As already noted, the primary thrust of this model is the storage and retrieval of information. Not surprising, the recommended practical applications are concerned with procedures and techniques designed for just this purpose. Some of the proposed applications, in existence long before the information processing model was developed, are emphasizing meaningfulness of the content, overlearning, reviewing and practising (massed or distributed), active recitation, note-taking, using advance organisers, reminding students of prior knowledge, provision of goals and objectives. These techniques are quite acceptable because they can promote meaningful learing. What is more, in promoting or implementing these techniques, one does not have to know about the information processing model. That is, these techniques stand on their own, independent of and prior to the information processing model.

Another set of techniques emphasized strongly in the textbooks consulted are mnemonic devices such as verbal rhyming, visual loci, and pegwords. These techniques do not emphasize meaninfulness and, in fact, are probably most useful when the content to be remembered is meaningless. Although such mnemonic devices promote the recall of series of *items* of unrelated material, they do not promote the kind of meaningful learning one would hope to accomplish in educating children. This is not to deny the value of some mnemonic devices in some circumstances; however, where possible, meaningfulness should be emphasized.

None of the practical suggestions above are really derived from the information processing model. Perhaps it is just as well because this model presents a gross distortion of the nature of human memory and learning.

6.5 Psychopedagogics and information processing

Aside from the obvious fact that to become functional new content must be integrated with one's possessed knowledge, the information processing model offers virtually nothing of relevance to psychopedagogics. The main reason for this is that the model consists of *ad hoc* metaphorical structures that do not do justice to the learning child in everyday life.

Except for attending and remembering, other modes of learning are taken for granted or also distorted (e.g., the assumption that we only experience small aspects of an object from which it is built-up into totality. For example regarding feature detectors, Farnham-Diggory says, "They do not detect a whole object or event at once. Instead, they detect very small aspects of it called *features*."). Such a view is phenomenologically untenable. This will become clear when perceiving is considered as a mode of learning in Chapter 3.

The information processing model is a strictly cognitive model which ignores the emotional foundation of all learning, and it leaves out of consideration the child, his psychic life, and the pedagogic situation. These are additional reasons why it is of little relevance or value to a psychopedagogical perspective. In representing the child as a computer, this model grossly misrepresents the learning child-in-education.

6.6 Conclusions regarding prospective teachers

As already indicated, assisting children to learn so they can remember what they have learned in ways that further their learning and becoming is important. To this end, it might be useful for a teacher to be familiar with some of the techniques recommended for accomplishing this. The use of these techniques is in no way dependent on a familiarity with the information processing model. Since this model presents an inadequate and misleading view of learning and remembering, it cannot be recommended as a topic of study for teachers or educators.

In arriving at this conclusion one might ask, "but what of the many research studies supporting this model"? The data and results of these studies cannot be ignored. However, many of the interpretations of these studies can be questioned. There are many reasons for this. A main one is that several of these studies use contents and conditions (e.g., brief periods of exposing the contents) often designed to fill in the details of the model which is taken for granted. Unfortunately, it is this very model which is problematic. The data emerging from some of these studies may still be useful and relevant when reinterpreted in light of an accountable philosophical anthropology and when the child as edu-

cand is stressed; however, this remains to be seen because such reinterpretations have yet to be made.

7. GENERAL COMMENTS AND CONCLUSIONS

The three models of learning considered are not of central relevance to one interested in gaining insight into and an understanding of how children learn, generally, and how they learn in an educational situation specifically. None of the models considered have the learning child as their point of departure. The Pavlovian model asks us to view the learner as a reflexive nervous system, the Skinnerian model sees the learner as a responding animal, and the information processing model sees the learner in terms of metaphors borrowed from computer science. All turn their back on the everyday reality of the learning child.

In one way or another these three models are variations of a stimulus-response paradigm, and they all represent an untenable naturalistic-oriented anthropology. Sonnekus (no date) states, in contrast to the theories we have been considering, "phenomenological penetration of the learning phenomenon in the human being unquestionably points to the fact that in the first place learning is an anthropological phenomenon, that is innate in the human being; that the naturalistic oriented psychology of learning as such, with its different point of departure and field of study, does not make any practical contribution toward the elucidation of this phenomenon". He adds that the life world of the child must be our point of departure if we are to found our insights on an acceptable anthropology and if we hope to penetrate to the essentials of learning as a form of the actualization of the child's psychic life.

The two chapters that follow are attempts (1) to base an understanding of the learning child on an accountable philosophical anthropology, (2) to begin with the life-world of the child, or more explicitly, the living, learning child in an educational situation, and (3) to discover and describe the categories of learning as they emerge from this everyday lived reality of the child-in-education.

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