

novel solutions to problems which had already been thought to be well understood. Whilst he may have been right, what he failed to point out was that this was actually very rare, and much more normally his students suggested solutions which were already known not to work or be satisfactory. One tends to remember student successes rather than their failures!

By comparison Herman Hertzberger in his excellent book *Lessons for Students of Architecture* suggests the importance of gaining knowledge and experience:

Everything that is absorbed and registered in your mind adds to the collection of ideas stored in the memory: a sort of library that you can consult whenever a problem arises. So, essentially the more you have seen, experienced and absorbed, the more points of reference you will have to help you decide which direction to take: your frame of reference expands.

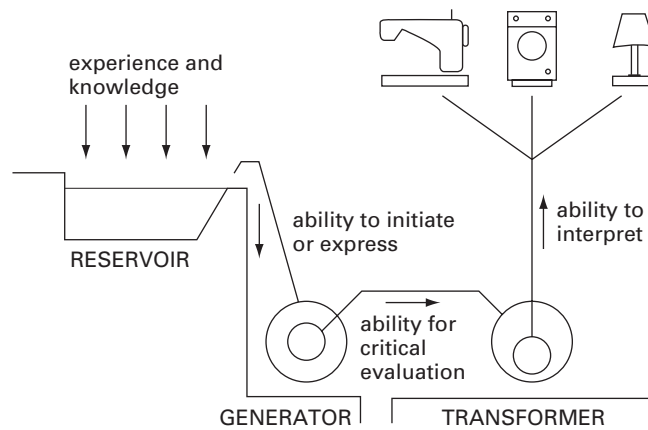
(Hertzberger 1991)

It remains the case, however, that design education all over the world is largely based on the studio where students learn by tackling problems rather than acquiring theory and then applying it. Learning from your own mistakes is usually more powerful than relying on gaining experience from others! The popularity and success of the studio system has more recently led some design educationalists to assume that all learning can be this way. There are, however, problems with such a system, for the student is not only learning through the studio project, but is also usually performing and being assessed through it. What might have made a good learning experience may not necessarily have generated a high mark. Unfortunately, too, the emphasis in such studios tends to be on the end product rather than the process. Thus students are expected to strive towards solutions which will be assessed, rather than showing a development in their methodology. Often, too, the inevitable 'crit' which ceremoniously concludes the studio project tends to focus on retrospective condemnation of elements of the end product rather than encouragement to develop better ways of working (Anthony 1991).

A study of design education in schools (Laxton 1969), concluded that children cannot expect to be truly creative without a reservoir of experience. Laxton developed a rather elegant model of design learning using the metaphor of a hydroelectric plant (Fig. 9.2). He argued for a three-stage model of design education in which major skills are identified and developed. The ability to initiate or express ideas, Laxton argued, is dependent on having a reservoir of knowledge from which to draw these ideas. This seems similar

**Figure 9.2**

Laxton's ingenious hydro-electric model of design learning



to Hertzberger's exhortation to students of architecture to acquire knowledge. Laxton's second skill is the ability to evaluate and discriminate between ideas. Finally, the transformation or interpretative skill is needed to translate ideas into the appropriate and relevant context. Kneller (1965) in his study of creativity makes a similar point:

One of the paradoxes of creativity is that, in order to think originally, we must familiarise ourselves with the ideas of others . . . These ideas can then form a springboard from which the creator's ideas can be launched.

Design education, then, is a delicate balance indeed between directing the student to acquire this knowledge and experience, and yet not mechanising his or her thought processes to the point of preventing the emergence of original ideas.

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