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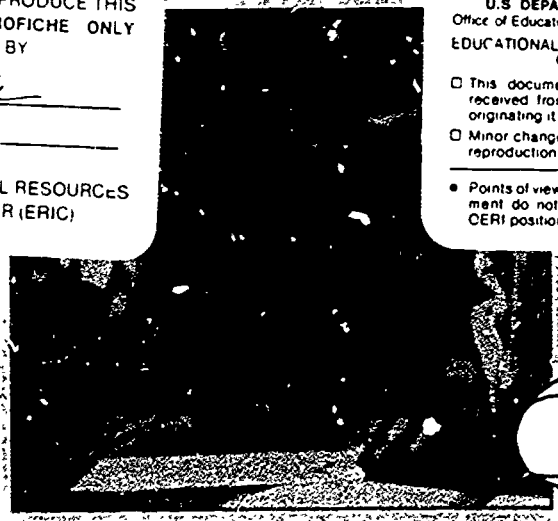
ABSTRACT

This booklet was written to help teachers plan their own research. It concentrates on how to translate an issue of general concern to a teacher or group of teachers into a worthwhile and feasible piece of research. The booklet is divided into four sections: section 1 deals with the purpose of doing research. It stresses that research questions can be developed if it is clearly understood why the research is needed. Section 2 contains an example of the different kinds of purposes and, therefore, the different kinds of research questions a researcher might have. The topic of primary-secondary transition is used as the example. Section 3 suggests a straightforward procedure which teachers can use to develop their own research questions out of the professional concern they would like to research. The concluding section offers a form which teachers can use to formulate their own research questions. This section includes an example of how the form might be filled in for the primary-secondary transition research discussed in section 2. Three figures explain the procedures in outline form. (JD)

Practitioner MiniPaper (PmP) 2

SO YOU WANT TO DO RESEARCH!

A guide for teachers on how to formulate research questions



Ian Lewis / Pamela Munn

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a guide for teachers on how to formulate research questions

Ian Lewis
and
Pamela Munn

The Scottish Council for Research in Education

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INTRODUCTION

'Cheshire Puss,' she began, rather timidly,
'would you tell me, please, which way I ought
to go from here?'
'That depends a good deal on where you want to
get to,' said the Cat.
'I don't much care where—' said Alice.
'Then it doesn't matter which way you go,'
said the Cat.
'—so long as I get somewhere,' Alice added
as an explanation.
'Oh, you're sure to do that,' said the Cat,
'if you only walk long enough.'

Lewis Carroll, *Alice's Adventures in Wonderland*

This conversation can readily be adapted to the situation of many teachers faced with real issues which they see as affecting their professional competence. It identifies a number of criteria which need to be met whenever it is felt that small-scale, school-focused research might help to enhance a teacher's understanding. The most important of these are, being clear in your own mind about:

- What you want to investigate.
- Why you want to investigate it.
- How you are going to investigate it.

Planning your research

This booklet is intended to help teachers plan their own research. It concentrates on how to translate an issue of general concern to a teacher or indeed a group of teachers, into a worthwhile and feasible piece of research.

The booklet is divided into four sections—

Section 1 deals with the purposes of doing some research. We stress, in this section, that once you are clear about *why* you want to do a bit of research you can develop what we call *research questions.*

Section 2 contains an example of the different kinds of purposes and, therefore, the different kinds of research questions which research might

have. We have used the topic of primary-secondary transition as our example.

In Section 3 we suggest a straightforward procedure which teachers can use to develop their own research questions out of the professional concern they would like to research.

In the concluding section we offer a form which teachers can use to formulate their own research questions. This section includes an example of how the form might be filled in for the primary-secondary transition research we discuss.

Team research

Research can be undertaken either by a teacher working on his or her own, or by a team of teachers working together on a particular area of concern to them. Our experience of working with teams convinces us that there are many advantages to them. A major advantage is that colleagues can support each other through the ups and downs of doing research. Team members can bring different points of view to the area to be researched and so can encourage more thorough consideration of the area. The results of team research may also stand a better chance of being implemented in a school, simply because a number of teachers have been sufficiently concerned about an area to try to do something about it. We have worked with teams coming from the same school and with teams across schools. Teams need not consist entirely of teachers. There are possibilities of teams of teachers and advisers, school social workers and educational psychologists working together in various combinations. We would urge any teacher contemplating some research to 'find at least one friend' to share the enterprise with.

