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EDUCATION CREATIVITY - A STRINGENT NEED OF THE SOCIETY

MIRON IONESCU

ABSTRACT. The present paper focuses on the complex issue of creativity and aims at approaching the most up-to-date aspects connected to it: the present research lines, the premises of the approach, educational strategies, the relationship between the educational phenomenon and the society.

The main conclusion is that creative aptitudes do not develop automatically together with the biological development of the individual and consequently require a special, early, long-term intervention in which each teacher should take part after responsibly assessing his or her own role in the formative mission to be achieved.

Present-day research lines in the field of creativity

As a complex and multidimensional phenomenon, creativity is a topic of interest for more sciences, such as: sociology, psychology, educational sciences, philosophy, economy, philology, aesthetics, arts and creatology. In the 3-rd - 5-th decades of our century creativity was defined, new meanings were added to the notion developed around this world. Today the stress is put upon other aspects, among which we can enumerate: highlighting the complex, interdisciplinary features of creativity, a psychology-based approach to creativity, a detailed study of the functions and factors of creativity, of the levels and stages through which the creative process passes, of the way of forming and developing creative abilities and of training the trainers of creative beings.

Can creativity be trained ?

Besides theoretical studies, the practical research has been mainly oriented towards designing the strategies leading to creative attitudes. The incentives to creativity and the results of the research in the field prove that creativity can be educated and trained. Economy, industry, social life even

contributed to the development of new operational methods and techniques typical of creativity domains.

Premise for approaching creativity

The requirements of contemporary like and the need of solving the ever-more complex issues in almost all fields of activity turned the education towards creativity in a priority and stringent demand. That is why the training of creativity is the preoccupation of many institutions, foundations, associations, circles interested in supporting and stimulating creativity. It is also the focus of books, textbooks, studies, congresses, symposia, reunions, debates, exhibitions, TV and radio broadcasts. In fact, it was as early as 1943 that Alexandru Roșca anticipated that "the discovery and use of the talented and genii becomes one of the most important functions of a well-organised society".

It is also true, as A. D. Moore (1975, p. 158) pointed out that there is no guidebook to creativity, which could be open at a certain page to tell us how to do or what to think to do in a subsequent step. But we strongly support the idea that when speaking about creativity one should start from the following principles:

1. creativity can be trained and quantified;
2. there are models, strategies, methods, techniques general or/and specific skills for some domains which can be identified and later on applied when solving the vast majority of issues related to creativity.

Creativity as a pedagogical concept

The principles above also led to a more and more frequent use of the sintagm "making the society more creative": specialists underline that society can be made more creative only if this process begins in the sphere of education and especially during school years. Consequently, at present, educational sciences prioritarily attempt at turning potentially creative kernels in each individual - no matter how young in age - into something valuable. This concern aims at fulfilling the following general objectives:

- to develop a positive/proper attitude towards progress, novelties and towards implementing the latter in one's actions;
- to train people to admit the new as a sign of progress, innovation and human creativity;
- to encourage pupils' originality;

- to form and develop abilities and skills required when creating, to reshape working strategies in a flexible, effective and dynamic system;
- to form and develop the creative capacity when producing new ideas, theories, connections, ideal or material models, objects etc.

Each of these objectives can be made more detailed and specific to the different subjects studied.

It is considered that any teacher should be an agent of change and this from a reason typical of this job's specificity, that is the teacher should form individuals able to integrate themselves creatively in the social life of some stage in the development of society.

The fact that the development of creativity by education is a priority has multiple consequences for school and training, Such a complex objective requires a system and a process of change at all levels. A systemic vision is the only methodological approach able to support such a view. The systemic approach is indispensable in making the educational process modern, efficient and creative, in the following aspects:

- the restructuring and/or redesigning of the curriculum;
- a useful and effective educational design;
- a scientific educational management;
- an operational and future prospect-oriented methodology;
- richer and ampler organisational forms in education;
- improved student assessment and evaluation;
- better student self-assessment and self-evaluation;
- permanent adjustment of the didactic discourse to the educational activities;
- modern relations between the teacher and pupil etc.

Strategies for educating creativity in school

The school is the main factor which can contribute to the capitalization of the potential creativity of pupils and to the stimulation of their creative aptitudes. Before going to school, the family and the pre-school take some care of the children's creativity, but it is only in school that the creative aptitudes of the child are found, stimulated, formed and developed.

But there is no chance for the pupils to become creative innovators if their teachers are not creative themselves. The teacher can show creativity when:

- designing activities;
- managing teaching and learning;
- assessing and evaluating the pupil's outcomes;
- adjusting actions according to the feed-back received;
- making research in his/her speciality or/and in psychopedagogy and implementing the result of this research in the classroom.

This sides of the teacher's activity should be reconsidered by the trainer's trainees and the teacher's pupils.

The developments in the theory and practice of education allow the identification of the constructive role of education in stimulating creativity and in promoting the pedagogy of creativity. Among the components, one can point to the following:

- the emphasis should be put on non-routine and non-conventional methods of teaching and on promoting cooperation in learning, on developing a favourable social and psychological climate, on stimulating the pupils' efforts and wish to be original, inventive and creative;
- education should promote heuristic education, having in view spontaneity, initiative, independence on behalf of pupils. When the child uses his/her own intellectual, affective, and motivational potential with a lot of effort, there are more opportunities of learning and of transferring the knowledge acquired to other situations of learning.

Theory and practice should always be linked together when knowledge is obtained by finding and discovery, that its when its instrumental dimension follows the well known educational principle.

The heuristic education can be reached only if learning occurs by finding, through problem solving and research, the later being ranked as didactic principles due to their formative and informative values.

Real scientific progress cannot take place if creative imagination is not be found, if problems are not continuously set in front of individuals or if older issues are not approached with a fresh view. In this respect, Albert Einstein (L. Infeld, 1983, p. 89) showed that "defining a problem often more is important than solving it as the solution is linked to mathematical or experimental skills", while G.T. Dillon (1988, p. 12) pointed out that "problem solving is the essence of the process of creation".

The heuristical methodology is now in full swing and a proof of its efficiency is the fact that the methodology penetrated not only educational institutions of all types and degrees, but also companies, institutes of design, art, etc. due to its mainly applied character.

The science of creativity (creatology) and of research seen as cross-sections through heuristic are often referred to their horizontal components: psychopedeuristics, socio-heuristics, science-heuristics, techno-heuristics and art-heurtistics. Introducing creativity in teaching all subjects can be one of the innovations in education and this is because innovation is a direct, operational, conscientious manifestation of creative attitude.

Present day and prospective trends in education put a strong emphasis on communicative, question-and-answer, independence-oriented activities, where the pupils' personality can be fully integrated. Part of these activities are extra-mural. All school based or extra-mural activities focused upon creativity and its stimulation can be related to:

- making intra- and interdisciplinary comparisons and connections;
- using question-problems;
- solving problems;
- capitalizing problem-based modelling;
- imagining schemes, ideal or material models;
- identifying the theoretical and practical applications of the knowledge acquired;
- filing in blanks in texts, completing drawings, figures, etc.;
- writing essays on a given topic;
- using reference literature to write reports;
- designing and solving problems and exercises;
- making mentally-represented experiments;
- making projects of research, even of invention, etc.

There are specific teaching techniques in the case of creativity. They are mainly valid in group work: brainstorming, sinectics, brainwriting, the buzz-group, case study, role play and they are aimed at encouraging originality, developing divergent and experimental thinking.

The creative phenomenon and the society

As we showed, creativity is also influenced by social factors, by the economical and social conditions, by the psycho-social content in which the human personality is integrated; all these factors both gather the achievements up to the respective moment and generate new problems

whose solution finding can be stimulating or inhibiting for the creative personalities.

The attitude of the civil society (state) towards the creative phenomenon is expressed in the measures taken to encourage the creativity of the individuals. These can be political, institutional and education-related, having two basic objectives:

1. finding out the creative potential;
2. promoting means of turning the creative potential into real manifestations.

Today's society is effectively preoccupied by stimulating and developing the creativity of its members. To train for creativity means to consider both the local specific and the development stage of the moment. "A creative challenge of the present - despite continuous social transformations - is the basis of future" (E. Landau, 1979, p. 109).

Exigencies and difficulties encountered in creativity education

In the stimulation and education of creativity, securing favourable conditions can led to intrinsic motivation, interest, passion, systematic concerns and consequently, in a creative and challenging environment, to an elimination of the emotional barriers.

Prejudices, conformism, rigid methodology, too precocious a critic of original ideas should also be fought against. Personal initiatives oriented towards finding new aspects, improving meanings and significants of things and phenomena, looking for unusual relationships between various elements which appear as isolated entities to an untrained eye.

Objectively, the difficulties encountered during a training favourable to creativity and due to lack of knowledge of the factors interfering in the process, of the mechanisms leading to the creative processes as well as of the rapports between the conscious - unconscious, affective-mental, individual-social in the creative process.

Human beings are also subject to barriers because of shyness, fear of mistake, discouraging attitude, lack of perseverence and ambition.

Conclusions

It is obvious that creativity, seen as a general human aptitude and a special one for the teachers, is an up-to-date topic. It is also a real large problem for the people as it requires many sided approach, as well as a lot of hope.

Encouraging creativity during education is dependent upon the totality of social relations an individual is a part of, upon many influences exerted upon it. Developing a creative behaviour does not depend only on one single factor, but on the whole environment in which the human being lives.

The training favourable to creativity should start from an early age, on an ascendent line and should go beyond school time.

The extention of the action of creativity in all fields of activity and in various forms fully justifies its up-to-dateness and the need that each of us should rethink the relationships with the other human beings and should reshape our life according to creativity.

BIBLIOGRAPHY

1. Boden, M.A. *(1994)*, *Dimensions of creativity*, The MIT Press, England.
2. *** *Copiii capabili de performanțe superioare*, "Caiete de pedagogie modernă" (1981), Nr. 9, E.D.P., București.
3. Dillon, J.T. *(1988)*, *Levels of problem Finding vs problem Solving*. În "Questioning Exchange", Nr. 2.
4. Einstein, A., Infeld, L. *(1983)*, *L'évolution des idées en physique*, Flammarion, Paris.
5. Landau, E. *(1979)*, *Psihologia creativității*, E.D.P., București.
6. Moore, A.D. *(1975)*, *Invenție, descoperire, creativitate*, Editura Enciclopedică Română, București.
7. Moraru, I. *(1992)*, *Strategii creative transdisciplinare*, Editura Academiei Române, București.
8. Moraru, I. *(1995)*, *Știința și filosofia creației*, E.D.P., București.
9. Munteanu, A. *(1994)*, *Incursiuni în creatologie*, Editura "Augusta", Timișoara.
10. Roco, M. *(1985)*, *Stimularea creativității științifico-tehnice*, Editura științifică și Enciclopedică, București.
11. Roșca, *Al. (1943)*, *Selecția valorilor*, Astra, Sibiu.

12. Roşca, Al *(1981)*, *Creativitatea generală și specifică*, Editura Academiei, Bucureşti.

13. Stoica, A. *(1983)*, *Creativitatea elevilor. Posibilități de cunoaștere și educare*, E.D.P., Bucureşti.

14. Weawer, W.T., Prince, G.M. *(1990)*, *Synectics: Its Potential For Education*. În "Phi Delta Kappan", January, Vol. 71, Nr. 5.

15. West, M.A., Farr, J.L. *(1992)*, *Innovation and creativity at work. Psychological and Organizational Strategies*, Willey, England.

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A MODEL OF INTERETHNIC CONFLICT MANAGEMENT IN ROMANIAN ORGANIZATIONS

HORIA D. PITARIU

ABSTRACT. Este tratată problema conflictelor interetnice din organizaţii. Pe baza unei investigaţii utilizând modelul Harward de management al conflictelor, a fost descris un model explicativ al conflictelor etnice organizaţionale specific ţării noastre. Totodată, sunt oferite şi unele soluţii şi direcţii de investigare.

The minority group: a psychosocial approach

There is a whole branch of psychology and a great amount of research concerning minority groups, regardless of their type. In a general sense, minority represents a group which, in a given society, doesn't enjoy power, prestige, or the opportunity to take part in decision making (Perez & Dasi, 1996). From another point of view, a minority group is one that deviates from the norms accepted and valued by the majority. Quite naturally, then, between the majority and the minority there emerges a state of tension which is reflected, to some extent, in the minority's behavior as well. Thus, a direct consequence of this is the minority members' having a keen awareness of the minority-specific elements of their identity. Turning now to the majority's standpoint, we shall find here the tendency to appraise minority people in a negative way, to try, by various means, to convert them to the majority's style of thinking and acting. In the last resort, the majority group will be concerned with developing a strategic program of assimilating or eliminating the minority, whereas the minority will strive to find opportunities of expressing and asserting oneself and of deviating from the majority's norms.

While all societies would like to assimilate or even annihilate minority groups and activities, since they may be perceived as potential generators of psychosocial problems, this would be detrimental, it would sharply contradict the dialectical principle of progress: a society devoid of

minorities becomes flat, uniform, paralyzed. Nemeth (1980) has shown in his studies on group decision that the presence of subgroups within a larger group enhances its efficiency. This finding has been applied in organizational psychology where it is recognized that competing groups are more creative and productive.

Moscovici (1976) argues that in the make-up of a minority an important role is incumbent upon its behavioral style which can be regarded as being the language of social interaction and defining the script and the semantics of interaction between groups. He maintains the existence of two kinds of minority groups: those actively defending their own viewpoints (nomic groups), and those displaying a passive kind of behavior, disapproving other groups, but not being active in advocating their own position (anomic groups). (Table 1.)

Table 1.
Characteristics of nomic and anomic groups (adapted from Perez & Dasi, 1996)

NOMIC GROUPS	ANOMIC GROUPS
• deviancy plus a counter-norm • are perceived by the majority as independent (organized, structured) social groups • perception of these groups by the majority is based upon social interaction with them • are aware of own norms • bring about social conflict	• deviancy without a counter-norm • are perceived by the majority as mere social categories • perception of these groups is based upon ethnocentric attitude on the majority's part • are not aware of own norms • raise social problems without engendering conflict; induce attitudes of marginalizing and ignoring on the majority's part

Nomic groups have as a distinctive feature their deviating from the norms of other groups and their putting forward counter-norms or alternative norms. Thus, they appear in the social field as independent social groups. Anomic groups, too, deviate from the majority's norms, but they don't propose alternatives of their own (they don't generate conflicts). By combining these two kinds of groups with their number (frequency), we are able to make out four types of societies (Table 2).

Table 2.
Four types of societies derived from the predominance of nomic or anomic groups (cf. Perez & Dasi, 1996)

	Few nomic groups	**Many nomic groups**
Few anomic groups	A society showing a high degree of uniformity (a static society) and little social conflict	A society being caught in a process of social change as an answer to objective needs
Many anomic groups	A society finding oneself in a state of anomy, characterized by little activity and much marginalization	A society in a state of disintegration and radical change

Another distinctive feature of minority behavior styles is their consistency. It is understood as a non-conrtradictory repetition of an action or opinion. Consistency endows the group with color and visibility so it will be perceived as an independent entity that provokes and actively maintains social conflict.

In the social image of a minority its extremist behavior (in its more or less radical variants) is another determining element. It is termed also negotiating style (Mugny, 1982). This behavior can be regarded as shaping the social relationship between majority and minority. A minority that resorts to a rigid or radical behavioral style is apt to bring about more conflictual relations than if it would use a more flexible or more moderate tone. A stiff, unyielding style on the part of a minority draws the observer's attention to what that minority is and to the motives underlying some of its actions.

In addition to behavioral styles, the perception of minority groups is marked also with a number of prejudices. ("Prejudice is an attitude which predisposes an individual to make either negative or positive judgments about persons, objects, concepts, or groups, prior to objective evaluation."- Wolman, 1973. It has a cognitive, an emotional, and a behavioral component. Or, to put it another way, it is "an a priori judgment, a favorable or unfavorable one, based upon a belief imposed by the environment and by education, and able to resist to information."- Sillamy, 1980.)

A last aspect to be mentioned with respect to the problem of the social perception of minorities is the existence of cognitive automatisms towards them. As a rule, a distinctive feature of the automatisms is the infrequent occurrence of certain events. For instance, a minority member who was awarded a prize, a gipsy who has assaulted somebody etc. results in establishing a connection between the social group to which the actor under consideration belongs, and the rare behavior that has taken place. Relying upon such events, some hasty, superficial generalizations are made.

The social psychology of minority groups encompasses a much wider area than the one presented above. Still, the elements listed here try to explain some of the mechanisms underlying the social perception of minority groups. Now, in an action of mediating between a majority and a minority group it is important to realize that the educational strategies to be developed have, as an ultimate goal, precisely that of changing the social perceptions of the community and of its component members. It shouldn't be forgotten that minority groups, through the philosophy they profess, often constitute a social motor. With regard to minorities, Perez & Dasi (1996) make this concise statement:"we think they don't help us, but actually they do; we think they have no influence upon us, but in fact they have; we don't like them, but, at the same time, we feel they are part of ourselves" (p. 81).

Conceptual delimitations: types of conflict (psychological conflict, social conflict, ethnic conflict and organizational ethnic conflict)

"Conflict" is considered as an extremely broad term used to refer to any situation where there are mutually antagonistic events, motives, purposes, behaviors, impulses etc. (Reber, 1985). Of course, conflict is found in almost every realm of human interaction, but it would be ridiculous to assume that social interaction necessarily involves conflict.

Psychological conflict (Sillamy, 1980) is defined as an internal state in which an individual finds himself when he experiences contrasting emotions, or when he is confronted with contradictory requirements or undergoes the influence of moral forces opposed to each other and considered as being of nearly equal value. According to C. L. Hull and N.E. Miller, intrapsychical conflict is a struggle between opposing tendencies. We distinguish four types of intrapersonal conflict:

(a) Approach-approach conflict, which opposes two desires (goals) with the subject being torn between them. Lewin defines this type of conflict as the need to choose between two positive valences. See the sophism with Buridan's ass.

(b) Avoidance-avoidance conflict, where the subject is presented with two aversive goals (he faces the necessity to choose between two negative valences). An example is that of being compelled to do an unpleasant work or else to be punished.
(c) Approach-avoidance conflict, when the subject experiences ambivalent feelings, of attraction and, at the same time, repulsion toward one and the same object. A case in point is that of performing a disagreeable task in order to get some reward.
(d) Double approach-avoidance conflict, i.e. having to choose between two alternatives, each of them with both positive and negative valences. Such a conflict might be caused by being presented with two job offers: one of them promising challenging work but low pay, and the other requiring tedious work rewarded by a good salary.

Freud investigated intrapsychic conflict and assigned it a fundamental place in psychoanalysis, especially in the theory of neuroses. While even today many researchers try to explain interethnic conflicts in terms of Freudian theory, we may consider that the explanations offered by them are of limited value. For Vasile Pavelcu, a Romanian psychologist, conflict is simply a factor of emotional strain (Popescu-Neveanu, 1978). With regard to structure, three types of internal conflict have been identified: cognitive, motivational, and emotional ones (Popescu-Neveanu, 1978).

Passing now from the intrapsychic conflict to the social (interpersonal or intergroup) one, according to Rubin, Pruit and Kim (1994) "conflict (social - H.P.) means perceived divergence of interests, or a belief that the parties' current aspirations cannot be achieved simultaneously" (p. 5).

Ethnic conflict has a less wide scope. It rests upon a psychological explanatory mechanism that works in a certain type of social relationships peculiar to a minority included in a majority-ruled society and constrained to coexist with that majority. This type of relations manifests oneself, most often, through various social, cultural, educational, political or economic phenomena. By analyzing the content of interethnic conflicts, we can make out their dynamic nature, we recognize that they are influenced by the level of civilization and the social framework where the interethnic "encounter" takes place. Heisler (1991) points out: "The politics of contemporary ethnicity and ethnic relations derive more from the nature of the modern democratic state and its political styles than from qualities indwelling ethnicity or the dynamics of ethnic groups". To understand the present-day ethnic phenomena,

peculiar to those societies having attained a high level of development, one must take into account a few important elements:

- the structure of modern society;
- the legal, constitutional, and political framework of the state;
- the ideological ethos of the regime;
- the consequent psychological responses and calculations of self-interest of individuals.

