

**Aster 41, 2005**

**BUILDING ACTIVITIES: ACT, REACT, INTERACT  
SUMMARIES**

**Supply and Demand Discrepancies for Building Projects in Middle School**

**Joël Lebeaume**

France's national curriculum states that technology class in middle school is to emphasize building projects. Nevertheless, teaching decisions are relegated to the local level (i.e. the schools themselves take the decisions) due to equipment and human constraints thereby creating discrepancies on the building-project level between what the Ministry-of-Education instructions should theoretically provide and the demand of pupils who, themselves, are virtually customers. This research article focuses on the description and analysis of objects built in middle school as well as the compromises adopted by various teachers. The objects produced are described and their purposes specified with teacher-education proposals being indicated.

**Fine-Tuning Teaching Methods and the Computer Environment Teaching Support while. Building : Miniature Robots with 11 to 15 year olds**

**Pascal Leroux**

Two questions must be addressed when designing an e-learning environment (ELE). Firstly, should ELE design be solely based upon the teaching and learning methods in one particular subject or should it be devoid of any specific subject matter and then adapted to a certain area ? In light of these questions, a logic of knowledge sharing between disciplines for apprenticeship-oriented and computer-aided-learning subjects would seem most appropriate. This article illustrates the example of knowledge sharing based upon a step-by-step/guided (le 1<sup>er</sup> est + précis alors que le deuxième plus flou - à vous de choisir) micro-robot building-project which integrates the computer environment into learning in technology class. As the building project progressed the project's marked-out approach was refined with the application of the micro-robot teaching-support being improved (i.e. Robo-Teach).

### **Building-Activities in a French-Middle-School Technology Class Guy Manneux**

Considered as a corps subject in French middle schools (11-15 year olds), technology has consistently encouraged building activities which take the form of pupil technical projects which require working with construction materials to obtain either concrete or virtual results.

This study describes and analyses the relation between how building workshops at school which are a part of the actual curriculum and pupils' vision of and personal experiences in these very workshops. It equally looks at what teachers view as feasible in these situations and how they structure and adapt their lessons. This article depicts these workshops while attempting to explain why these characteristics are as such. Based upon these observations new working theories to better define teaching workshops are proposed.

### **Go-Between Objects in Project Design in a Middle-School Technology Class Using Computer Aided Design**

**Alix Géronimi  
Erica de Vries  
Guy Prudhomme  
Jacques Baillé**

Technology as a subject can be used to develop a pupil's general knowledge (among other things) through the transfer of industrial design situations which require the building and application of technical knowledge. As components of the design process, mental images and ideas not directly integrated into the project – be they textual, graphic or 3-D computer models carried out using auto-CAD – can play a key role in technical thought. These very ideas and mental images can be termed go-between objects as they act as a mediator between builder and other design-process players.

This case study's goal is to examine the potential of a design situation in technology class in a French middle school for the use of technical knowledge and the role played by these "external" mental images and ideas as go-between objects. Following several pupil discussion-groups, statistics were laid for the various areas of knowledge used in the process. The authors then describe and interpret the go-between role of the various intervening "external" tools : instruction manual, diagrams, 3-D computer models.

While this study does show that middle-school pupils are capable of using an auto-CAD programme for projects, further research in the area must be carried out in order to better define the situations that might improve building instructions imposed on pupils during the design process.

## **Organising Building Activities and Choosing Building Materials with 6 Year Olds in Primary School**

**Marjolaine Chatoney**

Object building activities are a part of the primary-school curriculum at every level. However, curriculum directives specify neither the types of technical object to be built nor the technical approaches to be implemented. Nor do they indicate the types of building materials or techniques that are to be used and even less the notions to be developed. Teachers are to use their own judgement and can therefore concentrate on the complexity of the object to be built as well as vary the means of transferring knowledge by changing the project's structure. These very changes are important in the eyes of didactics researchers.

This study's objective is to show that an inter-relational and inter-dependent approach to an object on the functional, structural, and technical levels increases task options that would not otherwise exist using in traditional methods.

It was carried out in a primary school with 6 and 7 year olds following a teaching sequence dedicated to studying how to build miniature windmill.

## **Object Building as a Means of Conceptualizing Technical Reality**

**Colette Andreucci**

This article analyses the key moments of a sequence in a primary school technology class from both the psychological and didactic viewpoints. Situated at an important crossroads between the observation of products available in retail and evaluating pupil production with a goal to emphasize two technical principles associated with the assembly of the mechanism in question, building activities expose the vastness and diversity of the cognitive difficulties encountered by both pupils and teachers in their quest to come to the mutual understanding needed to build shared knowledge.

### **How does the Learner View His/Her Own Building Work** **Marc Weisser**

A learner's interaction with his/her environment can be conveyed using language. It can equally be expressed with technical object activities as go-betweens. A water-driven rocket project was carried out with pupils aged 9 to 10 with the first series of objects being produced barring any pre-determined instructions. Given their inconclusiveness as to what elements determined the height attained by the rockets, an idea to examine the various components independently surfaced during the first post-trial discussions. The pupils were then asked to symbolically use a variables chart while designing another series of rockets. Discussion following the second tests validated the latter method and led to a choice of prototype based upon the most important elements. This study shows that the status of an object designed and tested by a class varies from one method to another and from an object-oriented to a means-oriented extreme each mutually contributing to improve the other.

### **How Are Boys and Girls Influenced, Be They Alone or in Pairs, By Building Activities in Technology Class ?**

**Jacques Ginestié**

Building activities are highly linked to technology class and usually encompasses assembling a technical object out of building material or developing a service (i.e. an immaterial technical object). These projects must transcend the school environment and conform as much as possible to a real social environment. In technology class private companies are the reference point though these private institutions prove difficult to integrate into a school environment from a transformational and assembly-related standpoint. Ultimately boy-girl relations at school differ considerably from those between men and women in a professional context. Similarly relations between individuals and groups are approached differently in the two environments.

Based upon experimental research carried out in 15 classes of 13-14 year olds, this article takes a look at the effects of two principle variables (i. e. the type of work and individual or pair work) on pupil performance when carrying out two distinctly different building projects : one a more male-oriented task, the other more female-oriented.

**Traduction : Wayne Iwamoto**