

## LEARNING PROCESSES IN SOCIAL AND INSTRUCTIONAL INTERACTIONS

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Any instructional interaction is necessarily a social interaction and therefore the analysis of the process of learning implies the understanding of social discourse and communication. Research aimed at studying these processes has often used a three-step paradigm comprising 1) a pretest where the child's existing knowledge is assessed by asking him to display a performance to the adult, 2) an instructional intervention where the adult provides the child with an opportunity for learning, and 3) a posttest where the child is asked to re-display a performance. The object of study in phase 1 is the child's response (i.e., what the child manages to say to the adult, experimenter or teacher, who tests him). In phase 2, the object of focus is centered on the communication directed to the child by the adult. In phase 3, it is again the child's discourse (communication directed towards the adult) which is the object of study. In studies using this three-step paradigm, it is the difference between the phase 1 and 3 performances which is supposed to reveal "learning". We have conducted research in this perspective and have discussed elsewhere (Perret Clermont, 1980; Perret Clermont & Schubauer Leoni, 1981; Perret Clermont & Brossard, 1985) its interest for the educational field.

However, a certain number of questions concerning these studies remain unanswered. For example: What is learned? How is it learned? What was not known? Will it be remembered? When will it be

remembered? Is the knowledge learned transferable to other situations? At times, what is learned may not necessarily be what the adult intended to teach. The child's learning seems to depend on the context and the type of task. It is clear that the child's perception and his interpretation of the situation in which he finds himself will determine his behaviour and hence his performance which will in turn be interpreted by the adult as evidence of learning (or lack thereof).

In convening this symposium we wanted to foster an opportunity to explore these questions through different methodological and theoretical approaches and we will try to outline here the present state of understanding of learning processes as it emerges from these studies.

### METHODOLOGICAL CONCERNS

Patry and Oser (1985) examine a number of methodological problems concerning research on learning which has used this three steps paradigm; particularly concerning the generalizability of results. A question often arises in this type of instructional situation: Is the researcher eliciting cognitive development or is he really just indoctrinating his subject? These authors also draw attention to other important problems. For example: Often these studies approach the learning situation as a sort of *tabula rasa*, ignoring the past experience and acquired knowledge of pupils as well as teachers. How can the existing competence of the partners in the didactic situation be fully exploited?

In their respective research, Delamont (1985) and Woods (this volume) draw attention to the methodological problems inherent in the three-steps paradigm by their use of alternative investigative methods using participant observation. These methods have enabled a fuller understanding of the meaning and interpretation of behaviours of participants in the learning situation and of their interpretations of what is at stake in school contexts.

Concerning our own research using this three steps paradigm, we have shown that, in certain circumstances, peer interaction is likely to be more efficient for cognitive development than certain other methods of learning based on the usual child adult discourse; and this holds true at times when the interaction partners both have erroneous opinions of the object of the interaction. The instruction given to the child by the adult

(corresponding to phase 2 of the paradigm presented above) is therefore not the only model of interaction and communication which is liable to result in learning. However, the process of learning is complex and these findings admittedly do not fully account for it.

### THE SOCIAL AND SYMBOLIC FRAMEWORKS OF LEARNING

In many studies, the generalization of learning, whether it be a result of direct instruction or informal social interaction, is never as large as expected and continues to pose problems for researchers and teachers. Bell, Grossen and Perret-Clermont (1985) are currently undertaking detailed analyses of children's perceptions and behaviour in testing and interaction situations which have called attention to the fact that the child's performance does not occur in a social vacuum, but rather in a framework of symbolic interactions with the child's environment. This perspective addresses issues that are also illuminated by ethnographic analysis of learning and instructional situations.

In situations where an adult experimenter or teacher communicates not only with one child but with a group of children, communicative exchanges are not only directed from the adult to the child but also from the child to the adult as well as between children. Pontecorvo (this volume) has delineated the variety of strategies used by teachers to modulate the cognitive conflicts occurring in these situations and to deal with the alternative modalities of thinking which appear during discussion and the existing cultural differences between pupils or between the teacher and pupils. She has also shown that the class group plays an important role for the child's actualization of knowledge through sharing of effort, sustaining the emotional level and reducing anxiety.

### THE ACTIVE ROLE OF THE CHILD

The adult usually has a specific vision of the task in instructional situations that is influenced by his professional training, cultural background, and personal experience. The adult can never render a task entirely explicit to his interlocutors. Children therefore have access to a task only through the manner in which it is presented by the adult. In

order to approach the adult's vision of the task, the child must attempt to re-construct it by going beyond the adult's presentation. The child must therefore learn to focus his thinking in such a way as to adjust it to the vision of the adult. This adjustment is accomplished by direct exchanges concerning the task as well as indirect processes of regulation.

Sirota (1985) has observed a variety of children's strategies of adaptation and survival in the classroom. It seems that these strategies differ in function of the social distance existing between the child and the school culture.

