

A Vandal Proof Telephone Kiosk

A recent competition, 'The GEC Schools Design Prize', organised by the Design Council and sponsored by GEC, made its presentation of prizes on November 17th, in this the first year of what is to become an annual event.

In this competition our school was fortunate enough to be selected as one of the prizewinners, within the junior section (13-16 years), for a project undertaken by a team of six (four boys and two girls). The competition did not specify or suggest any particular subject, leaving any such decision to the schools themselves. The organisers did stipulate, however, that the project should be aimed at designing a functional three-dimensional product capable of being manufactured.

The following notes are intended to describe how the project developed from its inception to its completion. However, there are few design projects which follow a purely linear progression and it is not surprising therefore that in this particular case a number of divergent lines of thought were often being pursued simultaneously. It is inevitable, therefore, that the true sequence of events becomes slightly distorted in a review of this kind which, for the sake of simplicity, attempts to follow a chronological order.

Having been given complete freedom of choice in the selection of project topic, the team were given the following brief:

'To design a public telephone kiosk which would be more resistant to vandalism than those currently in use'. Particular emphasis was to be given to the internal layout, equipment and fittings, as well as the shell of the kiosk itself. Such a brief seemed to offer the maximum scope for inventiveness and technological innovation (albeit at a fairly superficial level, admittedly), as well as involving an appreciation of social considerations; economic and psychological factors; ergonomics; and ultimately demanding practical skills through the presentation of solutions in the form of drawings, models and mock-ups.

The initial phase of the project involved the pupils in making a study of existing telephone kiosks and identifying the most vulnerable features of these. Having once established the main problem areas, a number of preliminary lines of thought were generated through group discussion. This took the form of a 'brainstorming' session and provided the opportunity for much spontaneous and original thinking. The suggestions made were of a highly speculative nature and many notions were later abandoned in the light of logical criticism. Nevertheless, the exercise did produce a number of inspired concepts which were to provide a basis for further and more detailed consideration.

For the next stage, the team sub-divided into two smaller groups, each with a specific responsibility for developing solutions to one particular problem area: one group looking at a system to replace the conventional handset; the other group looking into the possibilities of making alternative provision for telephone directories.

One fundamental design consideration pointed to the need for the earpiece and mouthpiece to be built into the structure of the kiosk as an integral part of it. Based on this premise, the team devised an ingenious solution to the problem through a series of intermediate stages of development. Initially they considered a system in which a microphone and loudspeaker would be incorporated into the walls of the kiosk. This idea, however, presented severe inadequacies since it would require an amplification system to overcome the fact that mouth and ear would not necessarily be close enough to the microphone and speaker (assuming that people vary in height). Rather than incorporate an amplified system then, the team decided to look into the possibility of providing height adjustment based on the idea of an 'L' shaped bracket which could slide up and down a track on the left hand wall (the 'L' shaped bracket housing the earpiece and mouthpiece). Although the basic concept seemed to have considerable potential there was one significant limitation to this idea: in that the earpiece would not be accessible to the other (right) ear and the system would therefore be inoperative for people suffering from deafness in their left ear. This led the team to consider a 'U' shaped bracket with a central mouthpiece and earpieces in each 'arm'. This then provided the basis for their final solution and involved considerable development in translating their concept into a functionally viable form. A series of card mock-ups were produced to explore the optimum ergonomic requirements. This constituted a valuable design study in itself, involving a relatively complex analysis of the situation.

The telephone directories presented an almost insuperable problem since all initial attempts to house them securely (while at the same time ensuring that they were conveniently accessible for reference), seemed relatively ineffectual. Finally one member of the team came up with an inspired notion of containing the information on a long, continuous roll and housing this inside a secure console. The roll was to be fed from reel to reel (tape-recorder fashion) behind a small (armoured glass!) viewing screen. This then provided the principle upon which subsequent design proposals developed. An obvious limitation of such a system lay in the length of the roll. Approximate calculations were made to estimate what this length might be and hence the diameter of the roll. Not surprisingly these proved to be excessive and would involve an unacceptable length of time for full rewind from reel to reel. Splitting the system into two provided more acceptable results (and the mock-up shown

Two members of the Design team with their full-size mock-up of the telephone box console.



View of console showing mouthpiece/earpiece unit which slides up and down on vertical pole (carrying cable inside), key pad layout and cassette directory system.

(Photographs by kind permission of The Yorkshire Post)



in the photographs is based on such a system), but a number of further developments were later considered with a view to making the original concept more practicable. The key to all subsequent ideas lay in miniaturisation and, without mentioning all the ideas considered, the system which developed ultimately as the most viable involved a bank of cassettes containing directory information on microfilm. Information retrieval would require selection of the appropriate cassette (according to the first letter of surname), upon which a mechanical pick up system (similar to that of a juke-box) would run the chosen cassette through a magnifying system incorporating a single viewing screen.

It is interesting to note that such a solution embodies a number of familiar precedents, combining together the existing technology of cassettes, juke-boxes, and microfilm, in a totally new application and in a refreshingly original way. This surely demonstrates divergent thinking at its best — in pursuit of an operational solution to a very real problem (rather than just as an abstract, academic exercise for its own sake).

A further development still, of their idea would be to use a 'Viewdata' system as a more convenient alternative (this would mean that updating of directory information could be carried out at a centralised data bank without the need for servicing individual telephone kiosks. However, such a development lies beyond the experience of the children in the team and without having knowledge of any such prototype it would be unrealistic to expect that they could conceive such a system.

In other words it illustrates how often good design thinking relies heavily on the application of existing prototypes within the designers experience and on the appropriate combination and adaptation of such prototypes. So called 'original design' rarely exists, since any 'new design' invariably owes much of its inspiration to some identifiable precedent, either natural or man-made, or is otherwise based on some analogous solution buried deep within the designers subconscious.

Having once developed feasible solutions to these two major problem areas (handset and directories) the group then turned their attention to providing a more robust dialing system as well as developing an improved kind of kiosk to house their new equipment. Their decision to replace the conventional dial by push-buttons was in no way a revolutionary concept, but it did involve the team in arriving at a rational and ergonomically considered keypad layout. The internal components of the kiosk were then combined together in one console by the team as a whole. Finally a shape was arrived at for the shell of the kiosk and a scale model produced in 'Perspex'.

Looking back objectively at the completed project there are some obvious limitations in the team's proposals and viewed from an operational point of view many features of their scheme, although technologically feasible, would not be economically realistic. Nevertheless viewed from

an educational point of view the value of such a project has proved immense and hopefully has helped to develop in the pupils involved not only an appreciation of the fundamental processes and strategies of design, but also an awareness of the less obvious ramifications (social, psychological, economic and so on) of design activity.

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