The possibility for an interethnic conflict to break out is conditioned by the coexistence of two or more culturally differentiated communities under a single political authority. Roughly speaking, ethnic groups claim (we refer here to Romania):

- Political participation
- Cultural status
- Economic opportunities.

Organizational ethnic conflict, as a concept, is part of general ethnic conflict, being applied to a more concrete setting, tightly related to the work environment in which people spend the greater part of their active life and which, in fact, accounts for much of their quality of life.

Organizational interethnic conflict

As concerns its structure, the organizational environment is made up of larger or smaller social groups that are in a continuous interaction and that in principle can, and in fact do or do not, generate conflicts, having sometimes also an ethnic connotation. Regardless of the content of the conflict, the latter may have positive valences, or it may degenerate into negative actions, violence, or other forms of manifestation. Intergroup conflict is neither good nor bad in itself. In some cases, conflicts among departments or groups (including ethnic ones - H.P.) are necessary and productive for organizations (Cummings & Worley, 1993).

It seldom happens, however, that an interethnic conflict in an organizational setting becomes manifest. But this doesn't mean it is inexistent. It is present in a latent state. Interethnic conflict may break out any time, if there exists a specific and propitious context. Usually, it can be traced back to multiple causes. These causes determining organizational ethnic conflicts can be synthetized in a model (Figure 1).

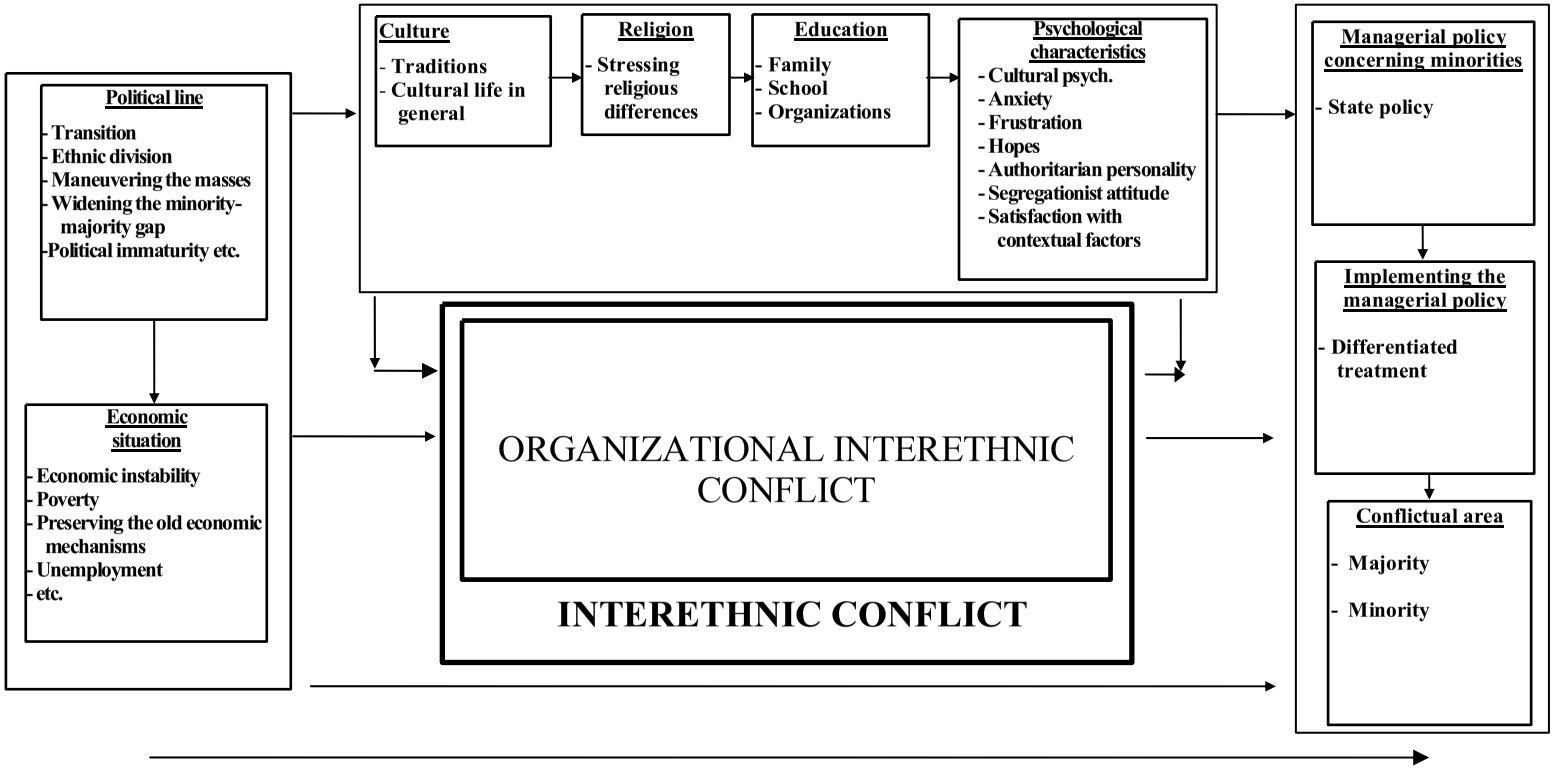

Figure 1. A tentative model of organizational interethnic conflicts.

The model shown in Figure 1 tries to explain organizational interethnic conflict as having a multicausal genesis; some of its roots are located outside the organizational framework proper. It has to be specified that the model presented above acquires a distinctive feature, typical of the social and political transition Romania is presently going through. This model works as a system, but in different ways according to different situations. From the very beginning we can make out two great sources of conflict which, in fact, are interdependent and permeating each other: the block or general framework of political-economical setting and the more restricted block or framework of organization proper, where the interethnic conflict arises and unfolds. Superimposed on these two structures we find a series of moderators that may be viewed as components conferring a peculiar tone or identity and determining the intensity of the ethnic conflict.

(1) The political environment plays a pervasive role in interethnic conflict. Minority groups live within a particular political framework in which they develop a series of norms of their own. These, in turn, may be consistent with, or opposed to, the majority's norms. Minorities are often used by the power as scapegoats. The minority group adopts toward the political framework a position, a stand that defines the group's nature as nomic or anomic. Depending on the political line of a state, the minority group develops its own strategy of self-assertion (the present situation in Romania is a case in point: after the latest elections, owing to enlarged opportunities for democratic action, the old strategy of the Hungarian minority's political organization has become obsolete and calls for profound changes).
(2) The economic framework, too, may further the triggering of interethnic conflicts. Economic instability, poverty, obstruction of market-economy mechanisms etc., all these factors may promote the occurrence of interethnic conflicts which can take the shape of manifest, open actions.

Against the political-economic background, ethnic conflicts are gradually building up in the organization and may then break out on occasion. As a rule, organizational conflict, including interethnic conflict, is being fed by the environment described above; it seldom happens to be devoid of any connection with that environment and to be generated by strictly internal conditions. (There are five major levels and sources of conflict within organizations: intrapersonal, interpersonal, intragroup, intergroup, and intraorganizational.) In practice we don't have to do with continuous manifest organizational ethnic conflicts. These are rare events;

most often they result from a particular political line and from a specific economic condition. A special case is that of ethnically inciting either the minority or the majority by various means of manipulation in order to get political benefit. As concerns the sources generating organizational interethnic conflicts, these can be viewed as having a plurilevel structure. We are referring here to both the conflict sources and to the area where the conflict unfolds.

Organizational interethnic conflict may be brought about vertically, from top to bottom (as organizational policy; vertical conflict refers to clashes between levels in an organization), or horizontally, within the same level (as a result of that policy or stemming from other, ethnically tinged causes; horizontal conflict refers to clashes among employees or departments at the same hierarchical level in an organization). The components of sources generating organizational ethnic conflict are listed below.

(1) Top management. We are referring to the company management which may, or may not, foster a policy of generating interethnic conflicts. An incompetent management often resorts to this strategic system in order to conceal a certain state of affairs.
(2) Mid-level management. Under the influence of top management, middle management often implements the "official" policy imposed by the superiors.
(3) The rank-and-file level is the "battlefield" between majority and minority, it is the "hot spot" where a conflict in general, and an interethnic one in particular, takes place. With regard to this level, organizational psychology discusses factors affecting intergroup behaviors and outputs (Goals, Attitudinal sets, Resource sharing, Uncertainty absorption, Substitutability, and Task relations).

The group of components which influences the outbreak, course, and outcome of an organizational interethnic conflict was assembled by us into what in experimental psychology is called a set of moderator variables (any variable that links two or more other variables or in some way affects the relationship between them. That is, the action of the two primary variables is "moderated " by the third). What is important at this level of moderator variables is the existence of wide opportunities for intervention on the part of those who set out to develop a strategy for ethnic conflict management. To put it concretely, there is no question of a real mediation, but rather of drawing up an educational program. That such a program works has been

proved by the latest elections in Romania when, although attempts have been made to trigger an interethnic conflict, these attempts failed in that very area which was assumed to be a ground favorable for ethnic strife: Transylvania. The democratic press conducted a real educational campaign in this sense. We have identified four types of moderator variables that may contribute to the genesis of ethnic conflicts: Culture, Religion, Education, and Personality characteristics.

(1) The cultural framework. We are referring to the cultural traditions of the group, its values and norms which further or hamper the integration of a particular ethnic group into an organizational sociopsychological system.
(2) Education.The spirit in which both the majority and the minority member are educated is a crucial factor in controlling or triggering ethnic conflicts in general and organizational ones in particular. Generally speaking, a defective education, the act of instilling into young people's mind a faulty image of the other ethnic group may produce major disfunctions in the relationships between minority and majority.
(3) Religion, irrespective of culture, is a factor that has contributed, along the centuries, to stimulate interethnic conflicts. Religious education accounts for many present-day ethnic conflicts.
(4) Personality characteristics peculiar to a minority. The explanations given for this component often resort to ideas drawn from Freudian literature. Sure, there are some similarities, but the psychological explanation for the mechanism of ethnic conflicts is far more complex. In this context we can mention aspirations, anxiety, hopes, needs, attitudes, satisfaction etc. that often appear in minorities which have had, for a long time, various - positive or negative - experiences with the majority.

One distinctive feature of the model presented above is the fact that it exists in a state of latency. It comes into operation only when certain conditions of imbalance between the component elements are met. This imbalance can be brought about from outside or from inside. But its manifesting oneself as ethnic conflict depends on how steady the state of balance is which stabilizes the relationship between majority and minority. There are many stabilizing factors. Within an organization, the democratic structure of the larger society supports the idea of having the minority participate at every level of management according to the principle of promotion based on competence, as well as developing human relations founded upon equality of rights.

Solutions for mitigating organizational interethnic conflicts

Generally speaking, a basic strategy for improving intergroup relationships is to change the perceptions (or, more correctly, misperceptions) that the two groups have of each other. To this end, various strategies have been devised and tried out (Blake, Shepard & Mouton, 1964; Neilsen, 1976).

Organizational interethnic conflicts result from numerous factors which can be divided into external and internal ones. External are those factors relating to the political, economic and psychosocial environment in which a particular group lives. Internal factors are a consequence of the external ones; they include the organizational structure, but likewise a particular psychosocial make-up of both the majority and the minority. Of course, it must be kept in mind that we have to do with a two-way rather than a one-way causal relationship.

An efficient means of easing and even eliminating organizational ethnic conflicts is that of setting up programs meant to mutually improve the image of the other ethnic group. A constructive solution consists in organizing joint leisure activities (cultural events, sports competitions or other outdoor pastime etc.).

Preserving a proper balance between majority and minority: this is, we think, a principle that will work in our endeavors to settle ethnic conflicts.

Organizational interethnic conflict is a reality that cannot be avoided or suppressed. We are able, however, to soften them, or to channel them toward constructive actions. Like any potent force, conflict (including ethnic conflict - H.P.) generates ambivalence by virtue of its ability to do great injury or, if harnessed, great good (Thomas, 1976). It is wise to regard ethnic conflict, too, as a phenomenon which can have constructive or destructive effects depending on its management.

REFERENCES

1. Bullock, A. & Stallybrass, O.(1981), *The Fontana Dictionary of Modern Thought,* Fontana/Collins, London, 1981.
2. Blake, R.R., Shepard, H.A. and Mouton, J.S. (1964), *Managing Intergroup Conflict in Industry*, Houston: Gulf.
3. Cummings, T.G. & Worley, Ch.G. (1993), *Organization Development and Change,* Fifth Edition. NY, West Publishing Company.
4. Moscovici, S. (1976), *Social Influence and Social Change,* London, Academic Press.
5. Mucchielli, A. & R. (1979), *Lexique de la psychologie*, Entreprise Moderne d'Edition. Editions Sociales Francaises, Paris, 1979.
6. Mugny, G. (1982), *The Power of Minorities,* London, Academic Press.
7. Neilsen, E. (1976), *Understanding and Managing Intergroup Conflict,* In: P. Lawrence, L. Barnes and J. Lorsch (ed): Organizational Behavior and Administration. Homewood, ILL; Richard Irwin.
8. Nemeth, C. (1980), *Jury Trials: Psychology and the Law,* In: L. Bercowitz (ed). Advances in Experimental Social Psychology (vol 14), New York, Academic Press.
9. Perez, J.A. and Dasi F. (1996), *Reprezentările sociale ale grupurilor minoritare,* În: A. Neculau: Psihologie socială. Aspecte contemporane. Polirom, Iaşi.
10. Popescu-Neveanu, P. (1978), *Dicţionar de psihologie,* Editura Albatros, Bucureşti.
11. Reber, A.S.(1985), *The Penguin Dictionary of Psychology,* Penguin Books, London, 1985.
12. Rubin, J.Z., Pruitt, D.G. and Kim, S.H. (1994), *Social Conflict,* Escalation, Stalemate, and Settlement. Second Edition. NY, McGraw-Hill.
13. Sillamy, N. (ed) (1980), *Dictionnaire encyclopédique de psychologie*. Paris, Bordas, 261-262.
14. Thomas, K.W. (1976), *Conflict and Conflict Management,* In: M.D. Dunnette (ed). Handbook of Industrial and Organizational Psychology. Chicago: Rand McNally.
15. Wolman, B.B. (1973), *Dictionary of Behavioral Science,* New York, Van Nostrand Reinhold Company.

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THE STRUCTURE OF THE EFFECTIVE TEACHER'S KNOWLEDGE

LADISLAU FODOR

ABSTRACT. This paper explores in depth what the author believes to be the essential components of the effective teacher's knowledge. It carefully emphasizes that there are seven major types of information which affect teaching behavior. First, teachers should have an intimate knowledge of the subject matter being taught. Then, they should have information from de field of psychology, pedagogy, methodology, remedial education, and from practice. At last, an effective teacher should have a wide-ranging general culture as well. The study also summarizes the major issues concerning the necessity of teacher education amelioration.

Nowadays, it is generally accepted that, the one who chooses teaching as his profession has to fulfill several particular expectations, and professional demands. These demands come from the profession's high complexity, its increased dynamics, and the various problems of pupils in development. For the ability of handling the professional, administrative, and social aspects, the problems coming up between pupil and parent, one needs specific psychopedagogical preconditions, on one hand, and creates complex pedagogical expectations, on the other hand. In the area of institutional education, the educational tasks, can be fulfilled only by a well-trained specialist or an expert (on can say professional). The psychopedagogical literature has always been concerned with the personality of the good teacher, that assures the suitable effectiveness of the teaching process. The typical psychical product called professional knowledge base (as culture) takes an important place on the teacher's personality traits list.The professional knowledge base is the most important factor of the educational competence. According to Arends (1994, 9) effective teachers have control over a knowledge base that guides what they do as teachers, both in and out of the classroom. The difficulties of the acquisition of educational competence, and of the practicing of the educational career

(unlike in the case of other occupations), are directly connected to the multidimensional character of the basic professional knowledge. In the field of different social activities, the representatives of professions which require an university degree (engineers, doctors, lawyers etc.) need only a on-sided specialized knowledge base.

While, in the case of most professional practitioners, the simple specialized knowledge seems to be enough for an efficient practical activity, teachers (educators) need to have a more complex specialized knowledge. The need for such a knowledge is argumented by the following factors:

- the psychological particularities of the children in development;
- the pedagogical, psychological, epistemological, sociological, biological and logical peculiarities of the educational process;
- the complexity of personality development by acquirement of information;
- the need for autoactivity.

On of the most important questions about the knowledge base for teaching refers about the relevant domains of knowledge. According to my opinion, in order to reach the effectiveness of the teaching-learning process expected by society, the teacher's professional knowledge has to embody at least seven dimensions. Before enumerating the seven dimensions, I shall admit that, at first sight, this idea may appear debatable. Although the pedagogical profession seems to have a lower level of professionalization, than, for example, the engineering or the medical career, the complex particularities of the development of personality-constituents (abilities, skills, attitudes, traits of character etc.), and of the behavior forms, require a multi-faceted professional knowledge of the practicing teacher. In the following part, I will analyze briefly the major seven dimensions of the teacher's professional knowledge.

Scientific (subject matter, specialized or content) knowledge

Many people believe that the teacher's content knowledge is the most critical factor in successful teaching. It seems obvious that one of the most important premise of an efficient educational practice, is the teacher's proper subject knowledge. That means a necessary presence of a deep knowledge of the cultural (scientifical) field, of the acdemic school subject. Without any doubt, the teacher has to be acquainted with the subject information he/she wants to transmit. Also, the teacher has to be aware of

those factual and conceptual information which have a deep impact on the development of the students' personality during the teaching-learning process occurrence. The content knowledge is the knowledge of the particular subjects to be taught such as mathematics, English or history. Many people argue, that without these knowledge an individual is unlikely to be a good teacher. Even if we cannot accept the rather anachronistic supposition coming up nowadays sometimes, according to which a teacher is able to teach and educate better if he/she possesses a higher scientific knowledge of his subject (e.g.: a physics-teacher is the better physics teacher, the more Physics he knows), I do emphasize the priority of the specialized scientific knowledge. In my opinion, considering the example of the physics teacher, a good physics-teacher needs to know as much physics as there is in the curriculum (possibly a little more). So, it is not necessary for him to be a scientist in that field to be able to teach this subject in the seventh or eleventh grade. However, the teacher needs to have a lot of information regarding child-psychology, the process of physical and psychical growing, the normal mental development, the specific aspects of the different stages of development, the strategic ways of personality-development, the optimal behavior management, the teaching-learning methods, procedures, techniques, etc. According to Arends (1994, 7) competency in academic subject matter will no longer be sufficient, particularly for teaching in classrooms that are culturally diverse and contain students with various handicapping conditions. But we should not leave out of consideration the fact that, one of the most important constituents of an efficient and functional educational competence of the teacher, has to refer to the knowledge of the taught material, that is to the adequate scientifically culture. Thus, in the case of an incomplete scientifically culture, both the teacher (in the field of teaching) and the student (in the field of learning) will come across serious difficulties. The unfavorable results of these difficulties are to occur in the child's general activity, preparedness and behavior. According to Ryan and Cooper (1988, 431) a teacher should have an intimate knowledge of the subject matter being taught, both the instructional content and the discipline from which it derives.

The conclusion regarding the facts described above, is, that in the case of teachers, good scientifically knowledge is absolutely necessary, but it is not a sufficient condition for a successful teaching process.

General pedagogical knowledge

The general pedagogical knowledge includes: knowledge of general education, didactics, educational theory, docimology, history, anthropology, sociology, axiology, psychology, deontology, and philosophy of education. So, it is about a sort of knowledge with special reference to those board principles, norms, rules and strategies of classroom management and organization that appear to transcend subject matter. The general pedagogical knowledge forms the better nourishing ground of the educational activity. It positively impacts the main educational tasks:

- building a good conduct;
- giving a good base for knowledge;
- defining the main objectives of particular lessons in terms of student behavior and performance;
- using effectively the technological equipment;
- developing a good character and other psychological traits;
- modeling an adequate social activity.

