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Demonstration and its Implications for Design Based Craftwork

The use of 'demonstration' as a means of imparting knowledge and practical skills will be a familiar technique to all those involved in the teaching of art, craft, design and technology. Whilst using this technique myself on many occasions I have observed that after such a period of instruction the children still make substantial errors. When faced with this situation my first assumption was that my demonstration had in some way been defective. Sandham, Wilmore and Brown make the same assumption, 'If the majority of children are going wrong after a demonstration find out where your teaching has been at fault'. However, despite subsequent efforts to improve my instruction I was often faced with the same result; no visible change in the behaviour of some children to indicate that any learning had taken place. This is further referred to by Sandham, Wilmore and Brown,

'Even after a careful and well constructed demonstration it is amazing how many wrong ways of doing the job some boys will find'. Although this is an excellent descriptive statement it does not bring us any nearer to an explanation. It is my contention that the 'wrong ways of doing the job' may in fact be a valuable source of analysis. The amount of pupil error generated by any given task could be seen as an indication of the task in relation to the ability of the children and may also be regarded as a reflection of their understanding of the situation. In this respect pupil error is of vital importance to the teacher because of the information it may convey.

At this stage it seems appropriate to define the term 'demonstration' and to identify the features which normally constitute such a technique in the workshop situation. In many instances it is less convenient to tell a pupil what he or she has to do than it is to show them what is required. Instead of giving a purely verbal instruction the teacher may himself perform the response and then require the pupil to imitate the behaviour shown. It is this technique which I shall refer to as demonstration. As a teaching method it is used extensively but tends to be more frequently employed in the teaching of practical subjects since a predominantly visual approach is often the easiest way to explain practical activities.

In the teaching of the practical aspects of the crafts, demonstration as a technique has become established practice as a means of imparting craft skills. Whilst the content of any demonstration will alter depending on a number of variables such as the age and past experience of the children and the very nature and complexity of the task in hand, the actual form of workshop demonstration often conforms to a standard pattern. The pattern is well documented in literature dealing with this subject, an example of which is given in the following extract:–

'The purpose of a demonstration is to provide an example of what the class is to do, show them how to do it and to give them a lead and an inspiration; in short to show that the job can be done.

Demonstration should be given when the class is ready to attempt the operation. All the tools and the materials should be sharp and neatly laid on the bench. It is fundamental that the teacher and the children should have a sense of purpose and be clear what the aim of the lesson is. The teacher should practice first and be capable of the job. It helps him to appreciate the problem from the pupils point of view and increase pupil confidence if the teachers skill is manifest. It is important to use exactly the same tools and materials as the pupils. The class must be arranged so that all are in a position to see quite clearly. Bear in mind that the class see the job in reverse. Break down the demonstration into a series of logical steps. A judicious distribution of questions keeps the whole class alert. Never let them feel that any job is beyond them and avoid any suggestion of sloppiness or short cuts. Demand high standards. If applicable a good blackboard summary is useful. Indicate the pattern of the lesson. Also use large relevant drawings to illustrate stages either on the board or on a prepared sheet. When the demonstration is over recapitulate and stress salient points; those things which need remembering. Avoid over-long demonstrations and be aware of the childrens concentration and absorption limits as a guide to the time factor'. It is this 'traditional approach' which constitutes 'good practice' in workshop demonstration.

If we are to study the demonstration effectively and be able to subject it to analysis then it is important that it should be located in a sound basis of theory. It is my contention that the traditional approach has developed not through theory but by drawing heavily on craft tradition and a faith in common sense interpretation of what is required. This would account for the somewhat ad hoc (though not necessarily inappropriate) development of the traditional approach. In an attempt to rectify this situation I have drawn upon the theoretical framework of J.S. Bruner which appears in chapter three of 'Towards a Theory of Instruction'. The theory is based upon learning and problem solving being dependent upon the exploration of alternatives. The four main features are:–

1) PREDISPOSITION:– Learning is dependent upon the exploration of alternatives.

2) STRUCTURE AND THE FORM OF KNOWLEDGE:– A theory of instruction must

specify the structure of knowledge so that it can be most readily grasped by the learner.

3) SEQUENCE AND ITS USE – A theory of instruction should specify the most effective sequencies in which to present material to be learnt.

4) THE FORM AND PACING OF REINFORCEMENT:– The essential feature of problem solving is the cycle of a testing and evaluation procedure.

