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Instruments and Procedures for Evaluation

CLIVE B. KINGS

Setting the Scene for an Evaluation

In the school situation one is often attempting to evaluate such things as programmes, use of resources or use of facilities but always with the prime purpose of making decisions which lead to enhancement of student learning. Thus we engage in a process of *formative assessment*. As Kings (1994) has summarised:

formative evaluation is a continuous process which should be developed within a futuristic framework. It is also important to ensure that evaluations are worthwhile and would lead to significant changes that will have impact on learners. It is imperative to focus the evaluation by clarifying the goals and objectives.

...it is important to devise a plan which can be implemented within the current resource base, that is, within the time and other resources available and utilising existing personnel. (p 49)

To ensure that an evaluation of such things as programmes, techniques and resources is futuristic it is imperative that the aims and objectives are reviewed within the context of the external and internal environments, and amended where appropriate to accommodate the various dimensions of these environments (Graham and Kings, 1992).

Evaluation involves a process of gathering information which can be used as a basis for making decisions. In this article I am primarily concerned with reviewing the ways of gathering information using a range of techniques and procedures that can be applied in the school situation. I am also concerned with techniques and procedures which may be used to analyse information that already exists.

There is a considerable amount of information that already exists in any organisation which therefore does not have to be newly gathered, but may need to be retrieved, processed and collated. Examples of readily available data include student absences, library borrowings and examination results.

Techniques and Procedures for Collating Existing Data

There are some types of data commonly available in most schools and other data which may only be available in a specific school. In the evaluation process it is an important first step to take stock of what information is already available in a school, since this will help to clarify what additional information will need to be gathered.

Some examples of data readily available in most schools include the following:

Examination Scripts

Examinations scripts are a rich source of data and can include responses to such things as multiple-choice items, essays and short answer questions.

Records of Continuous Assessments

Continuous assessment can be based on a broad range of assessment types and has the potential to provide feedback on written, oral, aural and practical skills as well group projects.

For examination scripts and records of continuous assessment to be useful it is imperative that examination papers and continuous assessment tasks are based on a table of specifications in which, not only is the content specified, but also the specific behavioural objectives. Thus one can produce a score based on the responses of individuals for a particular question or part of a question which corresponds to a specific objective and/or area of content. In this way one can produce a profile of responses indicating those objectives that have been achieved by most students and those objectives that have been achieved by few students.

All of these assessment tasks can also provide a rich resource for exploring students' writing and other communication skills.

Students' Questions and Responses in Class

Students reveal through their questions and responses their level of understanding of a topic and how reflective they are in their thinking. You can analyse the types of questions asked by students as well as the types of responses given by students. For example, you can characterise questions as open or closed, lower or higher order. Responses can be factual, substantiated or unsubstantiated, reflect critical thinking or not reflect critical thinking. You need to choose categories according to what you are trying to find out. A simple way of undertaking the analysis is to record a lesson using an audio-tape recorder and then scoring the questions and/or answers according to a schedule based on the prescribed categories. In such studies we should remember that the teachers' skills of good questioning are important in modelling good questioning and in generating critical thinking in students.

Students' Practices Such as Note-taking, Handling of Equipment, Ways of Working in Groups and Ways of Retrieving Information in the Library

Note taking can reflect the accuracy of information transmission, accuracy of spelling and understanding of the topic. Observations of students doing practical work can be used to find out about such aspects as whether students use equipment safely or whether they are measuring accurately. For example, you could use a schedule which itemises such things as the allocation of roles in group discussion and the satisfactory completion of tasks.

In these cases you can develop a checklist for analysis or schedule to help identify particular behaviours. Firstly you should clarify what behaviours you wish to categorise or observe before writing the items.

Minutes of Meetings

The availability of the minutes of meetings will often depend on the openness of the school climate. However, these records of minutes can be a rich source of information about factual matters, as well as providing details about priorities and attitudes of individuals about specific issues. The first thing to do is to clarify and itemise the specific information you require, and then to sift through relevant sets of minutes to seek information on the issue of related issues if appropriate. The information needs to be retrieved on the relevant issues or related issues, and then summarised to make it easily digestible. You can target information such as, *What information was discussed about computers at the last meetings?* or, more generally, *What is the feeling about spending money on learning resources?*

Communications from the Ministry of Education

These communications can include letters and circulars to the school giving information on a range of topics.

School Appraisal Reports

These reports will include data already collected as well as recommendations on a number of issues. Once the evaluation issue(s) has (have) been identified it will be possible to scan the reports, retrieve the information and summarise it.

Other data available to schools may be more idiosyncratic. The data may appear both within the schools as well as from outside the school. These data include records from school magazines; newspapers – articles of various types by different people; video recordings; letters from parents and other organisations and research articles.

In summary, all the sources of readily available information relevant to the objectives of the evaluation need to be identified. It is therefore an important step for the evaluators to brainstorm and clarify the possible sources of readily available information first. Once these have been assessed, they can be summarised in relation to the objectives. It is then important to take stock of the available

information. It may be that there is already sufficient information for the purposes of the evaluation or it may lead to clarification of the need to use alternative techniques and procedures. In some cases it may be obvious from the start that further information gathering will be necessary.