Implementation of these educational tasks contribute to the general improvement of the child's personality. The optimal pedagogical knowledge (including knowledge of educational contexts, principles, strategies, ends, purposes and values) is the sine qua non premise of a conscious, organized and systematical teacher. A good awareness of educational sciences assures, through teaching and applying the scientifically knowledge, mediates the process of introducing the students in the world of cultural values, helps them to become exemplary social beings, unique, and inalienable persons. In case of the lack or insufficiency of general pedagogical culture, the teacher, as a responsible specialist of the personality development process becomes a simple knowledge mediator. In this case, the teacher would only be able to pass over his scientifical knowledge and to verbally display and explain the subject matter. Talking only about plain information he/she would not contribute to the development of child's psychological life. He/she would not be able to handle educational logic of the typical school activities. In this way, the development of feelings, emotions, attitudes, beliefs and other components of personality, the improvement of the motivational basis of activity, the crystallization of interests, orientations, ambitions, ideas, necessities, theories, conceptions, in one word, the maturation of the basic human qualities would not be accomplished. On the basis of his general pedagogical knowledge the teacher develops the personal idea about instruction and education, about learning and

teaching, about personality development. Also, the teacher outlines his educational philosophy, whose importance is to influence the quality of whole teaching and learning process. It is easy to understand, that the significance of the general pedagogical knowledge consists in influencing the teacher's concept about planning educational methods, forms of organization and type of teaching's strategy.

Psychological knowledge

This wide knowledge category involves the teacher's general psychological information. This information arises from the field of general, developmental, educational and sociological psychology. However high the teacher's scientifical culture may be, a lack of appropriate psychological qualification cannot bring to a successful teaching activity. It is known, that a successful teaching activity requires, among other factors, a good insight regarding the psychological basis of education, and an adequate preparedness concerning the psychological development of the children. This statement is sustained by several research results (Arends, 1994), and by the educational practice. If a teacher does not have a proper psychological knowledge he/she is not able to organize creative, interactive, formative, and effective teaching-learning situations which agree with the major aims of school education.

A theoretical and practical knowledge about understanding, learning and human behavior, a psychologically perfected thinking and sensing of the teacher allows him/her to:

- solve children's emotional problems;
- maintain children's attention concentrated;
- solve conflictual situation;
- reinforce the student behavior;
- vary the learning situations to keep the students involved;
- assure a good discipline;
- get to know the children's individual particularities;
- follow the process of socialization;
- be able to create a normal teacher-pupil relationship;
- improve the interest and motivation of children with regard to learning;
- diagnose student's specific needs and learning disabilities;
- optimize achievement, etc.

The importance of psychological knowledge is also emphasized by the fact, that education is always an interpersonal process between teacher

and pupil. This kind of process is regularly based on a psychological ground. A major significance of the psychological knowledge of the teacher, may be best expressed by the Latin reflection: nemo paedagogus, nihil psychologus, meaning that one can't be an educator without being a psychologist in the same time.

Subject-specific pedagogical knowledge.

For a successful educational practice, the teacher needs to possess a good methodological readiness as well. A subject-specific pedagogical knowledge allows the teacher a successful presentation and processing of various subject matters (biological facts, historical events, geographical data, geometrical representations, mathematical notions, philosophical concepts, etc.). I believe that every teacher should be familiar with currently respected methodological knowledge about both the basic teaching procedures and the fundamental human learning behavior. In fact, the subject-specific pedagogical knowledge includes theoretical information about how teaching and learning take place. A distinguishing characteristic of good teachers is their ability to draw on methodological knowledge to inform their decision making in educational and instructional process. According to Falus (1998, 104) the subject-specific pedagogical proficiency represents the connection of the pedagogical knowledge with the themes of the subjects. With the help of a good methodological orientation, the teacher will be able not only to create the student's system of concepts (typical for the specific culture fields), knowledge, and thinking, but also, to apply the given subject-material to the development of personality. Possessing a good subject-specific pedagogical culture, the teacher will be able to choose and apply the proper teaching methods, procedures and techniques. At the same time, he/she will be able to prepare the students for an appropriate use of the thought material. Ideas coming from various cultural fields can be taught by different means of methods and can be learned by different methods. As a conclusion we can say that every educator on one hand has to make an effort for possessing the most suitable teaching methods, strategies and procedures in correspondence with different subject contents (a physics teacher for example should know the most important methods in teaching physics) and on the other hand, for endowing the students with the most suitable learning methods (in the case of physics, the students should know the specific methods of learning physics).

Remedial educational knowledge

It is widely known that among the normal school children, even in the same age-category, there are various differences, in some cases even significant discrepancies. According to these differences, we can distinguish children who need special education, so, different ways of pedagogical treatment. Having the fact, that the majority of normal school children hold at least one or more developmental problem (such as emotional, intellectual, behavioral, linguistic, or volitional disorders), the teacher should posses, beside his normal educational skills, some psychotherapeutical skills as well. If the majority of children has to deal with some problems in development, smaller or bigger insufficiencies, disabilities of the intelligence, emotions, language, will, behavior, or has any abnormality of different origins, it is totally necessary for the teacher to be able to give above his everyday task an appropriate psychological care (sometimes a therapeutic assistance) for these children. This issue is getting more importance nowadays, when mainstreaming becomes a vital topic of today's world's schools. The necessity of the pedagogical treatment in the case of retarded and disadvantaged children, orients more and more to the importance of the knowledge coming from the field of remedial (medical and educational) psychology.

It is to observe that nowadays, new tasks are added to the traditional pedagogical competence. If in the past, educators, advised children with various disabilities (concerning learning, behavior etc.) to leave the public school, or to turn to "experts" in order to solve their problems, nowadays it is obvious that the psychological and pedagogical treatment of these children tend to be the responsibility of a first-rate specialist in personality-development, the only specialist in teaching and learning, namely the practicing schoolteacher.

We can't forget - says Varga (1998, 112) - that the problem of a child is always the problem of the teacher as well. If the child's problem does not seem serious enough to require referral to a specialist, the teacher might try any of several approaches to improve the child's difficulties. Even if it is easy to understand that teachers are especially fond of having to deal with intelligent pupils, children with limited capacities, with real disabilities, or with learning, and behavioral difficulties, those having an inappropriate family background, are the ones that need major attention of a good teacher with profound knowledge in the field of remedial (medical) education.

Practical knowledge

The teacher's system of theoretical knowledge becomes useful, only when the teacher gains abilities and skills necessary for applying knowledge in practice. In this respect, the teacher's practical knowledge will be the precondition of a successful educational work. Just knowing some scientifically information does not guarantee the ability to act effectively on that knowledge. It is already recognized, that there is a very significant difference between knowing and doing. The teacher needs to possess practical knowledge in order to be able to carry out and organize the previously planned concrete pedagogical situations coming up in the field of operations, acts and activities on the basis of personal experience; near the theoretical thorough grounding, the teacher has to have a thorough knowledge of his profession's most important practical techniques.

According to Ryan and Cooper (1988, 431) effective teachers have to possess a repertoire of teaching skills that enables them to meet the different needs of their students. The practical knowledge embodies the specific pedagogical activity of the practicing teacher, so that the teacher can fulfill his vocation during the process of his training. Beside the theoretical learning, he needs to carry up the appropriate quantity and quality of exercise. It is experimentally proved, that between theoretical and practical knowledge there is often a loose relationship (because of the lack of training). It has happened, that in an educational situation, even if the educator has the necessary knowledge, but he lacks the practical ability, his practical application will not be the most appropriate. I am talking about the educator who knows what he should do, but he is not able to carry out successfully the necessary activities. Teachers may know, for example, that they should provide prompt feedback to their students on written assignments, but they are not always able to act on that knowledge (Ryan and Cooper, 1988, 455). To prevent this situation one needs a repertoire of effective teaching skills (classroom management skills, communication skills etc.) and specific practical tricks as for example: the asking techniques (questioning skills), the ability of planning and leading a lesson, of organizing the learning tasks, of reinforcing the student's behavior, the capacity to evaluate, explain and communicate. This list of skills just given is far from complete, however the teacher needs a very large repertoire of teaching skills to be able to work efficaciously with students. Since presently, the period of the practical training of the teachers is very short in Romania (as, in the present the practical training does not take up a lot of space of teacher training time) at least a two year lasting practice and experience-gaining period

is needed, when the practicing teacher has the possibility to try himself in the field of institutional education.

According to the present official regulations regarding teacher training, the practicing teacher obtains the practical knowledge and his final status as a teacher only after a two-year effective practice (in schools), which has to be followed by the successful passing of the final (definitive) exam, organized by the major universities. Although, there are many specialists who think that the achievement of the practice-teaching competence needs at least five years. I strongly believe that, a proficient teacher education program should concentrate on the performance coming from the most important teaching skills. No teacher training program should focus exclusively or extensively on the content knowledge of a subject-matter. The practical aspect has to be also assured in order to establish a functional, active, and creative teaching competence (no individual teacher can rely solely on knowledge of subject matter, of psychology or of pedagogy).

All young teachers need to develop a wide-ranging repertoire of teaching skills in order to be able to use these skills in various classroom events and situations. So, the schooling of effective teachers must not consist only in education, but in training as well, to perform certain teaching acts, actions or operations proficiently and even automatically. This automatically level of skills, make teachers more enabled to concentrate their attention and energy toward other various educational tasks in the same time applying their creativity.

Basic culture

Even if nowadays it is very hard to define the notion of basic culture, and it is more and more difficult to point out its constituents, we can't disconsider the real importance of it, in the carrying out the educational tasks of the teacher. It is generally accepted that the teacher's subject matter knowledge together with his/hers psychological, methodological and pedagogical knowledge, determines the more effective teaching results, the wider the area of his/her basic culture is. It is known, that Romanian teachers have sufficient general culture, moreover they are permanently widening it by continuous self-education.

In my opinion, when talking about the general culture of the teacher, we should not only think of the most important information of the most significant cultural field, but we should think also about the system of skills, capacities, aptitudes and abilities, defining the individual

way of living, thinking, about attitudes, thinking styles and conceptions. Modern approaches reveal that, the teacher's basic culture must be build of a system of best information, norms, values, and standards that a society developed over the course of many generations, over its historical development, which profoundly influences the everyday life and behavior of people in that society.

As a conclusion, we can say almost without any doubt, that in the respect of an efficient performing of the didactic profession there should be a very good balance between the above presented organic components of the teacher's knowledge. Unfortunately the present mixture between the teacher training and scientific education in our country, doesn't make this ideal possible. The curriculum of universities that train teachers, leads nowadays to the fact, that in the general professional knowledge of the teachers, the scientific knowledge should dominate more and more (sometime it should reach very high levels), while the other dimensions should be pushed into the background. At this moment, in the Romanian process of teacher education (that is to be found on the basic culture assimilated in the secondary schools), the teacher-candidate is given 87% scientific preparation, and 13% pedagogical, psychological, methodological and practical preparation. But there are many important topics (history of education, philosophy of education, sociology of education, remedial education, environmental education, health education, educational anthropology, pedagogy of family life etc.) which are not included in this 13%.

These deficiencies, and the big disproportion between the scientific and other areas of the teacher's professional knowledge, negatively influences the forming of the appropiate pedagogical competence, the professionalization of the pedagogical career, and the efficiency of the entire educational work as well. This situation leads to the fact that, the students who have successfully graduated their university studies, beside their strong determination to become teachers, they don't perceive, and feel themselves as teaches, but more as specialists (in mathematics, biology, physics etc.), because of the dominant knowledge. This regrettable situation (as in schools we should not prepare mathematicians, biologists or physicists, but educators) is easy to understand because of the dominance of scientifically preparation, that makes inexperienced teachers to consider themselves rather mathematicians, biologists or physicists than educators. The improvement of the present situation can only be helped by the total reconsideration (rethinking) of the teacher training process. Unfortunately, this reconsideration keeps us waiting because the present educational reform did not begin with the reorganization of

the teacher training, even though many specialists, among them Mialaret (1981, 99) consider, that the true and viable reformation of every educational system should start with it. While the central educational management has held out some good changes in the field of primary teacher training (it is being done at a college level instead of the former high school level), the initial secondary teacher training is still happenig in the old system's style. Fortunately the present situation is improved by the fact, that in the field of individual experience, most teachers feel the importance of the permanent psychological, pedagogical and methodological self-formation. They study specialized literature, and participate to diverse refresher-courses.

Finally, the above mentioned problems can be summarized by the statement, that the teacher's competence, and the prestige of the teaching profession, are based on the teacher's complex overlook upon the most various happenings, processes, organizational forms and equipment of the pedagogical profession, respectively by their multidimensional knowledge. So, teachers will be able to make those legitimate pedagogical reflections which determine the successful teaching-learning process, only when they possess all the seven dimensions of their professional knowledge. Only the presence of this complex knowledge assures the optimal function of the teacher's pedagogical thinking.

BIBLIOGRAPHY

1. Arends, R.I. (1994), *Learning to teach*, McGraw-Hill, Inc., New York.
2. Falus, I. (1998), *A pedagógus*, In: Falus I. (red.), Didaktika, NTK, Budapest.
3. Mialaret, G. (1981), *Introducere în pedagogie*, EDP, București.
4. Ryan, K., Cooper, J.M. (1988), *Those who can, teach*, Houghton Mifflin Compeny, Boston.
5. Varga, M. (1998), *A pedagógusszerepek átalakulása napjainkban*, Új Pedagógiai Szemle, 7-8.

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COOPERATIVE LEARNING. THEORETICAL OVERVIEW AND PRACTICAL SUGGESTIONS CONCERNING BIOLOGY CLASS

IRINA POP, ADRIANA BARNA

ABSTRACT. Informal cooperative learning consists of having students work together to achieve a joint learning goal in temporary, ad-hoc groups that last from a few minutes to one class period. These groups can be used to focus student attention on the material to be learned, set a mood conducive to learning, help organize in advance the material to be covered in class session, ensure that students cognitively process the material being taught, and provide closure to an instructional session. At times, teachers need to lecture, show a movie or a videotape, give a demonstration or have a guest speaker; in such cases, informal cooperative learning can be used to ensure that students are cognitively active. Informal cooperative learning groups also ensure that misconceptions, incorrect understandings, gaps in understanding are identified and corrected, and those learning experiences are personalised.

School learning and relationships

A direct relation exists between schools demanding that students work individually and the number of adults in our society who lack the competencies required to work effectively with others in career, family, and leisure settings. Their education should have prepared them for the *cooperation* inherent in adult career and family life. Numerous interpersonal skills affect the success of collaborative efforts. On the other hand, today, in the "real world" of the classroom, there are human relations' problems not less important than others. They stem from how students relate to one another, themselves, and their environment. Many youth feel angry, bored, confused, shy, and not loved. An increasing number of students, unable to cope with their feelings of insecurity,

escape through avoidance or turn to unhealthy behaviors. It is time to rethink and remake social relations to be an important part of education reform[1].

Class session interactive procedure

Especially during lecturing and direct teaching but also during observing and experimental sequences, the teacher's instructional challenge is to ensure that students do the intellectual work of organizing, explaining, summarizing, and integrating new material into existing conceptual networks. This can be achieved by having students do advance organizing, cognitively process what they are learning and provide closure to the lesson. Breaking up lectures with short periods of cooperative processing leaves slightly less lecture time but helps counter what is proclaimed the main problem of lectures[2]: *the information passes from the notes of the professor to the notes of the student without passing through the mind of either one*.

The following procedure helps biology teachers plan a lecture or a laboratory observation that keeps students actively engaged intellectually. It entails having focused discussions before and after the lecture or direct observation and interspersing pair/group discussions throughout the lesson.

Focussed discussion 1: *Advanced organizing*:

Assign students near the pair-person nearest them will do. Requiring different seating assignments, each class period allow students to meet and interact with many of other students in the class.

Give the pairs the cooperative discussion task of completing the initial (advance organizer) task. Give them four or five minutes to do so. The discussion task is aimed at fixing and advance organizing of what the students know about topic and establishing expectations about what new the lesson will bring.

Lecture/observation/discovery segment 1:

Deliver the first segment of lecture or materials for the first observation sequence (requirements enclosed). Work time: about ten minutes; for unmotivated adolescents, the time may be shorter.

[1] Jim Anderson, *Courageous Teaching. Creating a Caring Community in the Classroom,* Corwin Press Inc., London, 1995.

[2] David W. Johnson, R.T. Johnson, E. Johnson Holdbec, *The New Circles of Learning. Cooperation in the Classroom and School*, ASPD, Virginia USA, 1994.

Pair discussion 1:

Give the pairs of students a three-to four-minute discussion task focused on the material just presented. This ensures that students are actively thinking about the material being presented. The discussion task may be:

- to give an answer to a question posed by the teacher,
- to give a reaction to the theory, concepts or information being presented,
- to relate material to past learning so that it gets integrated into existing conceptual frameworks.

Discussion pairs respond to the task in the following way (four steps):

- each student *formulates* an answer;
- students *share* their answers with theirs partners;
- students *listen* carefully to their partners' answers;
- pairs *create* a new answer that is superior to each member's initial formulation, through the process of association, building on each other's thoughts and synthesizing[3].

It is important that students are randomly called on to share their answers after each discussion task. Randomly choose two or three students to give 30-second summaries of their discussions. Such individual accountability ensures that the pairs take the task seriously and check to ensure that both students in each pair are prepared to answer.

Lecture/observation/discovery segment 2:

Deliver the second segment of the lecture or the materials for the second observation or analyze sequence.

Pair discussion 2:

Give a discussion task similar to the previous one, focused on the second part of lecture/discovery.

Repeat this sequence of lecture segment and pair discussion until the material to learn is complete.

Focused discussion 2: *Closure*:

It is necessary to give an ending discussion task to summarize that students have learned from the lecture or materials analyze. Pair of students should have four or five minutes to summarize and discuss the material covered in the lesson. The discussion should result in students integrating what they

[3] Adriana Barna, Irina Pop, Agaftea Moldovan, *Predarea biologiei în învățământul gimnazial*, EDP, București, 1998.

have just learned into existing conceptual frameworks. The task may also point students toward what the homework will cover or what will be presented in the next class session. This provides closure to the lesson.

This procedure can be adapted to any biology lesson but we should carefully prepare enough natural materials, models and/or documents to share to each pair or group.

It is useful to process the procedure with students regularly to help them increase their skill and speed in completing short discussion tasks. Processing questions may include: "How well prepared were you to complete discussion tasks?" and "How could you come even better prepared from now?"

The informal cooperative learning group is not only effective for the students actively involved in understanding what they are learning during a lesson; it also provides time for teachers to gather their wits, organize notes, take a deep breath, and move around the class listening what students are saying. Listening to students' discussions can give properly direction and insight into how well concepts are being grasped by students.

Cooperative groups

Cooperative groups are long-term cooperative learning groups with stable membership whose primary responsibilities are to help students provide each other with support, encouragement, and assistance in completing assignments and hold each other accountable for striving to learn. Typically, cooperative groups are heterogeneous in membership, especially in terms of achievement, motivation and task orientation.

The activities for base groups can include:

- *Academic support tasks* such as checking to see what assignments each member has and what assistance is needed; in base groups, assignments can be discussed, papers can be planned, reviewed and edited and any questions regarding assignments and class sessions can be first addressed. If a group is unable to resolve an issue, it can then be brought to the teachers' attention.
- *Routine tasks* such as taking attendance or collecting homework.
- *Personal support tasks* such as listening sympathetically when a member has problems, emotional support between group members either during learning interactions and events or concerning individual obstacles (timidity, various inhibitions)[3]. At this point,

[3] Idem.

some attention should be paid to building a base group identity and group cohesion.

Long-term and stable relationships

Cooperative base groups help students establish long-term, permanent relationships, which are important for several reasons:

a. Most relationships in schools are, at best, "shipboard romances"[2]; they are temporary. School environment has enough variable parameters; that is why, for students became important that some of the relationships built in school to be permanent. The longer cooperative groups exist, the more influence members will have on each other, the more committed they will be to each other's success[4]. Permanent cooperative base groups provide the arena in which caring and committed relationships can be created; that improve attendance, personalize the school experience, increase achievement, and improve the quality of life within the classroom and school.

b. Long-term relationships promote concern for others as well as oneself and promote an opportunity to express that concern. A balance between concern for self and concern for others is increasingly important. Many high school students' own pleasures and pains, successes and failures occupy center stage in their lives. Each person tends to focus on achieving personal ends without concern for others. Physical, psychological and material self-indulgence have become a primary concern.

Over the last years, self-interest has become more important than commitment to society. Young adults are turning away from careers of public service to careers of self-service. Many young adults have a delusion of individualism, believing that they are separate and apart of all other individuals and, therefore, others' frustration, unhappiness and misery have no significant bearing on their own well-being. This is false. With the increase over the past decade in adolescents' and youths' concern for personal well-being, there has been a corresponding decrease in concern for the welfare of others (particularly the less advantaged) and for society itself.