By using (an expanded) version of the above theory and locating workshop demonstration within it, it now becomes possible to formulate a global picture, a catalogue of all the available constituent techniques for any given situation. (See Figure 1).

By using Bruner in this way it now becomes possible to compare the use of the traditional approach with the 'ideal type' demonstration located in the theoretical framework in order to see if there are any inherent defects in such an approach. We can already see that the traditional approach is inconsistent with the first part of the theory (Predisposition) since it does not allow for an exploration of alternatives. It is here that Bruner's work is invaluable through its distinction between 'teacher defined' alternatives and 'pupil explored' alternatives. Since the Theory of Instruction specifies the experiences which should most effectively implant in the individual a predisposition to learning then any approach which does not involve those experiences may be seen as negative or perhaps even disfunctional to predisposition to learning. If this is the case then any interest generated by lessons employing the traditional approach would have to be seen in terms of the cultural, personal, or motivational factors which Bruner mentions and not as a result of the methodology employed. Of the two approaches it is the design based work which allows for the exploration of alternatives on the part of the learner and is therefore the approach which is most likely to implant in the individual a predisposition to learning. This in turn has implications for the nature of authority relations between teacher and learner, since it differs in the two approaches (see Theory of Instruction, section 1 (a).)

Figure 1.

BRUNER'S THEORY	RELATED TO DEMONSTRATION
1) PREDISPOSITION	Absence of distraction. Good vision. Comfortable conditions.
a) Activation of interest	Nature of authority relations between teacher and pupil. Interest in subject. Pose problem (design based work).
b) Maintenance of interest	Work guaged correctly. Benefits to exceed risks.
c) Direction of interest	Sense of goal. Clarity of objectives. Knowledge of relevance of alternatives.
2) STRUCTURE	
a) Mode of representation	Importance of representation seen in learners terms.
Enactive	Suitability of tools and materials. Relevant research. Actual demonstration. Awareness of childs perspective.
Ikonic	Use of diagrams, charts, etc.
Symbolic	Use of language, technical/esoteric. Use of craft symbols. Craftroom culture.
b) Economy	Relationship between time span/attention/ and fact retention. Use of ikonic or symbolic mode for summary.
c) Effective power	Application of learned skill in other relevant situations.
3) SEQUENCE	Related to logic of operation. Normal pattern of enactive/ikonic/symbolic.
4) REINFORCEMENT	Follow up. Feedback from demonstration. Consolidation. Supply corrective function with a view to self-correction. Learners view of totality and purpose related to results and self-correction.