Individuals

Finally, we are conscious that this booklet may be used both by teachers on degree and diploma courses with a research component and by teachers doing research 'off their own bat'. We urge teachers on degree and diploma courses to discuss their research questions with their tutor or supervisor. It is extremely rare for a first attempt at developing feasible and worthwhile research questions to be totally satisfactory. Tutors should be given ample opportunity to comment on successive drafts of research questions before any attempt is made to collect data. Teachers who are doing their research outwith the confines of a degree or diploma, should try to talk over their questions with someone who has had research experience and/or someone who knows their school situation well.

Careful consideration pays dividends

Careful and thorough consideration of what you want to research pays dividends. The most important of these is that it saves you time by clarifying in advance what you need to know and why you need to know it. We know, from our own experience, that teachers can and do undertake worthwhile research on issues of direct practical concern to them. They do this within the usual limits of time and other resources available to any teacher. The teachers we have worked with have found their research a demanding but essentially enjoyable activity, which not only enhances their own professional understanding but can also improve the education of their pupils. We hope that you will be encouraged by this booklet to see research as something that is both worthwhile and feasible for you to do.

Further reading

We will limit the suggestions for further reading, and mention only a handful of sources which have the merit of being readable and relevant to teachers planning the kind of small-scale work with which we are concerned. *Rediguides* have the merit of giving practical advice about quite specific approaches to data collection. Each one is brief, with many practical examples, and contains a host of useful pointers to the effective implementation of particular data collecting approaches. They are obtainable from the Education Department, University of Nottingham, University Park, Nottingham NG7 2RD and a full list of titles can similarly be acquired. Two books containing examples of work done by teachers, and illustrating the range of possibilities within the scope of individual, small-scale teacher research, are:

J Nixon, (1981) *A Teacher's Guide to Action Research*, Grant McIntyre

D Hustler, T Cassidy and T Cuff (eds) (1985), *Action Research in Classrooms and Schools*, Allen & Unwin.

Lastly, a very useful recent publication designed to offer practical advice to teachers on how to set about collecting information and ensuring that their research intentions are as effectively implemented as possible is:

D Hopkins, (1985), *A Teacher's Guide to Classroom Research*, The Open University.

A readable book. It recognises the major differences between teachers and professional researchers, and does not try to mystify the research process.

1

WHAT IS A RESEARCH QUESTION?

Most teachers who are thinking of doing a piece of research have a general area of interest in mind. For example, one teacher might be interested in researching home-school relations, while another might be concerned about the transition from primary to secondary school. Unfortunately, research defined in these general ways is unhelpful, particularly to the teacher researcher with a small-scale study in mind. The reason lies not in the areas of interest themselves; few would dispute that these are worthwhile areas to investigate. The reasons that research interests expressed in this general way are unhelpful are:

(1) They do not indicate precisely which aspects of the general area should be examined.

(2) They do not indicate possible sources of information.

(3) They do not indicate appropriate ways of collecting information.

It is important, then, before we embark on an enquiry that we are clear about precisely what it is we are interested in investigating. A *research question* is one which makes explicit the precise area of an investigation; it identifies, within the area of general concern, the specific aspect(s) which is or are of particular interest. Research questions are the vital first steps in any research. They guide you towards the kinds of information you need and the ways you should collect the information. They also help you to analyse the information you have collected.

If we take the area of primary-secondary transition as an example, we could identify several possible different specific areas of interest:

(1) Are we concerned with evaluating the effectiveness of current administrative arrangements for transition?

(2) Are we interested in the possible mis-match between teaching styles on either side of the transition?

(3) Are we to be concerned with the personal dimension of transition, for example, pupils' anxieties?

(4) Are we interested in teachers' problems, pupils' problems, institutional problems? Whose problems are to be researched?

(5) Do we want to find out what is significant about transition to all the parties involved, pupils, parents, teachers?