Techniques and Procedures for Gathering New Information

A range of techniques and procedures can be used to gather information from students, teachers, parents and other parties who may be relevant to the evaluation. The information can be gathered in a range of different ways:

- *Diary of informal responses, feelings, observations*

Diaries are easily kept by students and teachers. These diaries are notes kept, for example, for each lesson. There might be some questions to help orientate thinking and recording. For example it could be that a student diary about homework could be focussed by the following questions:

- Were you clear about what you had to do for your homework?
- How did the homework relate to what you have been learning in class?
- Did you encounter any difficulties in doing the homework?
- Were you clear about how to get a good mark or grade for your homework?
- Did you have enough resources to do your homework?

You might also ask students to write their feelings about their homework and invite them to make any other comments. The student diaries can be collated around the organising questions, and for each question, similar sets of responses can be collated. Asking students to record feelings and open-ended thoughts about homework may reveal some unforeseen ideas, for example, perhaps the homework was tedious and somewhat repetitive!

The limitation of this approach is that some participants in the evaluation forget or cannot be bothered to record their ideas. An advantage is that some useful information might be uncovered that may illuminate the evaluation.

- *Informal responses/comments of students, teachers and others*

The evaluator should keep his/her own diary of significant responses of students, teachers, parents related to the aims and objectives of the evaluation. It is useful for the evaluator to write down some general reflections after visiting a class or having a meeting, or even at the end of the day. These reflections should be frequently revisited as the evaluation unfolds.

- *Structured group discussion, nominal group technique*

The nominal group techniques is a structured group discussion, where the discussion is restricted during the decision-making process, hence the use of the term nominal. The advantage is that each member can participate independently and equally, the long-winded or charismatic individuals cannot take over. Thus more ideas are brought to bear on an issue. Being very structured it is also very efficient taking only a limited amount of time. The problem identification and the problem solution phases are separated out. Each round of discussion needs to be facilitated.

Before discussion takes place, each member writes down his or her ideas on the problem.

Each member in turn presents one idea without discussing it with the group. The facilitator should record each idea on a white board or flip chart, proceeding around the group until all ideas are exhausted.

Now the group members clarify the ideas and evaluate them.

Each group member should rank the ideas. The final decision(s) is(are) based on the highest aggregate ranking(s). You can rank in any other way you wish to devise.

- Unstructured written or verbal response

Any open-ended comment to an open-ended question. This tends to be a hit-and-miss approach. Sometimes, however, it is necessary to do this to 'get a handle' on the evaluation when there is little information around.

- Questionnaires you devise

You may use a structured questionnaire, which has very focussed questions with coded answers; or an unstructured questionnaire with a few general questions; or a semi-structured questionnaire which is a combination of the two.

The questions to be asked should relate to the goals and the objectives of the evaluation.

Avoid collating unnecessary information which takes time. For example, if you want to know something about the experience of teachers, you could ask about:

- 'O' Levels / details of specific ones / level of pass
- 'A' Levels / details of specific ones / level of pass
- Diploma / level of pass
- Degree / level of pass
- Higher degree / level of pass
- Years in another employment position / relevance of the position
- Years as a teacher / specialisation
- Experiences gathered informally / computer technology
- Hobbies
- Reading / experience in the Arts
- In-services courses / length / nature of
- Foreign experience
- Language background
- and the many other things that can be thought up

You should identify exactly what it is you want to know so that the correct questions are asked. It could be that you want to know something about the science background of teachers, even then you need to be clear about the exact nature of the information required.

When you are clear about the questions you are going to ask, test out what you are asking to see if the information you will collate will yield the desired information.

A check list for a good questionnaire:

- As previously stated it is important that the questions match the stated aims and objectives (Linn and Gronlund, 1995). Do not have too many objectives so there will not be too many questions. This is preferable because respondents are more likely to answer all questions in a short questionnaire.
- The questionnaire should be designed for ease of data collation. For example you can use numbers to represent any category of response.

Respondent number [] [] [] (1-3)

Male.....1

Female.....2 [] (4)

Age [] [] years (5, 6)

N.B. On the right are the column numbers for collation of the data.

Wherever possible use a scale something like the one below:

Indicate the extent to which you:

strongly agree..... 1

agree..... 2

have no opinion..... 3

disagree..... 4

strongly disagree.....;..... 5

with each of the following statements:

Check that you have no double negatives. It is also preferable to have all statements written positively.

If you ask for open-ended responses, you will have to glance through a number of responses and try to develop some broad categories first so that you can collate the responses. You will then need to start from the first response sheet and manually categorise each of the open-ended responses. You have to ask yourself whether this will really yield much further information. Experience has shown that only a few individuals' responses are worthwhile whether students or teachers.

- *Unstructured or structured interview*

An interview provides the opportunity to not only find out some specific information but to also seek further unforeseen information which may help to clarify the evaluation issues. Thus in an interview schedule it is possible to have some highly structured questions for closed responses and some open-ended questions. The interviewer will need the skill of probing open-ended responses to clarify exactly what the respondent is saying.