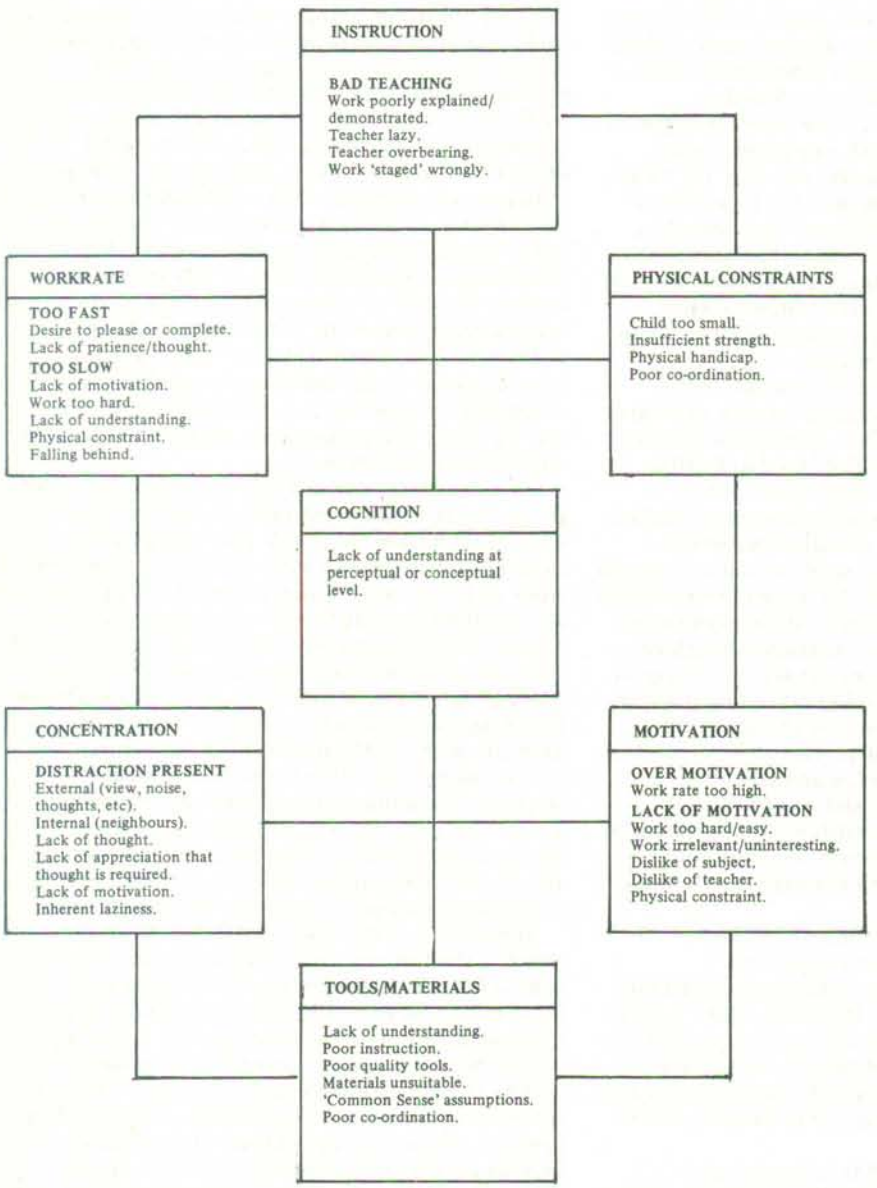
Categories of Error

Up to this point I have considered pupil error purely from the perspective of teaching deficiency. Whilst this is an obvious possibility, it is by no means the only reason why children will make mistakes. Not all mistakes occur because a child has not understood what was demonstrated. Error may occur at a purely mechanical level as a result of blunt tools or poor materials. However, errors of this nature are relatively easy to account for and consequently are not my main concern. In a sense they may complicate the matter since mistakes may obscure those errors which are made by children who do not *understand* what they are doing. In order to avoid this I have attempted to anticipate the common areas of error and identify their most likely causes.

Seven areas seem to encompass most workshop mistakes. They are Instruction, Motivation, Physical Constraints, Use of Tools and Materials, Concentration, Workrate and Cognition. It will soon become apparent that there exists a strong inter-dependence between areas and for this reason I have presented the classification in schematic form. (See Figure 2).

Many of the childrens mistakes will be explicable in terms of the six peripheral categories and as I have already stated, these should be relatively easy to identify and correct. However focus will shift to the cognitive domain when an error does not fit into any of the six initial categories. This raises several important questions. What cognitive difficulties could there be and what devices can be employed to explore error in this domain?

Figure 2.



In an attempt to answer these questions I have found the work of Kelly useful. His theories are based on the idea that a persons thought processes are psychologically channeled by the way in which he anticipates events. Corollories of this idea which are relevant are that any construct is unique to the person using it and that two people in the same situation will construe it differently. It is therefore possible that errors in this domain occur because the child has in some way misconstrued what he has seen. If this is the case, how can it be recognised in the teaching situation? Kelly suggests that the best way to assess the construing system of an individual is to ask him about what he has been doing. The assumption is that a person who has construed the situation correctly will be able to explain his actions. It should be noted however that construct theory is not dependent upon the ability to verbalise constructions, so any explanations may not be wholly verbal. It is also quite possible that a child may understand and yet still make mistakes but in such a case the error would in all probability lie in one of the six categories. Kelly's work also has implications for the form that questioning should take. If possible the children should offer the initial construct and the question should be value free. This could be achieved by comparing work on a similar/dissimilar basis rather than introducing the notion of good/bad. It is also often the case that teachers questioning is heavily orientated towards extracting the 'right' answers from pupils. This can often be seen in the parrying of wrong answers and the use of statements like:– 'Good, that's what I was looking for'.

If we accept Kelly's theory that a person who can explain accurately, has construed a situation correctly, then conversely the child who submits a wrong answer may do so because he has misconstrued. The desire for a right answer in reply to a question may seem natural enough but by continually 'looking for' correct replies the teacher may in fact be missing out on a valuable chance to benefit from a consideration of the wrong answer given. The importance of wrong answers now becomes apparent when seen in this light, not only in the teaching of practical subjects, but in the context of all instruction.

References

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