(6) Do we want to experiment with new ways of dealing with transition?

These examples, just a few out of a large range of possibilities, indicate a fundamental point about doing research. This is that you need to be clear about which aspects of a general area are of most concern to you. It is usually helpful to think about the purpose of the research when deciding which aspects of a general area are indeed of most interest. By asking 'Why am I interested in finding out more about primary-secondary transition?' you can help to identify a list of priorities and then decide which is the most important.

Why teachers do their own research

It is worth indicating that most teachers do research for one of the following purposes:

(1) To *monitor* and influence the direction of new developments.

(2) To *try to find out* what is actually going on, recognising that what actually occurs is not always the same as what is thought to occur.

(3) To *evaluate* what is already taking place.

The overall aim of these kinds of research is usually to provide some systematic and reliable information that can be used as a basis for action. Instead of relying upon intuition and value judgements in making decisions, the individual teacher, the department or the school staff as a whole can use carefully collected evidence to feed into the decision-making process.

It is usually helpful to talk over the purpose of doing your research with your colleagues. This is vital both for a teacher working on his or her own, and for team research. It is *essential* that such discussions take place if the research is intended to influence departmental or school decision-making. The research will not be done in a vacuum. It may well impinge on pupils, parents and colleagues. You will need the support of interested parties especially if the research is to have any kind of impact outside your own classroom. In addition, talking over the research with colleagues and examining the key features of the school context in which you work can help you clarify in your own mind what it is you are really interested in investigating.

In Section 2 we look in greater detail at where research questions come from.

2

WHERE DO RESEARCH QUESTIONS COME FROM?

We have already indicated the two important and initial sources of research questions readily available to the teacher contemplating some small-scale research. These are:

(1) The purpose to be served by the research.

(2) An awareness of the important features of the school context in which the research will be undertaken.

We now move to a range of practical activities designed to provide further assistance in ensuring the best initial decisions are made. It should, for example, now be clear that there are no 'right answers' to the question, if this is my area of interest, what research should I undertake? There are, in fact, many answers, and the researcher will have to make judgements as to which seems most suited to individual circumstances. What is important to recognise, though, is that precisely because we are talking about the individual teacher conducting small-scale enquiry, it will be essential to ensure that individual assumptions do not play *too* large a part in defining the precise focus for the enquiry. How, therefore, can the individual teacher guard against the natural limitations of his or her own particular background and experiences? How indeed can a team of teachers guard against reinforcing one another's assumptions? We can illustrate ways of incorporating the ideas of others into the initial planning by giving further consideration to the primary-secondary transition example. (We have used the example of an individual teacher throughout for the sake of simplicity and brevity.)

Incorporating the ideas of others

It is possible, for example, to be alerted, to specific issues in primary-secondary transition because concern has frequently been expressed at staff meetings about:

(i) The contrasting information received from feeder schools; or

(ii) about the variety of work which new pupils can do and which seems to be related to the previous, feeder school experiences.

This might suggest that it would be important to investigate the range and diversity of the curriculum provided and teaching methods used in the primary schools. In other words, the issues and interest generated amongst *colleagues* can be a critical source to alert the teacher to the specific focus for an enquiry within an area of general research interest.

It is also possible that a teacher's own *school position* is a major source

of significant areas of detailed concern: for example, a teacher with pastoral responsibilities for first year classes might identify a spate of letters from parents, and reports from colleagues. about increasing school phobia among first year pupils. Such concerns might suggest that it would be worthwhile to try to evaluate the effectiveness of current transition arrangements.

Thirdly, it is conceivable that *a report* has been read indicating that other schools have had some success in reducing transition anxiety by introducing arrangements which seem relevant to your own school. Lynda Measor and Peter Woods (1984), for example, have shown that carefully devised and phased induction programmes can substantially reduce anxiety associated with transition. Teachers reading this might be led to speculate on the feasibility of introducing such programmes in their own schools and also, then, on monitoring their impact.

It is possible to incorporate these external sources into one's own thinking about an area. These illustrations also serve to reinforce the earlier notion that it is the purpose which any research is designed to serve which significantly aids the move from general area of concern to precise formulation of an appropriate research question.