Bennett (this volume) points out that the pupil is a mediator in his own learning. Other authors (e.g., Flammer, 1980) have illustrated the active role of the learner who intervenes in the process of instruction by his questions, demands, requests for information, etc. Pontecorvo (this volume) describes the "epistemic operations" underlying these interventions (providing information and data, drawing analogies and metaphors, producing metacognitive and methodological reflexions ("How do you know?")). In their research, Patry and Oser (1985) also refer to these metareflexions in the developing child.

Each partner comes to the didactic situation with a particular conceptual referential framework reflecting his thoughts and preoccupations. In effect, when teachers and pupils are confronted with "scholastic matters", they do not only consider the defined task in cognitive terms but also take into consideration the relational structure of the situation. There exists a social and moral order in the classroom which is apprehended differently by teachers and pupils. Delamont (1985) has pointed out that in the everyday life of the classroom pupils are often confronted with a type of culture clash between their cultures and that of the school. Woods (this volume) has evidenced the existence of pupil sub-cultures which are not without influence on pupils' attitudes regarding school subjects such as science, sex education, etc. Gilly (this volume) calls attention to misunderstandings in the teacher-pupil relation which, for pupils, are often situated on an emotional level. It seems that pupils value aspects of the relation which are not at the centre of teachers' representations of the same relation. Gilly maintains that teachers' representations are marked by the obligation adequately to fulfill their role as it is institutionally defined (in order to be a "good teacher", one needs "good pupils"). In trying to understand the dynamics of teaching and learning situations, it is necessary to analyse how each actor pursues his own interests even when they are seemingly incompatible with the situation (Perret-Clermont, 1983, 1984a).

Looking at the dynamics of didactic situations, one can see that the didactic contract between teachers and pupils establishes in some sense the social order in the classroom. Within the didactic relation between teacher and pupil, the teacher is supposed to transmit an object of knowledge. This object is embedded in the referential universe of the teacher and is linked to his academic life history (teaching experiences, training, etc.). The pupil's comprehension of the transmitted object is likewise influenced by experiential factors. The consideration of the existence of these differing conceptual frameworks demands a re-examination of assumptions about content in the learning process: What is really being taught? What is learnt? Where does this object of knowledge come from? What is the pupil's goal in this pedagogical situation? Is it always the understanding of the material presented? Or does formal qualification sometimes take precedence?

#### THE TRANSFORMATION OF KNOWLEDGE

The transmission of knowledge implies the process of de-contextualization and re-contextualization. Taking the mathematical notion of "sets" as an example, one can illustrate the process by which this object of knowledge is transformed (see Perret-Clermont, Brun, Conne & Schubauer-Leoni, 1981). Set theory as elaborated by mathematicians becomes, in the hands of curriculum experts (who are influenced by other social aspects and other subject experts) the notion of "sets" as an object of the scholastic curriculum. This decontextualized object is in turn transformed by teacher trainers (with the influence of educational psychologists, school authorities, etc.) into the notion of "sets" as an object to be taught. This version of "sets" then becomes the object of a lesson or exercise as it is transformed by teachers in the classroom. This transformed (deformed?) object finally reaches the child who in turn re-contextualizes the notion of "sets" as an object to be learnt. Thus, at the end of this process the (naive!) psychologist discovers that there is little in common between the notion of "set" as initially elaborated by mathematicians and the notion of "set" as learnt by pupils. However, this description of the transmission of knowledge as a descending process constitutes an uni-directional model of the progressive "degradation" of "pure" knowledge to "deformed" scholastic material. In fact it can be useful to understand

also the reverse process: Starting with the child's activity on sets and collections in interaction with his teacher one can thereby evidence other mechanisms of de-contextualization and re-contextualization (Perret, 1985). The teacher's interference with the child's cognitive activity introduces feedback on his professional knowledge which can, in turn, be transmitted by him to teacher-training colleges training whose curriculum is, in turn, ameliorated in function of both practice and scientific research. This reversal of the process of de-contextualization and re-contextualization presents a more dynamic perspective of the transmission of knowledge while, at the same time, it calls into question the meaning of knowledge learned at school. For example, it is assumed that the notion of "sets" has a meaning in theoretical mathematics: Can it also have meaning to the child? To what extent and under which circumstances?

In pursuing research on learning and teaching, we are invited to remember that the object of knowledge is not uniquely the property of the teacher-student relation, as other actors also have a vested interest in its transmission (parents, for example). This object can take on different symbolic meanings for the different actors concerned. These symbolic differences could result in a kind of culture clash for the child who is caught in the middle (as it were) of different referential universes (Perret Clermont, 1984b).

#### ACKNOWLEDGEMENT

Preparation of this chapter was made possible by a grant from the Swiss National Science Foundation (Project no. 1.738.083).

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