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[2] Idem.

[4] Miron Ionescu (coord.), *Educația și dinamica ei,* Ed. Tribuna Învățământului, București, 1998.

Self-orientation interferes with consideration of others' needs as it actively prevents concern for others as equally deserving persons.

c. Long-term relationships can motivate students to work hard and do their best by holding them accountable for doing so. Numerous students spend very little time studying, avoid hard subjects, doing far less than they are capable of doing. Working together makes the efforts come from the heart, not from the head.

Teaching students cooperative skills

Children are not borne knowing instinctively how to interact effectively with others, and interpersonal and group skills do not magically appear when they are needed[2]. Many elementary and secondary students lack basic social skills such as the ability to correctly identify others' emotions or appropriately discuss an assignment. Thus, many teachers structuring lessons cooperatively initially find their students unable to collaborate with each other. But it is within cooperative situations, where there is a task to complete, that social skills become most relevant and should ideally be taught. All students need to become skillful in communicating, building and maintaining trust, providing leadership, engaging in fruitful controversy, and managing conflict. Therefore, teaching cooperative skills becomes an important prerequisite for learning.

What skills need to be taught?

Numerous interpersonal skills affect the success of collaborative efforts. Which cooperative skills teachers emphasize in their classes depends on what their students have mastered. As teachers observe and monitor their students working in cooperative learning groups they notice where students lack important skills. There are four levels of cooperative skills:

1. *Forming* - the bottom-line skills needed to establish a functioning cooperative learning group.
2. *Functioning* - the skills needed to manage the group's activities in completing the task and maintain effective working relationships among members.

[2] Idem.

3. *Formulating* - the skills needed to build deeper-level understanding of the material being studied, to stimulate the use of higher-quality reasoning strategies, and to maximize mastery and retention of the assigned material.
4. *Fermenting* - the skills needed to stimulate reconceptualization of the material being studied, cognitive conflict, the search for more information, and communication of the rationale behind one's conclusions.

Use of cooperative learning in the classroom

Any lesson, at any grade level can be structured cooperatively. All classes can have a mixture of cooperative formal, informal and base groups and can use cooperative learning scripts to different degrees. A typical class session consists of a base group meeting, a short lecture or group experiment or project and an ending base group meeting. The teacher formally starts the class by instructing students to meet in their base group for the introduction and warm-up tasks. The teacher then has three choices:

1. give a lecture and materials for analyze, using *informal cooperative learning groups;*
2. have students complete the same assignment in *formal cooperative learning groups*, or
3. present a data set followed by discussion questions, individualizing group assignments for the *formal* groups.

At the end of the class session students meet in their base group (usually, the whole class), to summarize and synthesize what they have learned. This structure keeps students intellectually and emotionally turned in to the work at hand and school in general.

While students work in their groups, the teacher monitors their progress by systematically observing each group and intervening to provide academic assistance and help in using materials and information sources, and, also, in using the interpersonal and small-group skills required to work together effectively.

We used generic cooperative lesson scripts to teach Plant Biology. For **example**, concerning the theme *Flowers, fruits and seeds*, we paid attention on learning goals, such as:

1. Relate the parts of a typical flower to the function of each part.

2. Indicate the features that distinguish monocots from dicots.

3. Understand the distinction between a fruit and a vegetable.

4. Know the regions of mature fruits.

5. Learn some types of fleshy and dry fruits and know how simple, aggregate and multiple fruits are derived from the flowers.

6. Discover the adaptations of fruits and seeds to the agents by which they are dispersed.

7. Diagram and label a mature dicot seed (e.g., bean) and a monocot seed (e.g., corn) in section, to show the parts and regions.

8. Observe the changes that occur when a seed germinates and note the environmental conditions essential to germination.

9. Explain the significance of dormancy in natural conditions; know the types of factors that control the dormancy and experiment how dormancy may be broken artificially.

I. *Formal* cooperative learning sequence: in order to guide students work on these topics, and in order to offer "problems" to solve, we prepared *different group assignments,* including *discussion questions*[5], such as:

1. Most wind-pollinated flowering plants have inconspicuous, nonfragrant flowers. How might nature be affected if all flowers were that way?

2. Do you believe the botanical distinction between fruits and vegetables is a good one? If not, how would you change it?

3. In discussing pomes, it was observed that the bulk of the flesh in an apple comes from the receptacle. What could you do to prove or disprove this?

4. Seed and fruit dispersal is achieved with the aid of wind, water, animals, mechanical means and humans. If you are "designing" a new plant, can you think of any new way in which it might be dispersed?

5. When volcanic activity or coral polyps cause new islands to appear in the oceans, they eventually acquire some vegetation. Would you expect the types of dispersal mechanisms for the flowering plants on these islands to be the same as they were for ancient continents?

II. We used *informal* cooperative learning to provide closure to the lesson by asking students to meet with a person from another group, and

[5] Kingsley R. Stern, *Introductory Plant Biology,* 4th ed., Wm. C. Brown Publishers, Iowa, USA, 1988.

write out four conclusions they derived from the lesson and circle the one they believe is most important.

At the end of the lesson the formal groups prepare their study forms to be evaluated and process how well they work together, by identifying, for example, three things members did to help the group and one thing that could be added to improve their group next time.

Conclusion

Using combinations of formal and informal cooperative learning can be a modern option to structure any (biology) lesson at any level. It is up to classroom, material resources and teacher skills to decide which forms of cooperative learning to use for which tasks. Teachers may take years to develop the expertise required to integrate cooperation automatically into lessons. Once teachers get to this level and students learn cooperative skills, school becomes the place where worthy goals are reached.

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FLEXIBLE LEARNING ENVIRONMENTS

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ABSTRACT. This paper provides an overview of the techniques available to authors of interactive learning material for use in flexible learning across the Internet. The rapid expansion in use of the Internet by educational institutions due to the emergence of the hypertext-based World Wide Web is first briefly reviewed, and then the variety of options available to authors of learning material are described in more detail. These techniques range from the basic use of simple hypertext structuring mechanisms available in the standard language of World Wide Web documents (HTML - Hypertext Markup Language) through to richer interactions and visualisations made possible by languages such as Java and VRML (Virtual Reality Modelling Language).

The techniques are compared and contrasted on the basis of their technical and pedagogical characteristics.

Introduction

Since its first appearance in the early 1990's (Berners-Lee, 1992), the World Wide Web (WWW) has grown spectacularly, from being a simple system designed to improve access by researchers to research papers on remote computers to a major force in corporate computing, communication and commerce. Partly because of their historical status as prime members of the Internet community, having in general fast connections to the Internet, Universities have traditionally been heavy users and producers of WWW material, and many courses around the world now have some material available in WWW format for round-the-clock access by students outside of normal class contact hours, and an increasing number are now

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offered in full distance learning mode with access and communication taking place primarily through the Internet.

Before committing large amounts of resources to the provision of learning material in WWW format, it is necessary to become aware of the *range* of options available to authors in structuring and delivering learning experiences. These techniques range from the basic use of simple hypertext structuring mechanisms available in the standard language of World Wide Web documents (HTML - Hypertext Markup Language) through to richer interactions and visualisations made possible by languages such as Java and VRML (Virtual Reality Modelling Language). It is the aim of this paper to present a brief overview of these techniques, and to compare them with respect to their technical and pedagogical characteristics.

The hypertext browsing model - its power and its limitations

Hypertext had a long history before the emergence of the World Wide Web since 1992 brought it to the attention of a mass audience. Twenty years after Bush's seminal paper (Bush, 1945), Engelbart implemented the first computer-based hypertext system, beginning a period of more or less continuous research into the concept of strongly interlinked electronic text. Perhaps the peak achievement of this phase was the Intermedia system developed at Brown University (Yankelovich et al., 1988). Intermedia was a set of dedicated software tools, which was used by lecturers at Brown and elsewhere to create richly inter-linked bodies of textual and graphical information for use by students. The system provided graphical overviews of the inter-linkages, annotation facilities, and the novel concept of "personal webs", whereby users could choose to view only customised subsets of the whole body of information. Intermedia was followed by other large hypertext system design projects such as Microcosm (Davis H. et al., 1992) and Sepia (Streitz et al., 1992).

So, at the time when the World Wide Web was first designed (Berners-Lee, 1992), the idea of hypertext was very well-developed, with a rich research basis, and with a sophisticated conception of the kinds of rich interactive information environments which could be built from this idea. However, the WWW was designed primarily to support the rapid retrieval of relevant documents from the Internet, using only a very basic form of simple hypertext linking and navigation.

Although the success of the WWW undoubtedly lies in this simplicity, it has since been recognised (e.g. Clibbon and Callaghan, 1996) that the current WWW hypertext data model ignores many of the lessons and ideas of previous hypertext research. Thankfully, the WWW Consortium, who control WWW standards, are working actively towards incorporating better support for more richly structured information, in initiatives such as XML (eXtended Markup Language) (Bosak J., 1997).

For now, though, and the near future, the "default" option for provision of learning materials on the WWW takes the form of sets of WWW pages with simple hypertext links used to provide both "contents"-style navigation, and to provide easily followed links to related information elsewhere. This approach certainly has some advantages: existing material, particularly slides (OHP acetates), can easily be converted and made available as sets of Web pages, and enhanced by further cross-linking; longer documents can also be exported from many wordprocessing packages in a form for immediate browsing on the WWW; and new material can now easily be prepared using one of the many HTML authoring tools, or Web-aware wordprocessing packages.

So in terms of technology, the production and dissemination of structured, inter-linked course material on the WWW is feasible for any institution with moderate computing and networking resources. It is appropriate, then, to move on to a critique of the pedagogical characteristics of this medium.

The basic assumption underlying hypertext is that the reader (in this case the learner) is able to "browse" through the material in a personalised manner, choosing a route through the material which meets the dynamic information needs of the learner during a particular session. To this extent, the medium is interactive, in that some more or less decisive action is required by the learner in order that the underlying information be explored and revealed. To what degree, then, might it be fair to criticise this form of interaction as suffering from the same weakness as so-called "page-turning" computer-aided learning (CAL) products of the past, in that the student experience is a more or less passive one? It is of course a basic tenet of educational theory that effective learning requires an active role on the part of the learner, through engagement with the material.

Clearly, educational material on the WWW can include questions and exercises which the learner can work on in some other format, and can make personal notes by, for example, running a wordprocessing package on the screen

alongside the WWW browser. Techniques for generating true two-way interactions and other richer forms of information presentation are covered in the sections of this paper which follow, but one point which should be made here is that the architecture of the WWW has so far prevented one particular form active engagement with the WWW material retrieved through browsing: annotation. In earlier hypertext systems such as Intermedia, readers were able to add their own annotations to selected portions of a hypertext document; these notes then became part of the reader's "personalised web" and could indeed be made accessible to other readers of the same document. The open, distributed nature of the WWW, and other aspects of HTML and Web servers, has meant that no general annotation mechanism has yet emerged for Web pages, though this weakness has been recognised, and is receiving some attention from the WWW Consortium.

Programming interaction - Java and its potential

How then does one go beyond the basic use of HTML in providing a greater degree of interaction and engagement by learners? Perhaps the simplest technique is to exploit the "forms" facility of HTML. This enables simple user controls such as text input boxes, buttons and checkboxes, such as might be found in any modern application program, into a Web page in amongst standard HTML text and graphical images. These could be used to ask questions of the reader, whose input is then sent back for processing by some specially written program using what is known as a CGI (Common Gateway Interface) script. This program would then normally generate some response to the reader, which would be presented as a dynamically-generated Web page.

This technique certainly provides a first step in creating interactive learning environments on the WWW, but suffers from the drawbacks of being technically rather demanding, and yet at the same time rather limited in the range of interaction styles which can be programmed. It is this need for richer interactive user interfaces in web pages (not just for educational purposes) which has driven the phenomenal growth of another piece of the WWW jigsaw - the Java programming language.

Java has its origins in a language designed for embedded controllers in appliances and other devices, but has, since its release in 1995, grown to become one of the most important general-purpose object-oriented

programming languages. Java is a platform-independent language, and its runtime environment is designed such that programs written and stored on one computer can be downloaded across a network and executed (in fact, interpreted) on another machine. The commonly used Web browsers of today have a Java interpreter built-in, which enables small to medium Java programs (called applets) to be retrieved along with a Web page, and to display and interact with the user from within the page.

This obviously has enormous potential for the provision of richer interactive learning experiences across the Internet. It is perhaps worth mentioning in this context that one of the first Java applets ever seen on the WWW was an example program provided by the designers of Java at Sun Inc. in which three different sorting mechanisms commonly discussed in computer science courses were presented as animated graphical displays, which show the differences in the sorting mechanisms much more clearly than any written description ever could.

Clearly then Java offers the possibility of producing interactive Web-based learning experiences equivalent to any that have previously been available in mainstream disk or CD-based CAL or CBT (computer-based training), particularly when one considers the imminent arrival (late 1997) of full multimedia facilities in the new Java libraries. However, programming such interactions in Java requires a high level of expertise, and any team building such support into their WWW curriculum material would require the services of available Java experts.

This technical drawback has led to some work aimed at enabling a small set of useful learning interactions to be generated by non-experts. One such project is the Flax system developed at De Montfort University (Routen and Graves, 1996). Flax is an interactive tool for authors, which enables them to produce sets of inter-linked Web pages, which can include a variety of interactive Java applets without requiring any java programming. The forms of interactions available include:

- simple question and answer interaction, with answer checking and feedback
- multiple choice questions
- linking appropriate items from two displayed lists

- selecting appropriate items from a displayed hierarchical tree of concepts
- etc.

So Flax lowers the technical skills barrier for producing interactive Web pages, and enables non-programmers to exploit some of the power of Java, while focussing on pedagogical rather than programming aspects. Of course, creating a coherent interactive learning package in any form is a time-consuming process, requiring careful planning, sensitive and relevant feedback, and much else. Even with the aid of a tool such as Flax, this would clearly be more resource-intensive than producing basic sets of Web-based lecture-style material.

Advanced techniques - creating interactive virtual environments and visualisations

Hypertext browsing and typical Java-based interactions don't make full use of human perceptual abilities. It is well-known that three dimensions can provide a rich information flow, which can, if properly applied, enhance learning in certain situations.

3-D software used to be restricted to specialist, high-performance workstations. However, developments in hardware and software has led to, for example, 3-D games now being commonplace on average desktop machines. Recent developments have even enabled the exploitation of 3-D environments and visualisations on the Internet. Virtual Reality Modelling Language (VRML) has its origins in a commercial 3-D software library from SGI Inc., but has now been developed and adopted as an Internet standard.

To build a virtual world in VRML the author is required to create a text file consisting of VRML statements, which describe the desired 3-D objects, their colors, textures and initial locations in virtual space, and any interactive capabilities the world is to have. VRML viewers are now available which can load VRML world files from across the Internet for local viewing and interaction and a number of these viewers are available as enhancements to common Web browsers, enabling VRML worlds to be retrieved and explored as simple as any other Web document.

Educational uses of this technology are still relatively rare. De Montfort University has recently developed a system for use in computer science teaching, which exploits the power of 3-D visualisation and animation, complimented by hypertextual explanatory notes. The first application of this approach has been to

aid the understanding of so-called "design patterns". Design patterns (Gamma et al., 1995) have recently become an extremely important strand in software design, particularly object-oriented design. A design pattern is a detailed but generic description of a design solution to a commonly recurring design problem in software. Design patterns are the distillation of design experience and expertise, represented in a form understandable and re-usable by other designers. Representations of design patterns are usually in the form of a structured textual description, which, for object-oriented patterns, includes brief descriptions of the main classes involved in the design solution, and of the major interactions at runtime between objects of these classes.

The VIP system takes a textual, pseudocode-like description of a pattern, its classes and interactions, and generates an animated VRML world, which can be viewed with any WWW browser supplemented by a VRML viewer component. In a separate "frame" from the 3-D world, standard HTML-based WWW pages are viewed which describe the classes and their interactions. As the user steps through the interaction (or runs it in automatic mode) appropriate textual descriptions of the various stages of the interaction are displayed in a synchronised fashion in the text frame. As the animation runs, the user can view the world from different viewpoints using standard VRML browser controls, moving around or between the objects in order to get the best view of the current interaction.

Initial trials of this system indicate that the combination of 3-D animation and textual notes can enhance the understanding of these sometimes complex designs. It is felt that this technique could be generalised to aid understanding of a range of conceptual constructs, which involve dynamic relationships between collections of components, and will have applications in areas very different from software design.

At the present time, this approach requires significant VRML (and Java) programming expertise. However, it is envisaged that, in a fashion analogous to that adopted by the Flax project described above, it may be possible to produce an interactive authoring environment which enables subject experts to produce certain kinds of 3-D animated worlds without programming.

Summary and Conclusions

In this paper a number of options open to authors of WWW-based distance learning material have been presented and discussed. These options have been compared on the basis of the technical requirements and expertise necessary for their implementation, and the nature and potential effectiveness of the learning experiences they provide. It can be concluded that well-structured sets of static Web pages can provide a useful foundation for course material, and have the advantage of a relatively low resource and skills requirement. However, the scope for active learner engagement is rather limited, this can be overcome to some extent by the inclusion of richer forms of interactive material. The Flax approach to enabling a subset of possible interactions to be generated by non-programmers would appear to be an attractive option for educators to pursue. As further tools become available, exploitation of some of the potential educational benefits of the use of virtual environments may also become possible without the requirement of highly skilled programming support.

REFERENCES

1. Berners-Lee T., Cailliau R., Groff J-F, Pollermann B. (1992), *World Wide Web: The Information Universe*, published in "Electronic Networking: Research, Applications and Policy" Vol 2 No.1, Spring 1992, Meckler Publishing, Westport, USA.

2. Bosak J. (1997) XML, *Java, and the future of the World Wide Web (*http://sunsite.unc.edu/pub/sun *info/standards/xml/why/xmlapps.htm)*.

3. Bush V. (1945), *As We May Think", The Atlantic Monthly*, (available on the WWW at http://www.w3.org/History/1945/vbush/).

4. Clibbon K. and Callaghan J.M., (1996), *Beyond Halasz's Hypertext Research Agenda - The WWW?*, The British HCI Group Symposium The Missing Link: Hypermedia Usability Research & The Web, 1st May, 1996, Knowledge Media

Institute, The Open University, UK. (http://kmi.open.ac.uk/~simonb/missing-link/Clibbon.html).

5. Davis H., Hall W., Heath I., Hill G., Wilkins R., *Towards an Integrated Information Environment with Open Hypermedia Systems,* in Proceedings of the Fourth ACM Conference on Hypertext, (ECHT '92) Milan, Italy. (pp. 181-190) ACM Press.

6. Gamma E., Helm R., Johnson R., and Vlissides J., (1995), *Design Patterns: Elements of Reusable Object-Oriented Software*, Addison-Wesley, USA.

7. Routen T., Graves A., (1996), *Flax: An Interactive Environment for the Production of Web-based Courseware,* (unpublished report - Dept. Computer Science, De Montfort University, Leicester).

8. Streitz N.A., Haake J.M., Hannemann J., Lemke A., Schuler W., Schutt H., Thuring M., (1992), *SEPIA: A cooperative hypermedia authoring environment,* In Proceedings of the Fourth ACM European Conference on Hypertext (ECHT'92) (pp. 11-23).

9. Yankelovich N., Haan B.J., Meyrowitz N.K., Drucker S.M., (1988), *Intermedia: The concept and construction of a seamless information environment,* IEEE Computer, 22 (1), 81-96.

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METHODOLOGICAL INSERTIONS IN TREATING THE "ELECTROLYSIS" THEME

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ABSTRACT. This article is addressed to the teachers confronted with the first teaching classes, and to future chemistry teachers. We tried, with several indications and with concrete examples, to make this chemistry-physics theme, which has a high difficulty grade, as attractive as possible. We considered a presentation of some didactical projects as a model useless, and we let flexibility and creativity of the teacher in his entire didactical process to be shown.

The examples, presented differentiatedly as difficulty grade, adequate to different preparation levels of the pupils, will make knowledge more accessible at the pupils level, and will help the teacher in the accomplishment of a didactical transposition, corresponding to a modern didactics.