The second, practical stage, then, requires that the teacher considers at least three other main sources of ideas and thinking associated with the original general area of interest. These are:

Published material

Whether in formal, official reports, or in the daily, weekly, local, national and professional press, the teacher contemplating research should try to become aware of current views and experience which might be reported in such sources. They are a guide to new ideas and, most importantly, they are a guard against too much insularity in the initial, planning stage. It is also possible that academic journals sometimes contain reports of other studies in the same area and it can often be useful to see how others have tackled issues connected with your own interests. On this last point, a way of saving a great deal of time in identifying whether anything has been published recently lies in making use of the *British Education Index*, available through most academic libraries. In addition there are British registers of research which can help in finding out *systematically* what has already been done in a particular area of interest.

All these published sources should be used to see whether, for example, alternative lines of enquiry beyond those already indicated seem to have been explored. They can also be helpful in indicating approaches which others, with similar interests, have used in collecting information. They

might, too, show where there appear to be major areas of dispute in conclusions which have been drawn, and which your research might explore. Finally, they can indicate, by omission, interesting new areas for enquiry.

What is important is that they provide a stimulus, external to the teacher and the particular school, for ideas which the teacher's own school or classroom might not, of itself, generate.

School interest

Interest within the school has already been indicated as a likely source for the initial concern, which might have a bearing on the key question of the worthwhileness of any particular enquiry being considered. Is it a matter on which your colleagues have already expressed interest? If so, it is possible that they will look with favour on your eventual enquiries which might be demanding time and support from them.

However, it should also be noted that expressions of school interest can also be used as a way of alerting the researcher to possible avenues of enquiry which have not, initially, been considered. All teachers do not necessarily share identical views on a particular situation, and the recognition of a diversity of views can be an important source of new ideas which should be taken into account in preliminary thinking and clarification.

Personal/professional interest

The natural busyness of teaching can frequently be a barrier to the formulation of the most effective research questions. By this we mean that the individual teacher can often, because of the heavy demands on the job, overlook critical aspects of a situation under review simply because they do not seem, at the moment, to be of pressing concern. It is important, therefore, to ensure that, before embarking on research the individual teacher stops to think of all the aspects of his or her own particular situation which might be connected, however remotely, with the possible area of research. How does your own particular position in school link with the area of interest? In what ways do you experience aspects of the situation? In what ways might your job be improved if particular enquiries bore fruit?

In other words, the particular situation of the teacher contemplating research can be an important source for the generation of the eventual specific research focus. This personal and professional dimension must not, however, be taken for granted. Such influence will only come about if time is taken to stand back and reflect upon all those aspects of your personal views and professional commitments which might have some bearing on the possible area of research.

Summary

In summary then, there are five main sources of research questions:

(1) The purposes to be served by the research.

(2) The particular features of the school, department, or classroom in which the research is to be undertaken.

(3) The views of colleagues, especially colleagues who do *not* share your own views.

(4) Your own position in the school may provide you with information which alerts you to the focus of the research into a specific topic.

(5) Published material, reporting the experience of other schools and teachers, and more general material relating to the area of your research.

You should use all these sources to help you generate the most effective research questions. Formulating research questions is often the most difficult stage in doing research. There is no substitute for thinking hard! Once you have research questions that you are confident about, they will guide you towards the most appropriate ways of collecting information. They are also the first line in analysing information once you have collected it.

How might this work in practice?

There follow two examples of research questions which focus on different aspects of primary-secondary transition.

Example 1 illustrates the kinds of research questions which a Year Head concerned about increases in school phobia might generate. The purpose of the research is to improve transition arrangements so that school phobia is minimised. In Example 2, the same Year Head is more concerned about curriculum progression and continuity in mathematics and so generates a different set of research questions.

Research Questions on Primary-Secondary Transition

1: School phobia

Taking as a starting point concern about primary-secondary transition arrangements because of reported increases in school phobia in first year pupils, my research questions (as a Year Head) could be:

(1) What are the primary-secondary transition arrangements? (Note that I do not take for granted that I am thoroughly familiar with these, even though I have worked in the secondary school for a few years. There may well be aspects I have either forgotten, or never knew about.)