As with the questionnaire it is important to establish the specific objectives of the evaluation prior to devising the questions. The questions may all be open-ended, but they still need to be specific.

It is important to remember not to use esoteric language when asking questions. You should therefore ask the relevant audience for the interview schedule; staff, students or parents; to scrutinise the schedule, modifying it in the light of comments, before using it. In some cases when collecting information from parents, it may be more appropriate to conduct discussions in a relevant language.

- *Specific questionnaires and standardised tests*

There are a whole range of questionnaires and standardised tests available. It is important to clarify whether the questionnaires are relevant and useful. In some cases questionnaires may need to be adapted to suit the context.

One example of a questionnaire is the *Students' Approaches to Study* (Biggs, 1987, 1991). This questionnaire yields information about how students study. It can provide a useful guide about any necessary changes required in the teaching-learning and assessment methods required to achieve deep learning.

Consider the discussion of the procedures and techniques above and then undertake an exercise like the following one in which the strengths and weaknesses of various techniques can be assessed. You should do this before you start the evaluation.

Strengths and Weaknesses of Techniques and Procedures

Technique/Procedure	Strengths	Weakness
Structured questionnaire	Can be widely disseminated	Difficult to write, often a poor return, time consuming to collate, often yields limited data.
Individual structured interview	Can follow up structured responses on the spot. Yields rich data.	Time-consuming, few responses.
Structured group interview	Can follow up responses on the spot. Yields rich data, often better than individual interviews. Efficient, easy to get a representative sample.	Dependent on the skills of the facilitator. Smaller number of respondents than a questionnaire.
Teacher diary	?	?

Before making a final decision about which techniques and procedures to use, you should consider some general issues that are relevant to any data gathering exercise.

Choice of Techniques and Procedures

Your choice of techniques and procedures should depend on the stage of the investigation, the amount information already known, the amount of time available, the ease of implementation and the focus of the evaluation.

Stage of the Investigation

In a preliminary evaluation you may very well want to find out some very basic information about students' computer experiences. In such a case it may be appropriate to ascertain some general information about who has a computer at home, what they use the computer for, and such things as how often they use the computer in school and for what purposes. This can be done by a show of hands in a class. At a later stage it becomes more important to find out more about problems of access to computers in school, and support for learning new software. This can be done by the use of individual interviews or by structured group discussions. Thus you can see that the objectives of an evaluation can change depending on the stage of development of the evaluation or on the stage at which the evaluation is pitched. Thus depending on the particular circumstances, and being sensitive to particular nuances, you will need to choose the evaluation techniques and procedures in relation to the stated objectives.

The Amount of Information Already Known

If you already know certain information there is little value in finding out the same information. You need to go beyond this established information to find something out that is more worthwhile. Thus if you already know that many students have requested longer opening hours for the library, so now you might need to find out why they want to use the library – to use books or to have a quiet place to study, when they would prefer to use the library and why.

The Amount of Time Available

You want to improve the use of Learning Centres in the school next term and there are only a few weeks to go this term. In this case

there is little value in devising a questionnaire, administering it, collating the results and writing a report as next term would be well over by that stage. Incidentally, a questionnaire may not yield the best data anyway. In this case it would probably be better to undertake a structured group discussion with two or three small groups of students.

The Ease of Implementation

In this case the evaluator has to think about what types of techniques and procedures can realistically be used. If students cannot read the information in a questionnaire or their English is not good enough to give extended responses, it would be better to interview a few students.

The Focus of the Evaluation

We need to be mindful of the aims and objectives of the evaluation when selecting the techniques and procedures to be used. For, example if you are investigating students' reading comprehension it is of little value finding out how many books students take out of the library each week. The questions asked and the type of instrument will be different. Likewise, informal interviews or structured group discussions may be more useful to ascertain students' approaches to reading.

One further point you need to be mindful of, to ensure that the language used is simple and clear and communicates ideas effectively. Sometimes you need to define what is meant as the use of words in the literature can be ambiguous.

Identification of Techniques and Procedures to be Used in an Evaluation

We will use an example to illustrate how you might go about selecting the techniques and procedures of the evaluation. Within the broader framework developed by Kings (1994) the aim(s) need(s) to be identified.

Aim: To investigate students' use of library resources for a group project on water pollution

You then need to identify the specific objectives, identify the specific techniques or procedures, and specific terms/questions.

Objectives	Technique/Procedure	Question/Item
To identify the number of: <ul style="list-style-type: none"> ■ Books ■ Magazines/Journals ■ Newspaper articles on water pollution 	Library statistics	Specific call numbers
To identify students abilities to retrieve library resources	Nominal group technique	<ul style="list-style-type: none"> ■ How do you go about retrieving the appropriate information for the project on water pollution?
To identify appropriateness of student access to the library	Librarian interview Nominal Group Technique with students Teachers' diaries	Opening hours for student access Are there any limitations for you in accessing the library resources? Commentary on resources use

Remember that the process of evaluation is complex. The selection of appropriate evaluation techniques and procedures to meet the needs of the aims and objectives is of paramount importance. It is through a quality selection process that information relevant to the evaluation is provided on which quality decisions about the focus of the evaluation can be based.

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