# Designing Interactive Learning Environments to include construction tools for personally meaningful artefacts

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Designers of interactive learning environments, applying contemporary views of learning, are now employing design models that incorporate the variety of ideas that are based on constructivist frameworks. Designers are attempting to give learners control over their actions and place them into worlds that can be manipulated and interrogated. These environments, if well designed, can support learner construction of knowledge through structured or ill-structured problem solving experiences. Such frameworks are based upon arguments that learners should be placed in authentic environments that incorporate sophisticated representations of context through such constructs as "virtual worlds". Within these modern constructions, learners are often given a rich set of resources to construct artefacts which reflect their problems solutions.

However, researchers such as Seymour Papert have long called for more open environments drawn from a theoretical view of learning termed constructionism which is based on two different senses of 'construction'. It is grounded in the idea that people learn by actively constructing new knowledge as well as asserting that learners are particularly likely to create new ideas when they are engaged in 'constructing' personally meaningful artefacts. Multimedia authoring tools have long been used to address the latter component of constructionism. The challenge for researchers and developers is to find the balance between resource rich 'virtual worlds' with embedded tasks and open ended construction that may not be goal driven, both resulting in personally meaningful artefacts, ie are we designing for learning, or are we learning by designing? This paper examines three projects that demonstrate these issues.