(2) How do teachers of the final class in primary schools which feed my secondary view these arrangements? How do they think these could be improved so that transition is less of a problem for pupils?

(3) How do teachers responsible for the first year secondary intake view these arrangements? How do they think these could be improved so that transition is less of a problem for pupils?

(4) How do pupils themselves view transition arrangements? In what ways do they think the arrangements could be improved?

(5) How do parents view transition arrangements? In what ways do they think the arrangements could be improved?

2: Curriculum progression and continuity

If, on the other hand, I was more concerned with liaison between primary and secondary schools in terms of curriculum progression and continuity, I would have a different set of research questions:

(1) How much information do teachers of mathematics to first year secondary classes have about the mathematics syllabuses in the associated primary schools?

(2) How much information do the associated primaries have about the first year secondary mathematics syllabus?

(3) What kinds of information about pupils' abilities in mathematics do secondary school mathematics teachers have? Do they find this information helpful?

(4) Would the mathematics teachers in the secondary school find *different kinds* of information about their pupils helpful?

(5) What do teachers of the upper primary classes see as the key mathematics skills to be mastered by their pupils?

(6) Do teachers of the upper primary classes see a need for information about what the secondary school is looking for in pupils transferring from primary?

Having produced a series of research questions generated by my own interests, I then need to consider the other sources of information listed in the summary on page 12. These sources may lead me to amend the research questions and/or reduce their number.

* * * * *

It is unlikely that the first set of research questions you produce will be the set you finally use.

3

PRINCIPLES INTO PRACTICE

We have indicated the importance of translating an initial research concern into precisely formulated research questions and have shown how the individual teacher can incorporate into this process the ideas of others. This still leaves one important area to be examined: the move from the research questions to the design of a feasible enquiry which offers realistic prospects of fulfilling the purpose which it is intended that the research will serve.

It is the issue of *feasibility* which should, finally, determine which of the many worthwhile possibilities for research, you will focus on. In saying this we reinforce one earlier comment about there not being any 'right answers' to the problem of defining a research question. It is important to recognise that for the practising teacher, any research enquiry will need to be added to an already substantial set of demands on time, energy and resources. Worthwhile teacher research, therefore, is research which can realistically be added to an already demanding job. It should, where possible, be seen as no more than extending the activities in which the teacher is already engaged. The more the research lacks connection with the normal range of professional work, the more difficult it will be to undertake, and the more likely it will be that its worthwhileness will be substantially reduced.

The strategy which we have outlined so far should allow you to move from an initial area of concern towards the identification of a number of possible research questions according to the schematic decision-making process outlined on the following page.

How, then, do we decide what is feasible, in making the final choices about which research questions to concentrate upon? One useful way is to introduce another nursery memory: the verse from Rudyard Kipling's *The Elephant's Child* runs:

> I keep six honest serving men
> Who taught me all I know.
> Their names are What and Why and When,
> And How and Where and Who.

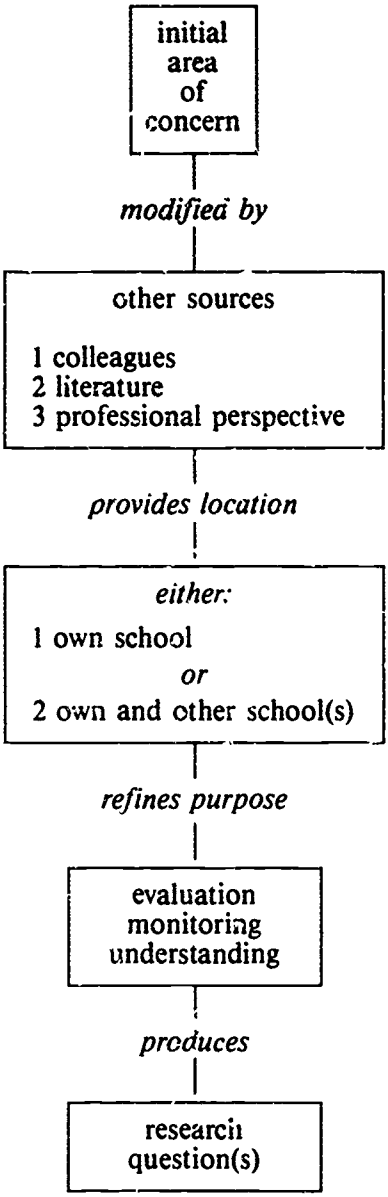

Figure One: The Decision-Making Process

Translated into practical terms, this gives rise to the following questions about your research:

