; it can vitalise the support that their isolated students receive and the consequent quality of their learning. Such energy and innovation, coming from the grassroots upwards, inevitably vitalises their University, the academic community of which these tutors can be leading, even though distant, members.

References

Cowan, J. (1994a). *Kirkcaldy correspondence tuition project* (Project Report 1994/3). Edinburgh, Scotland: Open University in Scotland.

Cowan, J. (1994b). *Telephone interpersonal process recall report* (Project Report 1994/1). Edinburgh, Scotland: Open University in Scotland.

Cowan, J. (1994c). *Transferable skills in post-foundation science* (ETTI 31.4). Kogan Page, London: Education and Training Technology International.

Cowan, J. (1994d, June). *Research into student learning - yes, but by whom?* Proceedings of the International Conference on Teaching Science for Technology at Tertiary Level (pp. 51-59), Stockholm.

Cowan, J. (1996a). *Interim report on telephone project.* Edinburgh, Scotland: Open University in Scotland.

Cowan, J. (1996b). The distance mode in Scottish Higher Education. In J. W. George, B. Nylehn, & A. M. Støkken (Eds.), *Distance education in Norway and Scotland: Experiences and reflections* (pp. 83-96). Edinburgh, Scotland: John Donald.

Cowan, J., George, J. W., & Kerr, G. (1988). *Report on project to assess tools for formative evaluation.* Edinburgh, Scotland: Open University in Scotland.

George, J. W., (1983). *On the line: Teaching and counselling by telephone.* Edinburgh, Scotland: Open University in Scotland.

George, J. W., & Cowan, J. (1989). Non-numerate study skills: A mathematical approach? *Open Learning, 4*(1), 41-44.

George, J. W., Nylehn B., & Støkken, A. M. (1996). *Distance education in Norway and Scotland: Experiences and reflections.* Edinburgh, Scotland: John Donald.

Hogg, T., & Cowan, J. (1994). *Report on an investigation into correspondence tuition in Region 11, based on Kelly's Repertory Grid* (Project Report 1994/6). Edinburgh, Scotland: Open University in Scotland.

Kagan, N. (1975). Influencing human interaction: Eleven years with IPR. *The Canadian Counsellor, 9*(2), 74-97.

Kelly, G. A. (1995). *The psychology of personal constructs.* New York: Norton.

Parlett, M., & Hamilton, D. (1972). *Evaluation as illumination: A new approach to the study of innovatory programs* (Occasional Paper 9). Edinburgh, Scotland: Centre for Research in the Education Sciences, University of Edinburgh.

Pottinger, I., & Kerr, G. (1994). *Kirkcaldy messenger project* (Project Report 1994/4). Edinburgh, Scotland: Open University in Scotland.

Reid, E., (1994). *Staff development and student learning (and vice versa) in the Highlands: The real McCoy?* (Project Report 1994/9). Edinburgh, Scotland: Open University in Scotland.

Reid, E., Geddes C., & Wood, H. (1996). Supporting Open University students in the Highlands and Islands of Scotland. In J. W. George, B. Nylehn, & A. M. Støkken (Eds.), *Distance education in Norway and Scotland: Experiences and reflections* (pp. 83-96). Edinburgh, Scotland: John Donald.

Schön, D. (1993). *The reflective practitioner: How professionals think in action.* New York: Basic Books.

Smith, B., (1994). *Obtaining feedback on correspondence tuition* (Project Report 1994/2). Edinburgh, Scotland: Open University in Scotland.

Weedon, E. (1994). *An investigation of the effect of feedback to students on TMAs* (Project Report 1994/5). Edinburgh, Scotland: Open University in Scotland.

Weedon, E. (1995). *An investigation into using a self administered Kelly analysis* (Project Report 1995/2). Edinburgh, Scotland: Open University in Scotland.

Wood, H., Rowson, H., & Fraser, S. (1994). *Workshop on skills in science* (Project Report 1994/8). Edinburgh, Scotland: Open University in Scotland.