The chapter "Energetic aspects of chemical reactions" from the actual 12th form chemistry textbook, can be structured in four content units: (1) Reactions with electron transfer, (2) The galvanic element, (3) Corrosion, (4) Electrolysis.

This chapter has an obvious interdisciplinary character, because it contains notions of electrochemistry (chemistry-physics). From this chapter, we will study aspects about teaching-learning the theme "Electrolysis".

The notional content of the theme has as a goal the thorough study of the electrolysis concept, which the pupils have studied previously in gymnasium and high school, both in physics and chemistry. The concept of electrolysis is in the maturation period of the formal level, through study in this level, the anode and cathode processes and the laws of electrolysis.

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In order to end the formal level of this concept, an inventory of the knowledge previously assimilated is necessary. In fig.1 we can have in view the notional system, on which the concept of electrolysis has its base, at this stage, and in fig.2 the detail study of the notion of electrolyte. By the detail study of the concept of electrolyte, we had in view to make evident the fundamental principle of "work" of the electrolyte: the principle of ion mobility. Very important is the evident making of the connection between electron mobility, in the case of 1st class conductors, and that of ion, in case of 2nd class conductors, insisting on the complex problems regarding the ionic diversification and as compared to the electrons uniqueness.

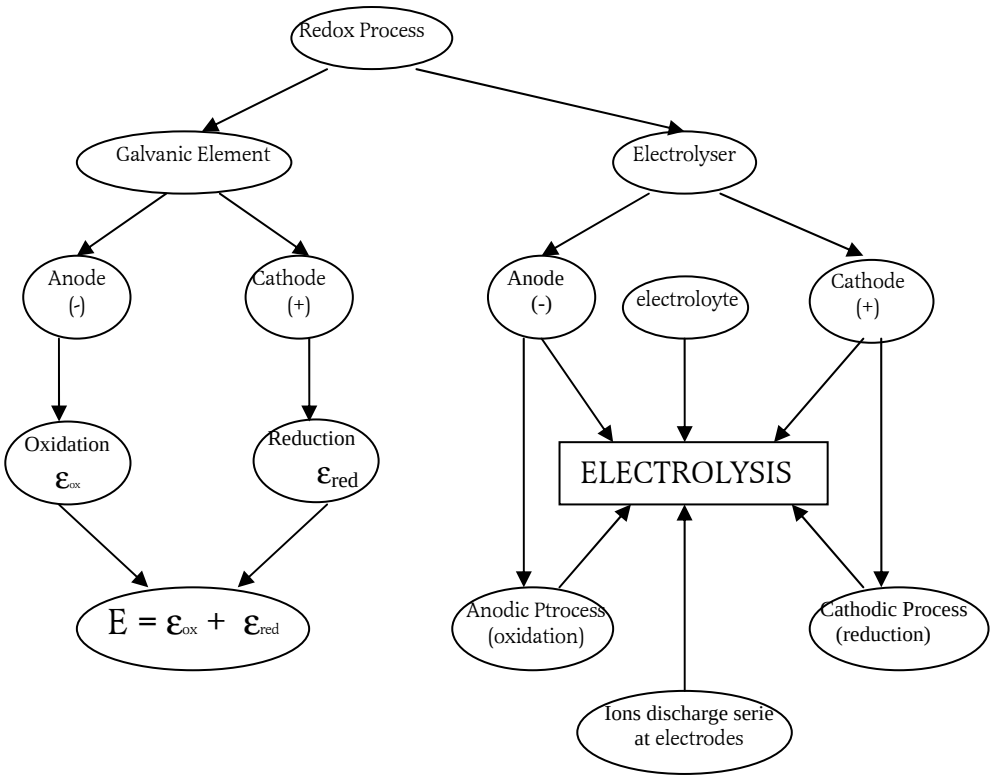


Fig.1. Electrolysis notional system

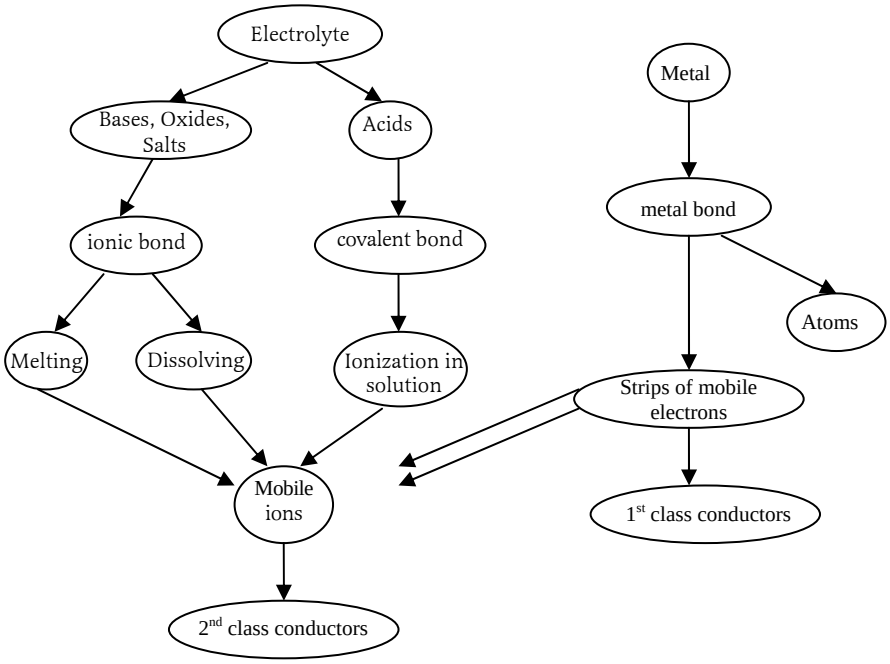


Fig.2. Detailed scheme of the electrolyte notion

In Fig.3 new notions are presented as well as those in completion, and which, on the whole, contribute to the development of the formal level of the electrolysis concept. This concept is considered to be assimilated by pupils when they can solve qualitative and quantitative problems, when the concept is operational.

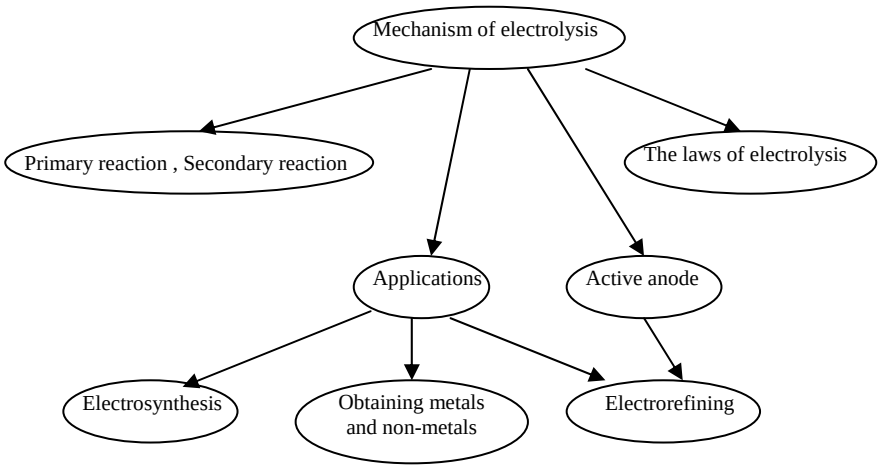


Fig.3. Improvement of the knowledges system "Mechanism of electrolysis"

As we can observe, in the context in which pupils have previously studied the redox reactions and the previous galvanic element, there are few new concepts. This is the reason why, at this stage, it is very important to get back to the assimilated concepts, and to insist on their operational side, by constructive aspects of an electrolyser, or by experimental-theoretic aspects of the electrolysis mechanism. These facts presume as much experimental electrolysis as possible (or modelling in case of insufficient material resources) and writing down the redox equations which take place (with the help of discharging series of ions at the electrodes).

It is particularly important that during the whole chapter, in which the present theme is also included, to make the importance of redox reactions more evident, in general, and especially the possibility that through them, chemical energy to be transformed in electric energy (through galvanic element), and the electric energy to be transformed in chemical energy (through electrolysis).

During teaching the theme "Electrolysis", the teacher can propose himself to accomplish goals, through which the pupils:

- should know the complexity of the electrolysis phenomenon;
- should correlate the substance structure with their behaviour in electrical field;
- should understand redox processes which take place at the electrodes;
- should correlate the ion descending order at the electrodes with the nature of anodes and cathodes processes;
- should work out connections between physical and chemical phenomena;
- should identify physical measurements which intervene in electrolysis and establish experimentally the mathematical relations between them (to know the electrolysis laws);
- should apply the electrolysis laws in solving problems;
- should know electrolysis' applications;
- should build up skills and acquire habits of independent work.

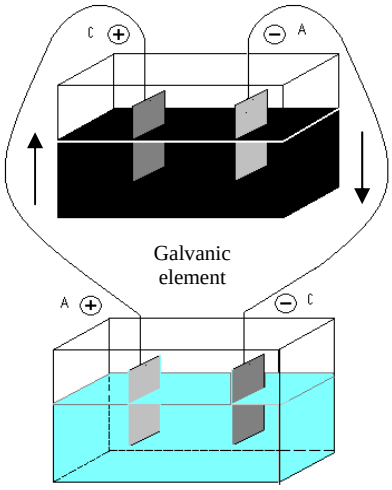
To reach these goals it is necessary for the teacher to apply a heuristic strategy, which will be based on the investigating pupils activities and on using observations and grades obtained by pupils after experimental activities. Within these heuristic strategies, an important weight will have the following didactic methods: experiment, modelling, learning by probleme – situation and learning through guided discoveries.

Regarding the actual syllabus, this theme can be covered in 3-5 lessons (depending on the school profile). We will not indicate the structuring mode in lessons of every theme, because it is up to every teacher's choice. We will only mention that there are several variants of methodological approach of this theme.

A possible variant could be that one, which refers to teaching simultaneously two themes: the galvanic element and the electrolysis, pointing out the constructive and principal similitude and differences between these two concepts. This type of teaching through "contrast" will allow pupils to make a clear delimitation of the concepts' action sphere.

Teaching in parallels is laboriously and presumes a long standing, constant study of the teacher to acquire the efficiency expected. We mention that teachers, with didactic experience, achieved such teaching, obtaining predictable results.

We will continue with the presentation of three intuitive diagrams, adequate to a parallel between the galvanic element and the electrolysis cell, which at the same time is useful to the pupils for the correct transfer of knowledge in the goal of effectuating some necessary connections featuring the new concepts. In fig. 4 we have presented an assembly, which can be achieved by the teacher for demonstration and by means of which the constructive and principle comparisons and distinctions of working can be spotlighted.



Electrolysis cell

Fig.4 Comparative modelling between galvanic element and electrolysis cell

A scheme (fig. 5) can accompany this experiment. It spotlights the physical and chemical processes on which the working of the galvanic element and electrolysis cell, is based. Modelling makes the displacement of electrons and ions, as well as the redox processes that take place, more evident.

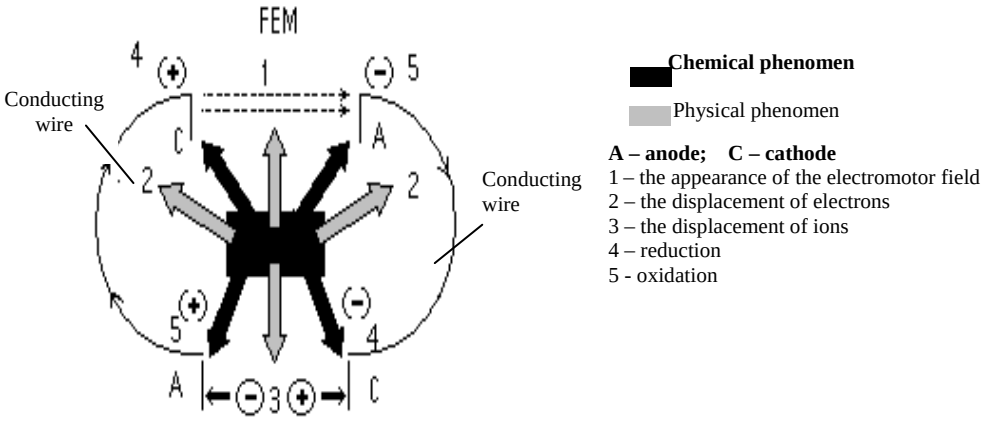


Fig 5.The spotlighting of physical and chemical processes

Fig.6 accomplishes a synthesis of the redox processes with an obvious formal character. The qualitative and quantitative processes accompanying the energy transformation, that is characteristic to the galvanic element and the electrolysis cell are spotlighted.

Because we're addressing the "teachers to be" students that are at the beginning of their didactic experience, we won't insist on this parallel. We will only make some suggestions regarding the content of the experimental activity slips, of the self-instruction slips and of the exercises that are absolutely necessary for the application of a strategy with a strong heuristic character.

It is necessary, as well, to mention that we are the followers of a differential instruction. That is the reason why we will indicate for some examples the schooling level of the pupils to which they can be applied.

If we want to clear up the concept of electrolysis and to motivate a low-level class, the themes can be tackled through a question-problem of the type: How can you find out which of the seven different solutions on the lab table is an electrolyte? Depending on the answers, the next experimental activity slip (which contains theoretical duties as well) can be proposed.

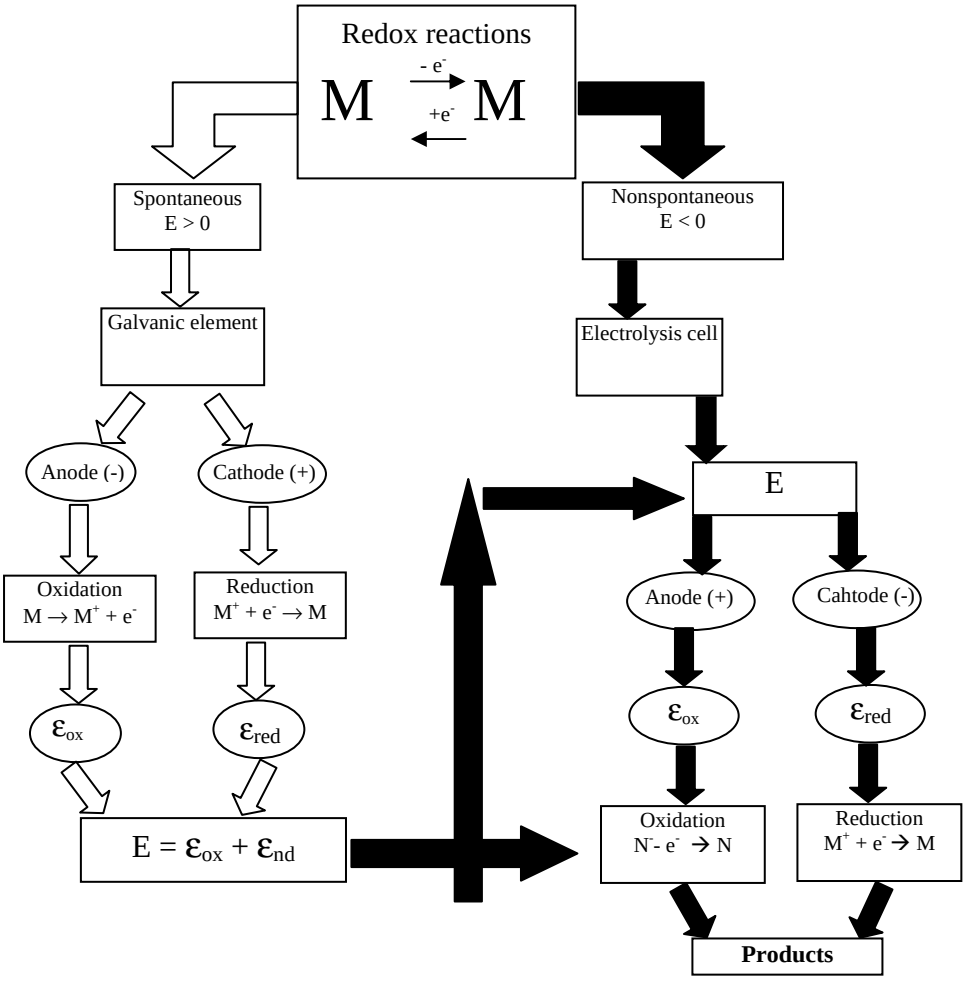


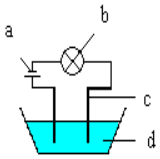
Fig.6. Scheme of redox processes

Experimental activity slip nr.1

Electrical conductibility of the substances.

Effectuate the experiments, complete the table, and fill in the following text:

1) The conductibility of the substances versus the electric current:

Work style	**Tested substances**	**Observations**	**Conclusions**
Work out the assembly:  a- continuous current source b- bulb c- graphite-electrodes d- substances or solutions to be tested (1,2,3,4,5,6,7)	1. distilled water 2. sewage 3. icy CH_3COOH 4. CH_3COOH and water 5. NaCl-crystals 6. NaCl and water 7. benzene	*The bulb doesn't switch on.* *The bulb switches on.* *The bulb doesn't switch on.* *The bulb switches on.* *The bulb doesn't switch on.* *The bulb switches on.* *The bulb doesn't switch on.*	1. *the bulb switches on when electric current passes through the circuit (2,4,6) there are ions they are electro-lytes* 2. *the bulb doesn't switch on when electric current doesn't pass through the circuit there aren't ions they are non-electrolytes*

Substances that release ions:

Acids		Bases		Salts
Weak	Strong	Weak	Strong	*All salts in: melt or watery solution.*
CH_3COOH	*HCl, H_2SO_4*	*NH_3*	*NaOH*	

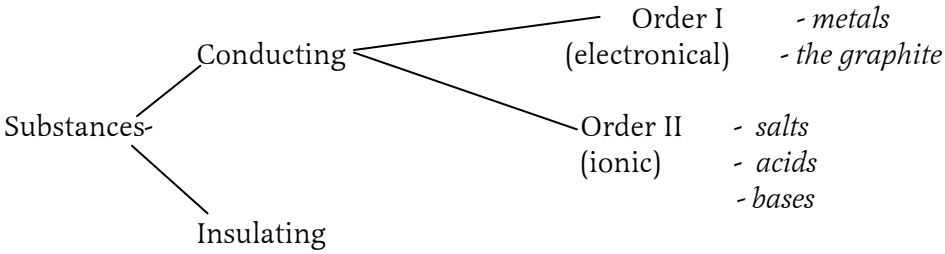
2) The release-mode of ions from substances with different chemical links:

A) Ionic combinations a) in melts *salts*
b*ases*
b) in dissolution *salts*

B) Covalent combinations *-through the ionization of acids*

$$CH_3COOH + H_2O \rightleftharpoons H_3O^+ + CH_3COO^-$$

3) The classification of substances on the criterion of electric conductibility:



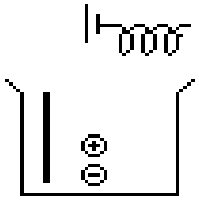
We can observe that in the experimental activity slip a systematization of the "mobilization" mode of the ions from different classes of substances is accomplished.

In the case of high schooling level pupils the notion of electrolyte will be put up-to-date orally, may be with some modelling, but not experimentally as in the previous case. In order to experimentally fulfil electrolysis, we must explain the necessary apparatus and the realization mode of the circuits.

For this purpose pupils can be presented experimental cloze activity slips in which the messing parts of the drawing sholud be filled in. For example:

1. The electrolysis of NaCl melt

Complete the scheme of the used assembly for the electrolysis of NaCl melt and indicate the processes that take place.



At the cathode: $Na^+ \xrightarrow{+e^-} Na$

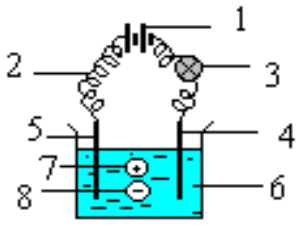
At the anode: $Cl^- - e^- \longrightarrow Cl$ $\qquad Cl + Cl \longrightarrow Cl_2$

2. The electrolysis of KI solution with carbon electrodes.

Complete the scheme, realize the installation, and effectuate the electrolysis. Fill the observations and the necessary materials in the table:

Used installation	Necessary materials	Work style	Equations of the chemical reactions	Observations

3. Specify the component parts of the next assembly:



1 – *continuous current source*
2 – conducting wire
3 – bulb
4 – chatode
5 – anode
6 – electrolyte
7 – anion
8 – cation

In the case of a high level class you can directly pass to the construction of the assembly with the components and materials put on the worktable.