- What information do I want?
- Why do I want it?
- When do I need it?
- How do I collect it?
- Where can I find it?
- From whom do I get it?

In the context of your research questions it will be helpful to consider these elaborated in the following form:

(1) *What information*? Will you need to get at people's views or examine their actual practice? Is the background important? Is it likely that there is a wide range of views and of practice?

(2) *Why this information*? How will the kinds of information specified help you to answer a particular research question? Are all the possible sources necessary? Are some more vital than others?

(3) *When do you need it*? Is there an order of priorities for data collection? Is certain information only available at particular times in the school year?

(4) *How can I collect it*? Will you need to observe situations? Sit in on discussions? Interview those involved? Will a questionnaire be necessary?

(5) *Where can I find the information*? Classrooms, staffrooms, corridors, meetings, filing cabinets, official documents, through private contact with individuals?

(6) *From whom*? Who are all the parties to the research problem under examination? Has every possibility been identified?

Finally, when each contending research question has been subjected to the kinds of procedures outlined, it will then be necessary to add the one crucial dimension in order to determine the feasibility of the proposed research. This dimension identifies the most precious resource available to the teachers—TIME. We have already indicated that such research activities will be in addition to the normal demands of teaching. This means, quite obviously, that there will be little spare time able to be devoted to research. There will, therefore, be no point in embarking on a project only to find that the demands it will make are far beyond your capacity to meet. Better, always, to go for the smaller scale project which stands a good chance of being brought to fruition, than the large-scale

project which has to be set aside before any conclusions can emerge. Again, we reinforce the notion that such research should be seen as adding to a teacher's professional understanding. This will not occur with a project which has to be abandoned because of lack of time.

It is worth adding some details here to show how the 'time factor' can affect a possible research project. If, for example, it is important to get information about what takes place in colleagues' classrooms, access to these classrooms will need to be negotiated. Opportunity to spend time in someone's classroom will need to be dovetailed into whatever limited free time may be at a teacher's disposal. Unless it is already established practice that teachers visit each other's classrooms, it is highly likely that a series of visits will need to be made in order to minimise the effects of the visitor—on both teacher and pupils.

It has to be remembered, too, that collecting any information requires that time also be set aside in order to analyse the material, to identify factors of significance and, possibly, to suggest new avenues which might be explored. It is all too easy to underestimate the time required to translate the data collection stage of research into an eventual report of whatever findings have emerged. If the research is judged to be worthwhile, then presumably colleagues need to be made aware of what has emerged, so that their own thinking can take the information into account. Reports on research require time to be produced.

A final limitation involves the methods which might have been chosen in order to collect the necessary information. It is essential that you become familiar with the advantages and disadvantages of the methods you intend to use. *Rediguides* are a good source of information here. (See page 6). It is also helpful if you can discuss methods with someone who is knowledgeable about them.

If you intend to observe in classrooms, for example, *what* will you observe, and how good are you at acquiring such information? Are you interested in teacher talk, teacher actions; *all* the behaviours of *all* the pupils, the interaction between teacher and pupils? You need to make decisions about what to observe and what to ignore. These decisions should follow logically from your research questions. If you want to observe whether a teacher asks questions to more boys than girls, for instance, you need to:

(1) Devise a means of noting to whom the teacher puts questions.
(2) Practice noting this *and* observing so that you are able to cover quick fire question and answer sessions.
(3) Negotiate a position in the classroom where you can see all pupils and the teacher.