Concerning the electrolysis experiments in the case of a low-level class the electrolysis of the $CuCl_2$-solution will be resumed.

If in the previous class this electrolysis was fulfilled demonstratively by a teacher or in the absence of the conditions only through modelling on the blackboard (drawing and explanation) in this study it would be desirable to accomplish electrolysis on groups of pupils.

Experimental activity slip nr. 2

Effectuate the electrolysis of the $CuCl_2$-solution using the assembly and the solution from the worktable. Modelate in the copybooks the accomplished assembly and name its components. Observe the transformations that happened at the electrodes and complete the next table:

Electrolysis Assembly	**Work style**	**Observations**	**Equations of redox reactions**

For a medium level class, the following experimental activity slip is proposed:

Experimental activity slip nr.3

Working tasks: Effectuate the electrolysis of KI solution in a U-form electrolysis cell, with carbon electrode. In KI solution drip some phenolphthalein and 1 ml of starch solution (which in presence of I_2 becomes blue). Observe the transformations in the electrode spaces and turn off the electrolysis after 5 minutes.

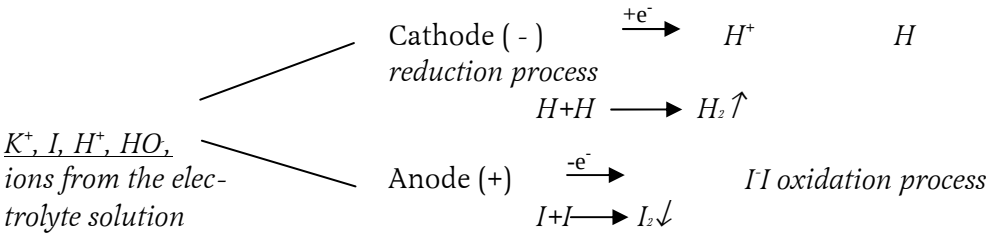
Fill in empty spaces:

1. At the KI watery solution electrolysis, we can observe:
   - In the anode space *the appearance of a blue coloration*
   - In the cathode space a gas gives off and *the red coloration appears*

2. The phenolphthalein red coloration in the *cathode* space indicates the forming of a *base (KOH)*

3. The starch blue coloration indicates forming at the anode *iodine (I_2).*

4. Indicate the ions present in the solution and write the equations which take place at the electrode, naming also the nature of redox processes:



5. The remained ions will form (KOH)

$$K^+ + HO^- \longrightarrow KOH$$

6. What substances have been changed during electrolysis:

KI and H_2O

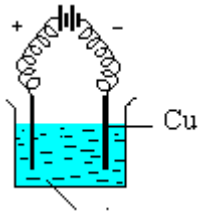
7. Write the global reaction equation which took place in the electrolyser:

$$2KI + 2H_2O \xrightarrow{\text{electrolysis}} 2KOH + H_2\uparrow + I_2\downarrow$$

For a medium to high level class we can propose the next experimental activity slip:

Experimental activity slip nr. 4

Working tasks: Effectuate the electrolysis of the solution of $CuSO_4$ with Cu-electrodes, using the materials on the working table. Complete the columns 2 and 3 from the table below using the discharging series of ions at the electrodes and reminding that it oxidizes or reduces the ion which has the smallest discharge potential.

1.Work style	2.Observations	3.Electrolysis mechanism
Work out the assembly according to the scheme:  $CuSO_4$ solution Observe the aspect of electrodes before and after 5 minutes of electrolysis.	*On the cathode we can observe the deposit of Cu. The anode becomes glossy.*	The ions from the electrolyte solution are: Cu^{2+} , SO_4^{2-} , H^+ , HO^- At the (-) Cu-cathode $Cu^{2+} + 2e^- \longrightarrow Cu$ At the (+) Cu-anode: $Cu - 2e^- \longrightarrow Cu^{2+}$

Conclusion: We can observe a copper transfer from the *anode* to the *cathode*. The process is named electrolysis with soluble anode (active).
In case of a chemistry profile class (or a very good group of pupils, olympics), we can effectuate the electrolysis of the NaCl-solution with Hg-cathode (this electrolysis is not included in the chemistry syllabus).

Experimental activity slip nr. 5

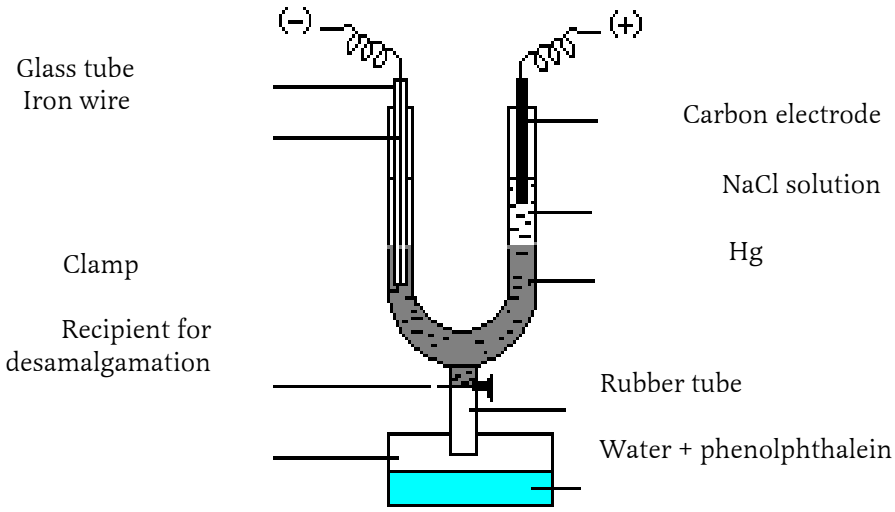
Information:

a) The utilization of the mercury cathode makes the phenomenon of "over-pressure discharge", of hydrogen on mercury more evident, and that's why Na^+ ions will discharge before the H^+ ions.

b) Mercury builds up amalgams with Na, K, Ag, Au according with the chemical equation:

$$K + nHg \longrightarrow KHg_n$$

Working tasks:
The assembling from the worktable is built according to this scheme
(the assembling is prepared to avoid touching mercury, which is very toxic).



Complete the table:

Observations	Electrolysis mechanism
At the anode the chlorine gives off. It has specific, pungent smell. The amalgam let out in the recipient for desamalgamation and stirred, gives a red colour, which indicates a basic medium (NaOH)	The ions from electrolyzed solution are: Na^+, Cl, H^+, HO^- At the cathode (Hg): $Na^+ + nHg \longrightarrow NaHg_n$ In desamalgator: $NaHg_n + H_2O \longrightarrow NaOH + nHg + 1/2\ H_2$ At the anode (C): $Cl^- - e \longrightarrow Cl$ $Cl + Cl \longrightarrow Cl_2 \uparrow$ The global chemical equation: $2NaCl + 2H_2O + nHg \xrightarrow{Electrolysis} 2NaOH + Cl_2 \uparrow + H_2 \uparrow + nHg$

After the pupils have fulfilled the practical activity and/or through modellings several electrolysis types, they could get homework with different difficulty levels as follows:

Exercises slip nr.1 (medium level of difficulty)

1. Indicate the nature of ions, atoms, and molecules present in the melt of $MgCl_2$ electrolysis process and write the electrolysis mechanism.
2. Identify the ions, atoms and molecules involved in $MgSO_4$ solution electrolysis and write the electrolysis mechanism.
3. Indicate the ions and molecules involved in AmBn melt electrolysis and write the electrolysis mechanism.

Exercises slip nr.2 (high level of difficulty)

1. Complete in the following table the products which are obtained from the melt electrolysis of the halides of type AX_m and BX_m knowing that: A^{m+} is before H^+ in discharging order of the ions at the electrodes and B^{m+} is after H^+ in discharging order of the ions at the electrodes. Mentioned must be made that X can be Cl or I.

Halides	The electrolysis	Obtained products
$A^{m+}X_{m}^{-}$	melt	$A+m/2X_2\uparrow or\downarrow$
$A^{m+}X_{m}^{-}$	watery solution	$A+m/2X_2\uparrow or\downarrow$
$B^{m+}X_{m}^{-}$	melt	$B+m/2X_2\uparrow or\downarrow$
$B^{m+}X_{m}^{-}$	watery solution	$H_2\uparrow+m/2X_2\uparrow or\downarrow + B^{m+}(HO)_m^-$

Identify the halides represented by the general formula: AX_m and BX_m using the discharging order of the ions at the electrodes.

AX_m: AuX_3, HgX_2 , AgX , CuX , BiX_3

BX_m: SnX_2, FeX_2, NiX_2, ZnX , MgX_2, AlX_3, NaX, CaX_2, BaX_2, KX

2. What electrochemical characters, referring to the hydrogen, have the metals, which can be prepared through the watery solutions electrolysis of these salts?

1. How do you explain that in the case of acidulated water electrolysis or alkalized water electrolysis, with the help of an electrolyser with carbon electrodes, the same gases are given off, in the same voluminous ratio, aspect represented in fig.7.

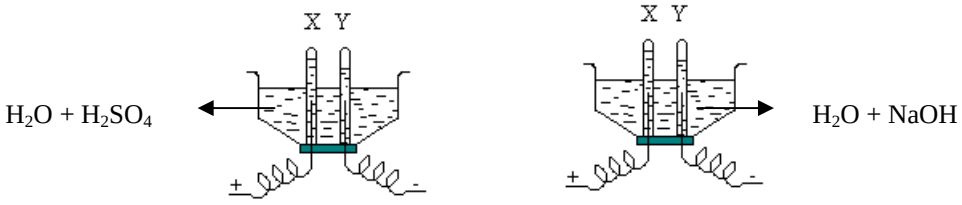


Fig.7

The electrolysis laws can be deduced according to the textbook. If the lab is equipped with analytical balances, both laws can be deduced experimentally (not only the second law, as the textbook shows).

So, the first electrolysis law can be deduced fulfilling the electrolysis of $CuSO_4$-solution at the constant intensity of current and variable periods of time as well as at the variable intensity of current and constant periods of time. The graphite cathode is weighed every time, before and after the application of the indicated parameters. For pupils a very important and motivating aspect, that of the electrolysis applications, is treated as a rule (for lack of time or equipment) just theoretically. We propose several experiments that can be effectuated with the object of making evident the importance of electrolysis applications:

Experimental activity slip nr.6

1. Effectuate the nickel-plating of copper cylinder (which is the cathode) with the help of nickel-anode. Write the electrolysis mechanism of $NiSO_4$ solution with nickel anode.

Ni^{2+}, SO_4^{2-}, H^+, HO^- ions of the electrolytic solution

- at the cathode (-) (Cu cylinder) $Ni^{2+} + 2e \longrightarrow Ni$
- at the anode (+) (Ni plate) $Ni - 2e^- \longrightarrow Ni^{2+}$

If the number of Ni atoms, which is dissolved at the anode (in other words they are passing in Ni^{2+} ion in solution) is equal with the number of ions, which are reduced at the cathode, how do you think that the Ni^{2+} ions concentration from $NiSO_4$ electrolyte will be?

- constant [x] - variable [ ]

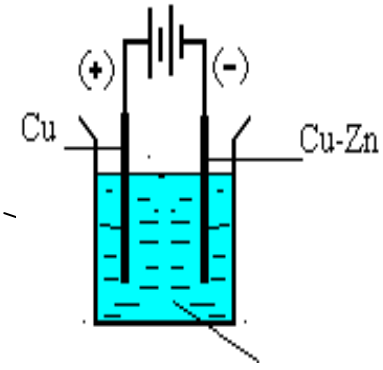
2. Make the assembly necessary for copper electrolytic purification using a brass plate (Cu-Zn alloy) and a Cu plate. Complete the scheme and the mechanism.

Electrolysis mechanism

Cu^{2+}, Zn^{2+}, SO_4^{2-}, H^+, HO^- ions from the electrolyte solution

- At the cathode $Cu^{2+} \xrightarrow{+2e^-} Cu$ (copper)
- At the anode $Cu \xrightarrow{-2e^-} Cu^{2+}$ (Cu-Zn brass)

Scheme



$CuSO_4$ solution

During the electrolysis, a Cu transfer takes place from the **anode** to the **cathode**. So, the electrolyte concentration is constant. Electrolysis, with active anode (soluble anode), can be applied to the **metals purification**, (in electrometallurgy).

The activity slips or the parts presented can be applied during the lessons, where didactic activity will call attention to their utility. Of course, with the enumerated examples, we didn't realize an exhaustive presentation of the existent possibilities, but we outlined only some suggestions, which we hope to contribute to the didactic creativity stimulation of the future teachers.

REFERENCES

1. J.J. MacDonald, *Cathodes terminals and signs*, Education in Chemistry, **25**, **1998**, p. 52-55.
2. A. Condamines, *The terminology and representation of the knowledges*, Didaskalia **5**,**1994**, p. 35-53.
3. A. Tiberghien, *The choice of space notions representations building*, Didaskalia **5**, **1994**, p. 53-63.
4. M.C. Milot,*The place of news technologies in the learning of chemistry-physics*,Didaskalia**8**,**1996,**p. 97-111.

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LA MODÉLISATION DANS LA DIDACTIQUE DE LA PHYSIQUE

LILIANA CIASCAI

ABSTRACT. Focusing instruction on models helps students achieve a coerent understanding of science content knowledge and so facilitates its use in new situations. In a similar way, it is an antidote for the fragmentation of procedural knowledge that results from teaching specific cognitive skills in isolation from others.

Le physicien étudie la nature, en essayant de décrire et d'expliquer l'existence et les caracteristiques, l'état et le comportement ou l'évolution des objets physiques. Pour chaque objet physique étudié (système physique, phénomène) il propose un concept ou une loi. Pour un ensemble d'objets physiques étudiés le physicien construit une théorie. Mais aucun concept, aucune loi et aucune théorie ne peut prétendre qu'ils décrivent la réalité d'un phénomene dans toute sa complexité, chacun d'entre eux ayant une certaine puissance explicative ou prédictive. Donc, le concept, la loi ou la théorie sont des modèles c'est-à-dire ils représentent l'image que le physicien se crée (fournit) sur la nature. Ch. Ruhla (1996, p.21) considère que, d'ailleurs, le modèle est une interface entre le physicien et la nature. Vue de cette perspective la physique est un ensemble de modèles proposés et validés expérimentalement par des physiciens. Dans le procès de la construction de la connaissance scientifique les chercheurs opèrent avec et sur les modèles existents.

I. Des considérations épistémologiques. La précision des concepts

La modélisation représente une modalité de réfléxion de la réalité et en même temps, une méthode de la connaître.

Le fondement épistémologique des modèles, affirme C. Bîrzea (1995, p.108), est représenté par la connaissance par analogie:

- soit S_1 et S_2 deux systèmes. Si le système S_1 a les propriétés (a, b, c, d) et le système S_2 a connues seulement les propriétés (a, b, c) nous pouvons supposer qu'il va avoir aussi la propriété d;

- soit le système S_1, connu et soit S_2 un système inconnu ou moins connu. Si entre les deux systèmes il y a des identités (des isomorphismes) ou des similitudes partielles (des homomorphismes) alors ces relations de correspondances nous permettent le raisonnement suivant: nous pouvons étudier le comportement du système connu, que nous allons nommer modèle ou système modèle (S_M) et puis nous transférons quelques résultats sur le système inconnu, que nous allons nommer système original (S_O).

La relation modèle-théorie dans la science et les implications de cette relation pour la didactique de la physique.

Le rapport de "force" entre la théorie et le modéle représente un problème autant débattu dans le monde des physiciens et des philosophes que l'existence de la "méthode scientifique". Parce que le mode de pensée déductive a une importance si grande dans la construction, dans la science, de la connaissance, D. Hestenes considère justifiée l'opinion des membres d'une communité de gens de science, ci-dessus mentionnée, qui affirment la priorité de la théorie sur les modèles. R. Giere (apud D. Hestenes, 1995, p.29) soutient un point de vue contraire et notamment il considère la connaissance scientifique organisée essentiellement autour des modèles (qui deviennent ainsi des constructions fondamentales), la théorie jouant un rôle secondaire. Ainsi, si les modèles sont périphériques, donc ils ne concretisent pas l'essentiel, ils perdent la signification, ils ne sont plus représentitfs pour une classe d'objets physiques. Mais si nous considérons les modèles comme des éléments fondamentaux et représentatifs nous comprenons le contenu d'une science comme un ensemble de modèles validés et la structure de la science, comme un système de principes théoriques qui sont en correlation avec les modèles. En d'autres mots les modèles englobent le contenu en temps que les théories définissent la structure des connaissances scientifiques. Les modèles sont fondamentaux à la théorie dans le sens qu'il n'y a pas de structure sans contenu (D.Hestenes, 1995, p. 29).

E. Hutten (1970, p.74) exprime un point de vue plus équilibré. Il accentue le rôle du modèle dans l'évolution de la connaissance et non pas dans la théorie. Ainsi, le modèle "nous donne à la disposition une interprétation partielle d'une théorie plus avancée, respectivement, plus abstraite, à l'aide d'une théorie connue et acceptée". La procédure est la suivante: on isole dans le domaine soumis á la recherche un phénomène (un procès) pour lequel certaines considérations nous font croire qu'il peut être expliqué en utilisant un modèle, doué d'un nouveau trait, est appliqué á une nouvelle situation, en élaborant ainsi une explication ou des prédictions (qui seront ou non fondées) et qui, plus tard, sont transférées aussi à d'autres phénomènes. Donc, par l'intermédiaire du modèle, la nouvelle situation est décrite (partiellement), ou interpretée, à l'aide de la vieille théorie (les relations de la vieille théorie sont transférées d'une théorie à l'autre bien que leur interprétation initiale est seulement partiellement utilisée).

Pour la didactique de la physique, respectivement pour les théories physiques étudiées dans l'école, D. Hestenes (1995, p.29) considère qu'il y a des raisons épistémologiques et cognitifs pour considérer le rôle principal des modèles devant la théorie dans l'instruction:

- les modèles sont spécifiques, la théorie est générique. Les modèles ont un impacte plus fort sur les élèves que les principes parce qu'ils se rapportent, le plus souvent, aux objets concrets;

- les modèles sont testables, la théorie est abstraite (les principes théoriques sont vérifiables empiriquement seulement par modélisation immédiate). Les modèles offrent un support au procès de l'abstratisation et comme suite les principes théoriques sont plus facilement à comprendre en utilisant les modèles (qui fournissent un contexte aux principes);

- les modèles sont des unités de base de la connaissance scientifique coérente. La coérence et la complétitude de la théorie est évidente seulement dans ses modèles;

- les modèles sont essentiels pour comprendre l'évolution de la connaissance scientifique;

Les recherches de psychologie (linguistique) cognitives montrent que les hommes classifient les objets surtout d'après la ressemblance avec les prototypes mentaux que selon la similitude d'un set restreint de propriétés (M. Miclea, 1994, p.206). Les modèles, considère D. Hestenes (1995, p.29) peuvent servir comme prototypes pour la classification naturelle et pour celle scientifique aussi.

Les concepts de modèles et de modélisation. Les types de modèles

Le modèle représente un système matériel ou abstrait S_M qui reproduit certains traits considérés essentiels (des notes ou des particularités): des propriétés, la composition et la structure, la dynamique interne etc. d'un système, phénomène ou procès complexe, nommé système original (S_O) et qui, ainsi, est étudié indirectement. Donc, le modèle est conçu pour substituer ou représenter le système original, dans des contextes cognititifs différents, grâce aux relations de similitude structurale ou fonctionnelle qui se trouvent entre eux.

Un modéle s'appelle **isomorphe (de la même forme)** si l'original et le modèle coincident jusqu'en detail. *Par exemple, un objet avec sa photo, avec un dessin ou avec une maquette, les solutions d'une equation avec les procès qu'ils décrivent etc.*

La réalisation ou l'utilisation des modèles isomorphes est difficile et ainsi apparaît la nécéssité de la conception des modèles - appelés des modéles omomorphes - qui illustrent seulement certaines notes, essentielles pour l'étude réalisée, de l'original. La plupart des modèles utilisés dans la science sont omomorphes avec l'original.

Au moment où la pensée ne reconstruit pas la réalité mais elle construit une réalité possible, nous parlons d'un simulacre.

Au sens restreint le concept de modèle désigne toute représentation matérielle, iconique ou symbolique, réalisée dans le but de l'élaboration d'une description, des explications, des prédictions. Donc le modéle reproduit certains traits du système étudié dans le but de la compréhension du comportement (des propriétés) de celui-ci et de la fixation des propriétés inconnues.

II. Les étapes de la construction et de l'utilisation du modèle dans le procès didactique

La construction ou l'utilisation d'un modèle dans la physique se fait dans un des buts suivants:

a) la description des phénomènes observés et respectivement

b) l'explication ou l'évaluation des conclusions d'une théorie,

c) la réalisation des projets.

Donc, il y a deux stratégies de construire le modèle: l'une progresive, basée sur l'induction et sur la comparaison des dates empiriques (avec lesquelles on opère, en général, la physique classique) et une autre théorique, axiomatique, qui donne naissance à des déductions qui font souvent l'objet de l'étude expérimentale (et duquel s'occupe la physique "théorique"). Dans le premier cas la modélisation commence avec l'analyse d'un fait physique qui se réfère à un état ou procès subi par un système physique. Par l'analyse on poursuit identifier et préciser, le plus exactement possible, les relations de correspondance existentes au niveau des éléments du système étudié et du modèle parce qu' en s'appuyant sur ces relations on élabore les interférences valeureuses pour comprendre le système étudié. La deuxième stratégie commence avec une situation (un fait) théorique (une conclusion de la théorie, par exemple une prédiction ou un expériment pensé) et se termine par un expériment qui justifie ou non la conclusion de la théorie.

Mais heuresement, dans la science, les deux stratégies se croisent, en conectant avec plus de puissance le champs de la connaissance empirique avec celui de la connaissance théorique. Les modèles ainsi construits sont plus élastiques et dinamiques et donc plus productifs.

L'oscilateur harmonique est un tel modèle, dont les caractéristiques et la résistence dans l'évolution de la physique sont bienvenues.

De la perspective du procès didactique la modélisation représente une méthode d'apprentissage et d'instruction. Dans cette acceptation, "la modélisation est l'opération d'étude des phénomènes de la nature et de la société à l'aide des modèles idéaux et matériaux". (M. Ionescu et V. Chiș, 1988, p.166). Du point de vue didactique la construction des modèles et l'utilisation de modèles présentent intérêt. Les deux sont possibles seulement si on tient compte de la règle suivante: **le système modèle est construit sur la base d'un système ou procès qui a été bien compris et qui sera employé pour expliquer un autre système ou procès qui s'avère difficilement à comprendre ou auquel on n'a pas d'accés directement.**

Le procès de modélisation est schématisé dans la figure ci-dessus:

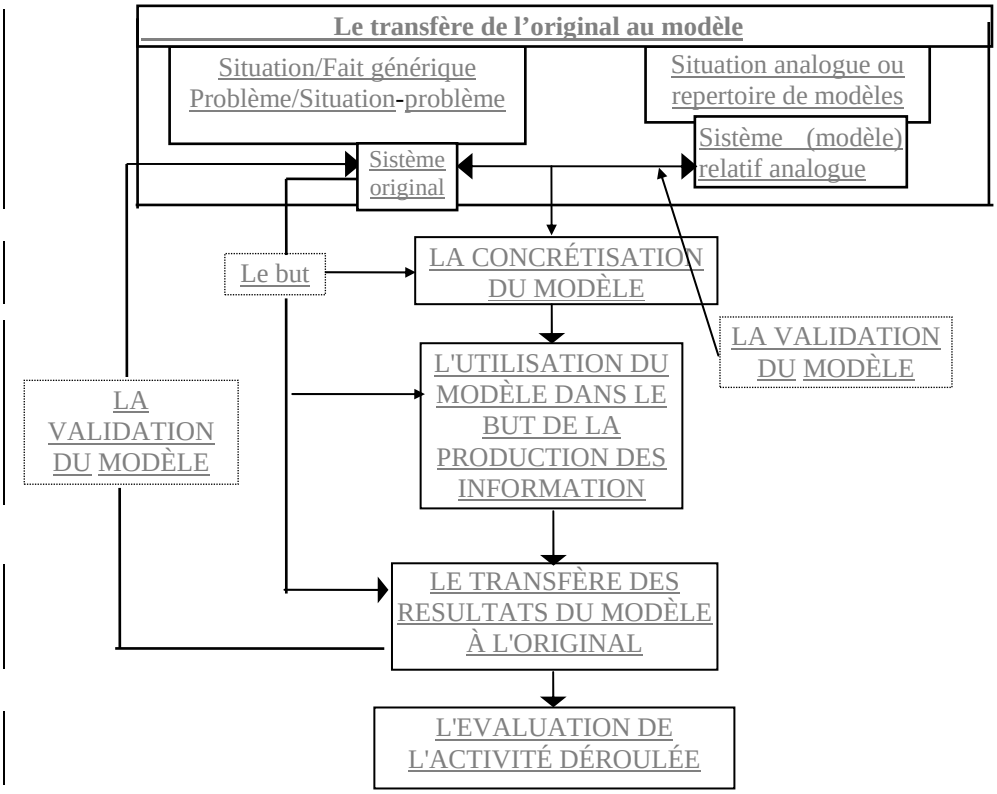

Fig.1. *L'algorythme du procés de modélisation*

III. La modélisation des objets d'étude de la physique dans le procès d'apprentissage et d'instruction

De la perspective du procès didactique, la modélisation représente une méthode d'apprentissage et d'instruction à plusieurs valences:

- elle facilite le développement de la "modalité de représentation symbolique de la réalité" (J. S. Bruner, 1970, p.81);

- elle familiarise l'élève avec le raisonnement par analogie, elle facilite les procés d'abstractisation, de généralisation et d'idéalisation;

- elle exerce les élèves dans la téchnique de l'observation systématique (l'utilisation des modèles accroît la fréquence de l'observation systématique;

- elle initie les élèves dans le mode de pensée spécifique et elle informe sur l'évolution de la connaissance scientifice (la succession des théories physiques);

- elle contribue à la création d'une perspective systématique sur le contenu scientifique de la physique, en familiarisant les élèves avec un nombre de modèles fondamentaux et avec le mode dans lequel ceux-ci se trouvent en corrélation dans les théories;

- elle met en évidence le mode dans lequel la connaissance scientifique est validée parce qu'elle implique les élèves dans l'évaluation des modèles scientifiques par la confrontation avec les dates empiriques.

L'analyse des avantages de l'utilisation de la modélisation doit être accompagnée par la mise en relief de ses limites.

Pour évidentier ces limites nous devons essayer de formuler une réponse a la question: "Comment est-il possible qu'un modèle si éloigné de la structure des atomes se constitue dans un symbol de l'époque atomique?"

La réponse à la question en est simple: une utilisation erronée de la méthode de la modélisation. Ainsi:

- dans le procés didactique on a réalisé l'analogie avec un système modèle qui n'a pas été parfaitement assimilé;
- la modélisation a pris fin seulement avec le maintient des valences et non pas de limites du modèles;

- la nonintégration des connaissances dans le système des connaissances antérieures a comme conséquence l'omission des limites du modèle, des limites dûes à la situation particulière pour laquelle est construit ou utilisé le modèle.

Dans une situation d'apprentissage donnée est indiquée la combinaison de differents modèles. Surtout les modèles symboliques doivent être utilisés avec des modèles matériels ou figuratifs. La necessité de la combinaison des modèles réside dans la constatation que chaque modèle a ses limites ou autrement dit, un modèle d'un système physique peut évidencier un trait du système qu'un autre modèle du même système physique ne le présente pas. En même temps, un modèle symbolique (parfois même figuratif) est interprété par celui auquel il est présenté conformément au systéme des connaissances antérieures et avec les schémas propres de pensée. Donc, chaque représantation mentale d'un modèle symbolique est personnelle, c'est-à-dire elle diffère d'un sujet à l'autre. Cette conclusion sort en évidence avec l'utilisation du modéle.

BIBLIOGRAPHIE

1. Bîrzea, Cezar (1995), *Arta şi ştiinţa educaţiei,* Bucureşti, Editura Didactică şi Pedagogică.
2. Bruner, Jerome, S. (1970), *Pentru o teorie a instruirii,* Bucureşti, Editura Didactică şi Pedagogică.
3. Ciascai, Liliana (1999), *Predarea şi învăţarea fizicii în gimnaziu şi liceu*, Cluj-Napoca, Editura Albastră.
4. Hestenes, David, (1995), *Modeling Software for Learning and Doing Physics*, In: Thinking Physics for Teaching. Edited by Carlo Bernandini et al. Plenum Press, New York, p. 25.
5. Ionescu, Miron, CHIŞ, Vasile (1992), *Strategii de predare şi învăţare*, Bucureşti, Editura Ştiinţifică.
6. Ruhla, Ch. (1996), *L'ordre et désordre dans la matire,* Paris, Bulletin de l'Union des Physiciens, Nr. 780.

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BEST USE OF THE DEMONSTRATION METHOD IN THE STUDY OF CHEMISTRY

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ABSTRACT. The article deals with the method of demonstration, trying to underline its valences in the study of chemistry. The main forms of demonstration's method are reviewed within this subject, some methodical suggestions being revealed in order to maximise the efficiency of their utilisation.

Demonstration represents an educational method by which the analysis of reality is based on artificial experiencing of the original situation; so, by its utilisation the objective knowledge of the world (by the pupils) gets a mediated feature.

The peculiarity of demonstration's utilisation in chemistry study consists of resorting to the reality's substitutes, to different intuitive subjects and didactic means, concerning the study of some chemical phenomena and processes (see the different forms of demonstration's method).

Although the direct and continuous sensorial contact with the objective reality stand for the basis of a scientific, progressive cognition which is important for the pupils, this kind of contact cannot be always achieved in chemistry lessons. In chemistry and chemical technology there are plenty of objects, phenomena and processes, which by their own complexity are extremely difficult to study. Besides, their theoretical explanation (based on the actual knowledge system of pupils and on their intellectual abilities) is not satisfying to clarify the essence and features of the studied chemical phenomena; this is the reason who really makes necessary the resorting to their substitutes.

In the study of chemistry to demonstrate means to show, to present to pupils objects, phenomena, real chemical processes or their substitutes, in order to ease the pupils' effort in reality exploring, to assure a perceptive support, concrete-sensorial, pretty suggestive to make the teaching and learning of this subject accessible.

Demonstration follows an inductive way as an educational method, sometimes being supported by some logical-theoretical demonstrations, which have a deductive basis and can intervene in defining the studied chemical phenomena, in establishing their features and also in the identification of their interdependence relations. More than that, by observing the latest developments in the theoretical chemistry and consequently the high abstraction degree of so many elements within structural specific content, there are more and more situations that exclusively presume the use of logical-mathematical demonstration.

Forms of demonstration method in the study of chemistry

Because of the variety of intuitive and demonstrative subject used in chemistry, the demonstration method presents different forms; among them, the following can be reminded:

- demonstration by chemical experiences help (demonstrative experiment);
- demonstration by models help;
- demonstration by audio-visual means help;
- demonstration by electronic computer help;
- demonstration by intuitive-didactic means help;
- demonstration by graphic means help;
- demonstration by drawing on the blackboard.

Demonstration by chemical experiences help is performed by the teacher or a pupil in front of the classroom in order to demonstrate, to confirm or to check some scientific truth on the basis of the explications and discussions regarding these.

The methodical stages of the demonstrative experiment are the following:

- pupils' sensitizing and creating their motivation for the experimental activity;
- establishing the goal of the experiment;
- establishing together with the pupils the substances and all the necessary components for the construction of the experimental device and finally drawing its scheme on the blackboard;
- the description by the teacher of the correct way of working, description accompanied by a series of explanations from the teacher and pupils, whenever is possible;
- the effectuation of the experiment and the explanation of all the actions which were made, so that the attention of all pupils to focus on the essential aspects.

When the demonstrative experiments are done, there is necessary to ensure all the pupils' visibility; in this way they are supposed to be stimulated to perceive more complex the demonstration, to observe, to analyse, to compare and arrange the experimental facts. There is not recommended (from the methodical point of view) to discuss, for instance, the physical properties of a substance, and then this discussion to be followed by their illustration. The pupils must be taught to notice by themselves these properties and to draw some conclusions, by teacher's help.

- data and observations gathering and experiments' results analysis - stage which is developed in front of the classroom, the teacher being the guide
- drawing the conclusions - stage which is done by conversation with the whole classroom.

Demonstrative experiment example: checking out that the dissolved substances keep their chemical properties.

Demonstration by models help is a study method of the reality by help of some systems named models, like objects' analogues, phenomena and real processes and also a method of their own utilisation in teaching-learning activity.

The methodical stages which lie in a cognition act by modelling are:

- the passing from the original to the model;
- the building of the model;
- the establishing of the modelling's goal and of the possibilities of modifying the model;
- the experience (the action on the model) and the research of the model's properties;

- the transferring on the original of the results obtained by modelling.

Example: The explanation of the free enthalpy's variation of a system which is in reaction with the help of a system with communicating vessels which put in movement a turbine.

Demonstration by audio-visual means help (films, slides, television, tape recorder, video-cassette recorder, radio, spotlight etc.) deals with the substitutes of reality, with the spoken and written word and especially with the visual images which reproduce more or less properly the objects' or phenomena's world about which the pupils have to learn. Most of the time, the audio-visual means are essential auxiliary means for the educative-instructive process in chemistry, especially because of this quality to substitute the original or to represent it when it cannot be known in another way or when it is necessary to be best perceived by the pupils' observation. There is the case of the chemical processes which cannot be reproduced in the laboratory (for instance, the nuclear reactions), of the dangerous chemical processes (for instance the nitro-derivatives obtaining), of the chemical processes difficult to perceive because of their too low speed (as it would be the iron's rusting) or too high speed (explosions or burning cases).

By the information they get, the audio-visual means generate the dynamics of the intellectual activity, with the condition the pupils must know very well the aim of the demonstration and the questions they are about to answer. Thus, the illustrated information by help of audio-visual means become not only contemplative, but it deals with the critical thought, so that, the pupils consider and interpretate correctly the chemical phenomena studied.

Example: didactic films with the topic "The Metal Utilisation", "The Electrolysis Applications".

The advantages of the demonstration method by audio-visual means help could be synthesised like this:

- they have the main role to offer the pupils understanding through substitution of an experience which remains, however a direct one;
- the possibility to present correct and complex chemical information in an attractive way for the pupils, what really develops their interests for the study of chemistry and stimulate their motivation;

- offers the didactic staff the possibility of some resumption concerning some chemical aspects which is difficult to be understood by pupils.

Demonstration by electronic computer help is a form of the demonstration method which is more and more used in the study of chemistry. The advantages offered by the computers are absolutely remarkable, some of them being quite unreplaceable. We refer here especially to its modelling possibilities of some chemical compounds' structures, to the visualisation of hybridisation phenomena, to the modelling of chemical reactions' mechanism (catalysed and uncatalysed) in some animated forms.

Demonstration by intuitive-didactic means help is the simplest form of demonstration method in the study of chemistry. The most used intuitive means we can meet in teaching and learning this discipline are:

- samples of natural chemical substances (metals, ores, minerals, salts);
- samples of chemical substances (gaseous ones, liquids ones and solids ones) synthesised in industry or in laboratory (oxydes, bases, acids, salts, organic substances);
- devices and laboratory installations (pH-meter, voltmeter, installation for obtaining some chemical substances etc.).

Demonstration by help of chemical substances samples illustrate their physical properties (aggregation state, aspect, colour, smell, hitting behaviour, density comparing with that of water) and also some chemical properties.

From the methodical point of view, it is recommendable that the organisation form of demonstration activity by samples help to be frontal; the teacher can present the samples from the front of the classroom or by passing among the pupils' desks, orientating the pupils' attention upon those aspects which imply to be observed. These two methodical modalities are very efficient from didactic point of view, because at the same time level all the pupils in the classroom will observe the samples and draw the conclusions which are requested.

There is not recommendable to send to the pupils' desks the chemical substances, because there is waste of time, some disorder is created in this way, and the teacher cannot be sure that pupils have noticed correctly the chemical substances properties, so the instruction sequence reached its aim.

Concerning the demonstration by laboratory devices and installations help, the cautions which are supposed to be done refers to the

right achievement of the installations and the right utilisation of these, as well.

Also, besides the main aim of the experiment, the teacher will pay attention to the aspects concerning the pupils' safety: after pouring the liquid chemical substances out of theirs bottles, the tops of these bottles will be put back immediately; the bottles will be held in that way, that their label will be oriented to the pupil's palm; the solid substances will be touched only by spatula, the liquid ones with a dropper and the substance's excess will never put back in their bottles; the shaking of the test-tubes must be made very cautiously, taking care that the tube is not oriented to other persons; the direct smelling of the gases formed in the chemical reactions should be avoided. To all these we can add the usage of the pupils concerning the cleaning and arranging their laboratory tables and especially with all the safety rules in the chemistry laboratory.

Demonstration by graphic means help (drawings, schemes, diagrams, maps, photos, paintings, etc.) is a form of the demonstration method which is necessary when the teacher has not the possibility to use, as an aid for the demonstration, any objects and/or phenomena in their natural state.

The increased graphics' utilisation in the educative-instructive process at chemistry is justified by their own advantages:

- they permit the essencializing of the scientific content according to a lesson, to a topic of a chapter or even of the whole discipline of chemistry;
- they support the connection's achievement among the knowledge, processes, phenomena, the sistematic tackling of the chemistry structural content;
- offer the pupils a lot of information within a short time.
- make the access more easy to get the abstract knowledge by their presentation in an intuitive way;
- develop the pupils' spirit of observation and contribute to the practising of thought operations;
- they have a formative value, not only an informative one, because they contribute to the developing of pupils' intellectual work technics.

There is recommended in graphics means utilisation to take into account a series of some methodical requests:

- to follow permanently the teaching aim which must be achieved using the graphics, which must be in accordance to this aim,

correctly elaborated, simple and accessible to pupils; for instance, the drawings should content only the essential elements of the objects, phenomena, processes which they represent (not to be overloaded by insignificant details);

- it is recommended that the proportion of the component elements of the graphics to be respected according to the reality, as far as possible, in order that the pupils can form a correct and also realistic image upon the objects, phenomena and chemical processes modelled;
- the aesthetics and design of the graphics is not to be forgotten; the graphics must also be big enough, in order to be watched easily by all the pupils and must be placed in that way to obtain a maximum visibility for the entire classroom;
- the teacher will guide the activity of the pupils preferably through heuristic conversation (only occasionally offering them some guiding points) and he will ask them to analyse, to compare or to select the essential elements, achieving new generalisation; by training and activating the pupils to elaborate, analyse and interpretate the graphics, their utilisation in the teaching-learning process will have a grown informative and formative efficiency;
- in order not to distract the pupils' attention during other instruction sequences, the graphics will be presented only to the beginning of the demonstrative activity.

Demonstration by drawing on the blackboard - offers the advantage of synchronising demonstration with the oral exposure and the teacher's explications, getting easier the understanding of the new knowledge. Another significant advantage consists in the achievement of a time saving in the instruction. Drawing continuously on the blackboard, the teacher will attract the pupils' attention upon the significant aspects, supporting pupils in their perception and in their understanding and finally contributing to the developing of the observation spirit.

In chemistry, this form of the demonstration method is used for:

- the structure representing of the chemical substances;
- the representing of the reaction's schemes;
- representing of tools, vessels, devices and chemical installations;
- representing of technological fluxes.

The main requests in elaboration and utilisation of the drawing as a demonstration modality are:

- the drawing must be correct, exact, expressive, to reveal simplified the essential aspects, very carefully achieved and aesthetic;
- the coloured choke should be used in order to underline the main drawing's aspect;
- the component parts of the drawing should be numbered, if necessary;
- the drawing must be big enough to be observed and analysed by all pupils;
- in the same time with the drawing's effectuation, the teacher will watch the pupils' activity in the classroom and he will train them in conversation and even in the drawing's components identification - in this way the teacher can be sure that the pupils understood the drawing's signification and that they will not copy mechanically this drawing.