If you intend to interview—whether it be parents, colleagues or pupils—what do you want these interviews to focus upon? What methods do you intend to use to record the information? How good an interviewer are you? You need to be clear whether you are interested in exploring your respondent's opinions in an open-ended way, for example 'How do you find the new Maths syllabus?' Alternatively you may wish to explore particular features of the Maths syllabus, for example 'How do you find the geometry problems in the new Maths syllabus?' A golden rule about whichever kind of interviewing you do is that you must not ask leading questions, such as 'The new Maths syllabus is hopeless isn't it?'.

All research methods have their strengths and weaknesses and no one method or combination of methods is suitable for all research. What is important is that there should be a logical connection between the research questions you are asking and the methods you use to provide the evidence to answer these questions. If you are interested in exploring opinions and classroom experiences in an open ended way your methods should be open ended. If you want to test out a theory about classroom behaviour or attitudes towards something then you have to use methods that focus on that theory and do not give respondents the chance to wander off the points you are interested in.

These examples are offered simply to show that there could easily be a need to give some time to adequate preparation for information gathering. Practice and preliminary thought ensure that the limited time which is at a teacher's disposal is used effectively, to produce high quality information, thereby providing a basis of confidence in whatever outcomes emerge.

4

THE PROCESS OF FORMULATING RESEARCH QUESTIONS: A SUMMARY

In this section we take you step by step through the process of formulating research questions, still using the primary-secondary transition example.

First we use the diagram on page 15 to illustrate (in Figure Two) how to produce a series of research questions on pupils' attainment in mathematics in the last year of primary school and the first of secondary.

Secondly, we have devised a form which we hope will be of use when you come to generate your own research questions. The first part is intended to take you through the main stages of the model. The second part concentrates on the feasibility of the proposed research by asking you about its timescale, about the kinds of information you will need and about your research methods. We have completed this form continuing with our primary-secondary transition example and Figure Three records the way in which this might have been completed by a guidance teacher who had followed through the process we have described.

In conclusion

The identification of the number of stages which need to be gone through to produce effective, worthwhile and feasible research questions should not be taken to cast doubt on the value of teachers undertaking small-scale research projects related to their own work. Rather, the above sections indicate the importance of preliminary planning, precisely because such teacher research will be small-scale and needs also to be demonstrably relevant to that teacher's professional concerns. By ensuring that the preliminary planning is undertaken effectively, we can ensure that the precious commodity of teacher time is used to its best advantage.

Figure Two: Generating Research Questions

	Teacher Reactions	*Thoughts*
area of concern	As a head of first year responsible for first year classes, I am becoming increasingly concerned about the views of my colleagues on an apparent decline in standards with each year's new entry	These comments are coming through staff meetings and head of department meetings Perhaps I should see if there is any substance here?
modified re-	(1) *Colleagues.* These views, once I start to identify and list them, seem to be more common within Maths than in other subjects	Informal chats with first year teachers and heads of departments may give some information.
	(2) *Literature* a number of articles in recent issues of the Times Ed suggest that primary and secondary teachers do not have enough contact with each other	I wonder whether my colleagues' views can be substantiated? Is there any misconception? Some feeder schools are experimenting with new Maths schemes I wonder whether this is a likely source of colleagues' complaints
	(3) *Professional* I am responsible for liaison with feeder primaries, so I can chat informally with their staff to see whether there is confirmation from their side of things	
identities location	Putting these sources together it seems as if I will need to look for information within my own school and also in our feeder primaries	I will need to examine school records, to monitor performance in Maths by feeder school. I will also have to get information about expectations in Maths from the feeder schools

refines purpose understanding	To establish valid data on pupils' attainment in Maths in the first year of the secondary school. To establish valid data on pupils' attainment in Maths in the last year of primary school.	If I can produce factual data on performance in relation to feeder schools and their Maths schemes, this should provide colleagues with reliable information to set against their own views. If there are 'real' issues we will have to decide on appropriate courses of action. If the attainments are measured in a different way, or if the first year at secondary syllabus has changed, we don't know if standards are rising or falling since we are not comparing like with like.
produces *research questions*	(1) How are first year of secondary pupils' attainments in Maths measured? (2) Are the attainments measured in the same way from year to year? (3) How are last year in primary pupils' attainments measured in each of the feeder primaries? (4) Are these attainments measured in the same way from year to year? (5) Is there any pattern linking pupils from particular primaries to high and low first year at secondary attainments?	

Figure Three: Teacher Research Form

PART 1: THE RESEARCH QUESTIONS

Note: • Elements starred are identified in relation to the diagram on page 20

NAME:	J SMITH
SCHOOL:	LOTHIAN HIGH SCHOOL
POSITION:	YEAR HEAD
AREA OF INITIAL CONCERN•:	Performance of first year secondary pupils and possible decline of standards.
INFLUENCED BY•:	Informal discussion with first year secondary colleagues and heads of department, recent articles in Times Ed and discussion with primary school colleagues.
LOCATION OF PROPOSED RESEARCH•:	Within own school and in feeder primary schools.
INTENDED PURPOSE OF RESEARCH•:	To provide colleagues with reliable information on trends in first year secondary Maths performance, related to pupils' feeder primary school Maths experience.
SPECIFIC RESEARCH QUESTIONS•:	1 How are first year secondary pupils' attainments in Maths measured? 2 Are the attainments measured in the same way from year to year? 3 How are final year pupils' attainments measured in each of the feeder primaries? 4 Are these attainments measured in the same way from year to year? 5 Is there any pattern linking pupils from particular primaries to high and low first year attainments

TIME SCALE	SOURCES OF INFORMATION	METHODS OF COLLECTION
End of academic year	Interviews with first year secondary Maths teachers about their views of current performance of pupils and any trends. Try to identify specific areas of concern and any views about likely causes	Informal interviews using prepared set of questions
	Analysis of pupil performances on end of year examinations, examined by feeder school	School records for this and the last two or three years
Summer Holiday	Data already collected used to tease out issues reflected by staff views. Any variations in pupil performance indicated in examination results?	Use *Rediguides*, 11, 20 and 21 on analysing interviews and elementary analysis of statistics
Assuming that there are differences in pupil performance and that at least some of these seem to be connected with particular feeder schools, then		
Autumn Term	First year secondary teachers and Head of Department of Mathematics asked for reactions to report on findings	Organise a group meeting and circulate information sheet on significant findings
	Self. Use information emerging from colleagues to identify questions to be asked on forthcoming official visit to feeder primary schools	Identify factual questions, eg What schemes being used, texts, etc? What, if any, skill and technique emphases? What to look for in pupil work?
Spring Term	Feeder primary schools. Heads and Teachers especially final year teachers	Documents and schemes of work. Pupil records where available. Formal/informal interviews as appropriate
Summer Term	Data collected from feeder schools and secondary Maths colleagues. Reactions from colleagues on information, and relationship, if any, to variations in pupil performance	
Summer holiday	Data analysed and report drafted—thoughts on how best to present report to colleagues. Which points should I concentrate on?	

OUTCOME *(overleaf)*

TIMESCALE—OUTCOME

Beginning of academic year

Report to colleagues on findings, reflecting all stages of analysis—variations in performances of first year secondary pupils and feeder school relationships.

Analysis of data from feeder schools and up-dating of first year in secondary performances in current year's examinations Leading to identification of possible sources of variation in pupil performance, and suggestions for realistic action to be taken.

On this last point, there might, for example, be a need to arrange joint meeting between primary and secondary staff to map out an agreed and continuous Maths syllabus.

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SCRE Practitioner Papers have a practical slant. They present research findings and issues clearly and succinctly to help teachers and others take account of educational research in improving the practice of education. Some titles are of most interest to certain groups – headteachers, staff in further education or those concerned with staff development, for example. Others will attract a wider readership but all are written for an identified audience. The series includes reports of research, edited collections around a theme, reviews of research and annotated bibliographies.

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The authors, both former teachers, have worked with teachers engaged in small-scale research projects. Ian Lewis was a Senior Lecturer at York University with special responsibility for the teacher research programme before moving to Westminster College, Oxford. Pamela Munn (formerly of Stirling and York Universities) is a Senior Research Officer at the Scottish Council for Research in Education where she is in the process of establishing a Teacher Research Support Unit.

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