Methodical requests in demonstration method's utilisation

In order that the demonstration method to be used successfully in teaching and learning chemistry, the following methodical requests must be respected:

- the teacher have to select the demonstrative means that are adequate and representative for the proposed teaching aims;
- the teacher must be sure that pupils have all the practical and theoretical knowledge and abilities necessary for demonstration understanding and that they have understood the aim followed through the demonstration;
- it is convenient that before the demonstration the teacher stimulate the interest and curiosity of the pupils for that should they know and do, by using the following methodical modalities: reactualisation of some theoretical knowledge, using some knowledge pupils already have from practice, hypothesis and/or some questions-problems or problems formulating;
- the demonstrative material will be presented to pupils only in that moment when will be treated the concrete situation, either simultaneously with the explanation or at the end of it, according to the didactic objective, to the teaching aim, to the combinatory forms of the educational methods and to the nature of the demonstrative material;

- the demonstrative materials must be appropriate to the didactic aim; they must be suggestive, clear, simple and also they must respect the real proportions to be as big as to be observed by all the pupils and placed to such a way to make optim the visibility for the whole classroom;
- the selected material must offer the pupils the possibility of its perceiving by means of many senses (seeing, hearing, touching and smelling) in order to form a complete and exact images and to develop the observation making and the interrelations between the analysing senses; it is better if the material is first examined as a whole, then its parts are analysed and finally it is reanalysed as a whole.
- in teaching projection activity, the teacher will clearly establish the explanations and questions which he's going to give and to formulate; by presentation method by a tight combination of intuitive elements with the explanation (which can precede, accompany or follow the demonstration) the pupils to be helped to notice the essential, the main features, to establish interrelations, causal connections, to do generalisations; it is recommendable that pupils work themselves with demonstrative material, in order to get practised with it;
- pupils must be activated to take part to discussions and explanations as they watch the demonstration and to do a series of actions as: drawings, schemes, calculations, figure consults; it is necessary the whole groups of pupils to be involved not only during the demonstration, but even after that, in the stage of processing and interpreting of the obtained dates, stage which is called by teacher all the time including the problematisation (the didactic activity will be not finished once with the demonstration). In this respect, Jean Piaget shows that image and audio-visual means represent the precious ancillary means of the purely verbal education, but as there is a verbalism of the word, there is a verbalism of the image, at the same way dangerous if the intuitive methods lose the absolut necessary primate of the spontaneous activity and the pupils' personal searching.
- the demonstration rhythm to be adequate, according to psychological resources, individual and age characteristics of the pupils;

- the demonstrative material's presentation should be well balanced, because the success of didactic activity is independent on the quantity of used demonstrative material;
- the teaching aid utilised in demonstration should be qualitative, in order to correspond the followed aim and should be prepared very thoroughly and the used modalities (experiences, illustrative materials, drawings etc.) should to guide to the easiest and most straight way of understanding phenomena in their dynamics and developing;
- the pupils should be trained in using, elaborating or obtaining the demonstrative materials.

Advantages of demonstrative methods in the study of chemistry

- they support the formation of chemical representations, thanks to learning processes from concrete to abstract;
- they focus pupils' attention to what is really essential in demonstrative material, contribute to observation spirit's developing, to get accustomed to observe systematically, to pupils' intellectual capacities development; besides the scientific information, the pupils get also the typical way of think about chemistry;
- they contribute to develop the investigation's spirit, of interest for cognition in general and especially of interest and motivation to learn chemistry;
- they give the possibility to present the chemical phenomena in the dynamics of their developing and transformation, making easier the understanding by pupils of chemistry's essence;
- they diminuate the weight of verbalism in training, lifts away the theoretical, abstract character of chemistry knowledge and underlines their practical/aplicative character, what really help pupils to get convinced of the practical importance of chemistry knowledge and consequently of practical utility about the study of chemistry.

Limits of demonstrative methods utilisation in the study of chemistry

- the teaching way typical to demonstrative methods is a guided one, what really makes that the independent participation's degree of pupils to be generally low;
- during demonstrations there are some difficulties in watching the whole class and making sure the feed-back connections for all pupils in the classroom.

Modernisation ways of demonstrative methods

- pupils have to be implied in demonstrative activities, in making observations, in their analyse, in the explanations offering, in drawing some conclusions, in generalisations' effectuation, in order to assure a very efficient learning activity;
- the utilisation of demonstrative method in a new spirit, heuristic, in a permanent problematisation background, underlining thus their formative and informative valences.

REFERENCES

1. Fătu, S., Jinga, I., (1997), *Învățarea eficientă a conceptelor fundamentale de chimie*, Editura Corint, București.
2. Ionescu, M., Radu, I., Salade, D., (1997), *Dezbateri de didactică aplicată*, Editura Presa Universitară Clujeană, Cluj-Napoca.
3. Ionescu, M.(coord.)(1998), *Educația și dinamica ei*, Editura Tribuna Învățământului, București.
4. Isac, D., (1998), *Metodica predării chimiei*, Editura Mirton, Timișoara.
5. Șunel, V., Ciocoiu, I., Rudică, T., Bîcu, E., (1996), *Metodica predării chimiei*, Editura Marathon, Iași.

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KNOWLEDGE BASE FOR TRAINING TOMORROW'S TEACHERS

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ABSTRACT. In general, reform process concerned with informational support necessry for teachers in the development of the didactic process and less about their practical training. In the basic training of tomorrow's teachers we need a lot scientific and methodological information for optimizing the development of teaching skills. The material resources of schools where teacher training os taking place and the methods used in this process have caused concern from those involved in this course. To overcome difficulties which have appeared over the last 10-15 years in training teachers, a knowledge base is required to meet the need of lectures and students. This requirement is the first issue needing to be addressed for a user who has not specialized in software or Intranet/Internet and does not know of the "world of possibilities offered by computers" for enhancing education. A fortunate meeting between a programmer and user enriched by earnest cooperation, resulted in the design of a product which we hope will be improved with the assistance of ous users.

Real problems, problems solutions

In the actual stage, the reform of education focus the attention on student and pupil's activities, teachers becoming managers (system managers, process managers, information manager, finally of their own activities).

In the last 10 years, the teaching of the physics is falling in disfavour. This fact is due to a relaxation reaction provoked by much old tares, like:

(a) dense and difficult theoretic contents of older teaching programmes;
(b) pour manner of presentation of these contents in the courses an hand books;
(c) the nature of the subjects proposed at the exams and courses;
(d) the missing or the bad use of the logistic means.

Today, some of these features are receded, or are in a process of correction, but new problems which are issued prove the complex character of the reform process which is covered by a system with various functional deficiency: from such of philosophical and morale nature, to theses of communication and social and profession integration. More concretely, lots of

teachers consider the reform (i.e. its levers and its key terms) to be only an institutional cosmetics with only `name day` nature's changes, and less more a signal to change targets, contents, study and evaluation manners of the instruction.

Decisions took in piloting of the system which is the physics teaching, analysed before, are not based , in a great part of it, on experimental researches over this system; they are based, mainly, on the assumption of models and external sources, which are pertinent, but insufficient by its pure theoretical character. The few researches, made on local side, are able only point out the problems, which are knew in its greatest part.

In the case of the existence of some solution propositions, they express the image of the authors about "how the system should function", imposing a certain meaning and signification to the studied process. Solutions present great difficulties to be spread in the community involved in the functioning of system, often only depending on the hierarchic position or on the influence of the emitter.

All theses things pointed out before, are able to become causes to perpetuate the vicious circle which affect the unfurling of the study of Physics: the teachers form in the pupils an idealised image of the Physics - a perfect building which has to be known because it is useful in problem solving, but this building become more and more complicated for the pupil which s becoming student, having more and more levels and interior labyrinths, which are compulsory to be known by a future expert; in addition to become a good teacher, it is absolutely necessary to add at this edifice various annexe, much few structured, but which are to contain immutable truths emitted by psychologists and educators.

So, it become necessary to broke the vicious circle, right in the area of the initial training of tomorrow's teachers in Physics (sciences), mainly in pedagogical practics. The fundamental problem, marked by an metaphor, can be reformulated through a set of questions:

- "*How is possible to organise and developpe in the most efficient way the initial training (the pedagogic practice) in Physics* ?". This question is justified by the importance of the activities performed by students in this period, and by the pour conditions of the didactical branch which is at an universtary level today: defficitary organization (few number of hours, the missing of the school supplies, a.s.), perdant mentalities, formal knowledges and so.
- "*How to capitalise the experience of more then 10 years in the domain and the new logistic means which are disponibles*?". In this time has been

experimented some formulas for lesson developing and some colaboration methods with the students.

- "*Which are the concret modalities to link the pedagogical practice to the continuous preparing, specially in the first 2-3 years of teaching*?", being very well known both difficulties enconntered by the graduates in the first years of the teaching career, and the institutionalised efforts [DPPD, IUJ, CCD] modes for continuous formations of the teachers.

As answer to these questions, taking account of:

(a) the characteristiques of the initial training,

(b) the requests expressed by the reform of the instruction in physics,

(c) all the difficulties enconntered, we have proposed the achievement of a concret offert for students/teachers, which is:

(1) to form specific abilities for didactical operations
(2) to contain exemples, possible models for this
(3) to have such a set of characteristics, as to be perfectible, by the way of a continuous regulation and adaptation of the informations which are contained
(4) to constitute as an interactive communication system.

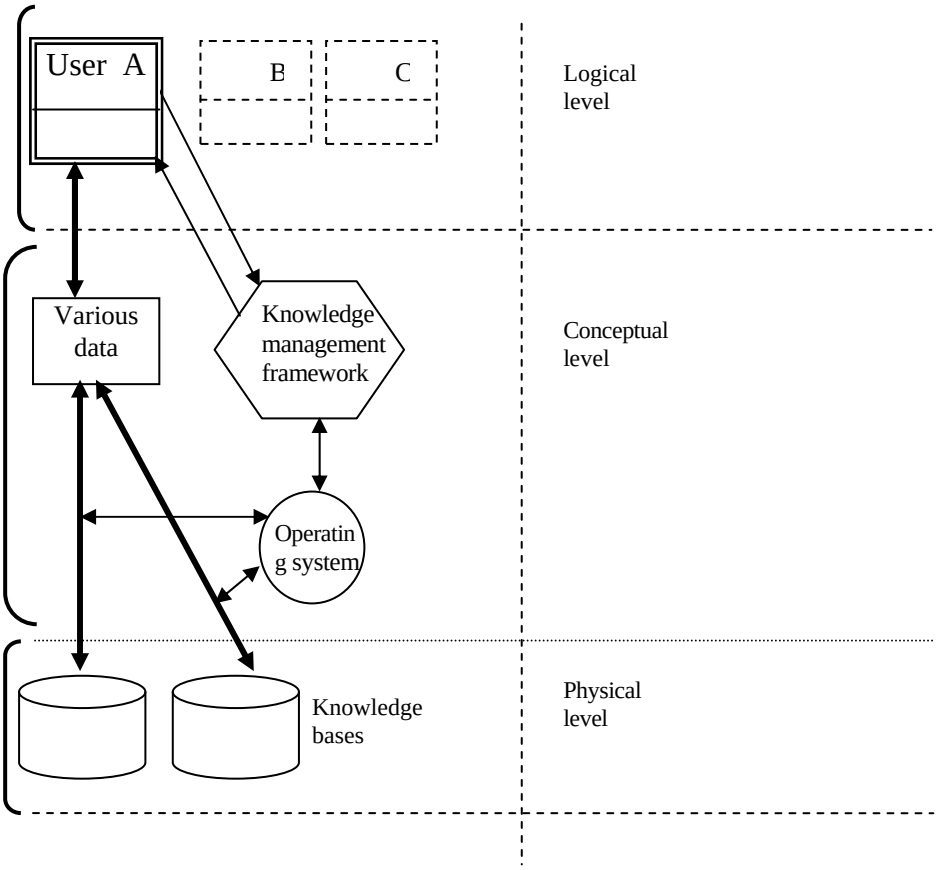
Sure, we have proposed, for this "concrete offer", to represent a very living information source for the researches in the domain.

Knowledge bases - the solution for adaptation to the informational explosion in the instruction

Taking account of the perspective of the explosive proliferation of computer networks in this final of millenium, from this direction is issued a generous offer able to catalyse the motivations, but also to enrich and to diversify the resources of those called to facilitate the knowledge in the domain of the sciences.

A knowledge base conceived to hoard the instruments which are necessary for acquire such skills absolutely necessaries for tomorrow's teachers, become a "sine qua non" resource, because of the characteristics of the services which is able to provide. The occidental universities are already endowed by such tools, the knowledge bases which are at their disposition having already stored enormous quantities of multiple and complex informations, accessible, interactive and useful in the teaching process.

The structure of the knowledge base will be the fallow:



This knowledge base which is in course of implementation, having very powerful characteristics which been presented bellow, take being by the financial aport of the Fundation for Open Society. The product which will result is designed for the students of the science faculties, for the teachers, for specialists in the sciences of education, having as destination to offer information, and also to be sources of information, didactic models too. The interactive character, absolutely necessary, will facilitate the participation of the users in the enrichement of the content both in sources and models.

7 Concretely, the knowledge base, which is designed to be used in the 3 steps of the didactical process:

- the planing
- the effective developement
- the self-analysis and the analysis of the work

Will have the following characteristics:

- open system, which will be continuousely enriched
- large variety of informational types:
  - texts
  - statical and animated images, graphics
  - sonorisations (audio)
  - instruction program models
  - statistics, quantitative/numeric information
- growth facilities, with information transfer directly from multimedia resources
- direct interface with the INTERNET
- user friendly interface;
- functionality, rapid methods for accessing information at all levels, reliability;
- information protection by implementing features and passwords in a hierarchical preference;
- reconfiguration depending on syllabi , educational priorities, evolution of didactic strategies and examination.

The knowledge base will be structured in two major components identically as importance in educational act attendance:

1. the component designated for the scientific information;
2. the component loaded with methodical information.

Looking at the entire system destination we can say that the first component serves the second.

The component designated for the pure scientific information, has a massive volume and is loaded with high quality information from various sources; it will store and enrich the problems tackled in curricula organised on scholar cycle. This component is oriented on an interdisciplinary knowledge. Contained information will have links through active HTML pages mechanism from classical programs to HTML pages or sites built on interdisciplinary study principle.

This interdisciplinary approach will be sustained through multimedia technologies exploited both at visual presentation level, static and "movie" type and at those supported by proper sonority.

Along the didactic process, the necessary experiments will be facilitated through "the virtual experiment" generated on computer which will overcome once for all the difficulties about the acquisition and the manufacture of the didactic material.

The virtual experiments make up a precious model at the disposal of those involved in didactic process.

Custom design of the knowledge base in the teaching of the physics

The general characteristics of the data banks used in education allow us to take a practical example in the teaching of the physics. The design was influenced by the way in which tomorrow's teacher activities are carried on in the training of physics (conditions, demands, logistic means, a.s.o.) and by the nature of the information loaded with the methodical component.

Usual, tomorrow's teacher does the following operations:

- fill in the observation card for the assisted lessons ;
- make up plans of lessons where they need biographic and bibliographic cards, cards for the independent pupils' activities, a.s.o.;
- prepare experiments;
- write and resolve typical problems;
- correct the working for evaluation;
- and so on.

These operations are recorded on documents that form every student's portfolio.

We observed a lot of formalism and distrust in the documents design and especially in their use. The data bank will overcome these drawbacks. How it is possible? Because the methodical component of the bank will contain:

- active models of the assistance card;
- active models of the plans of the lessons.

In preparation for the assistance stage, the tomorrow's teacher can extract the predefined model for various types of lessons especially for the study of the new knowledge. After the observation stage of the training, the knowledge base is receptive at the students' suggestions, lightening the loading with new models, even being able to find new criterions proper for the observation and examination of the lessons.

In the design and writing stage of the plans for lessons, tomorrow's teacher benefit by models of plans loaded in the knowledge base. These will be linked with biographical and bibliographical cards and with notes with theoretical character (to formulate the operational objectives and didactical

strategies, the roles of different kind of evaluation tests, methodical solution of the problems of Physics, and so on).

The plans of the lessons made up by the tomorrow's teacher with the support of these models, are themselves loaded in the knowledge base, serving both for the evaluation necessity of the students' activity who make them up and in generation of the alternatives for the entire community of the data base users.

Conclusion

This issue shows the theoretical apply (principles, characteristics) to draw up the knowledge base.

In the next issues we'll describe in detail the use of the knowledge base to provide those who are interested, the necessary information for making up similar supports for education.

REFERENCES

1. McIntyre,D. J.,(1992), *Preparing tomorrow`s teacher: The Field Experience. Teacher education yearbook IV*.
2. Dumitrache, V., Unghianu, M., (1982), *Băncile de date*, Ed. Ştiinţifică şi Enciclopedică, Bucureşti.

Internet resources

1. *http://science.coe.uwf.edu/NARST/NARST.html "National Association for Research in Science Teaching"*
2. http://science.coe.uwf.edu/NSELA/NSELA.html National Science Education Leadership Association - promotes the development of efficient and effective supervisory practices"
3. http://www.enmu.edu/cetp/ "New Mexico Collaborative for Excellence in Teacher Preparation (CETP) - National Science Foundation initiative to support efforts in K-12 teacher preparation and renewal in science, mathematics, and engineering".

STUDIA UNIVERSITATIS BABEŞ-BOLYAI, PSYCHOLOGIA-PAEDAGOGIA, XLIV, 1-2, 1999

INTERDISCIPLINARY LESSON ON DATA PROCESSING

ZOLTÁN KOVÁCS

ZUSAMMENFASSUNG. Die Informations- oder Datentechnik spielt Heute in fast allen Lebensbereichen eine wichtige Rolle. Der aktuellste Vertreter der datentechnischen Geräte ist natürlich der Computer. Datenübertragung, -speichung und -verarbeitung sind auch in biologischen Systemen von größter Wichtigkeit. Nachdem einer kurzer Zusammenfassung über das interdisziplinarische Unterricht wir stellen eine Lektion als Beispiel über Datentechnik dar.

The technique of information has a great importance in all fields of life. Many house devices (radio, video, TV, tape recorder and player, Photocamera) operate with data processing: receiving, memorizing and transmitting data. Nowadays there is a computer in almost every home.

As we know, biological systems also operate with data processing. Many chapters of Physics and many disciplines are in connection with data processing: optics, acoustics, electronics, measurements, news, information technique, computer science and others.

The interdisciplinary/cross-curricular teaching is a very effective method in teaching science. In this way we can show students a certain concept in its complete appearance, from different points of view. So the same concept will not appear as a different thing in different sciences. This method contributes to developing students' integrated view on science and life.

The concept of interdisciplinary teaching can be defined in different ways, based on the rate of the cooperation/coordination between the scientific discipline. This cooperation grew and became more complex in the following order:

The level of studying reality	Cooperation /coordination between the disciplines	Systemic treatment of science	Degree of interdisciplinary view
Multidisciplinary	rare	elementary	low
Pluridisciplinary	symmetric communication at the same level, without coordination	weak	symmetric nearby placed sciences at the same level
Cross-disciplinary	monodisciplinar concept	rigid	one science's axioms are transferred to other
Interdisciplinary	at high level	each discipline has its own notional system and research method	exist a common axiomatic at the same discipline defined at a higher level
Transdisciplinary (integrated science)	at very high level with aim to establish a new science	a specific system and process	the abstract system is common to many particular areas

Our university research team in science methodology edited, in an interdisciplinary way, a textbook on interdisciplinary teaching for the university students and schoolteachers. The content of the textbook[i] and also one of its part (from chapter IV) is presented above.

Foreword

I. Psychological and informational coordinates in natural science training

(1.The problematic. 2. The Internet. 3. Usefulness of Internet in training. 4. Example).

II. Interdisciplinarity as a basic principle in science and training

(1.Introduction. 2. Definition of interdisciplinarity. 3. Concepts. 4. The functions of Interdisciplinarity. 5. Implement of interdisciplinarity in school training. [Establishing integrated issues. Structural levels of integrated training issues. School curricula, textbooks and teachers' duty. Interdisciplinary view on school training] 6. Interdisciplinary view on university training).

[i] A. Barna, L. Ciascai, F. Ciomos, E. Dulamă, Z. Kovács, A. Naumescu-Lengauer, I. Pop, C. Predescu (editor), D. Vâlcan, *Interdisciplinary Connections in Teaching Natural Science*, Edited by Science Education Dpt. of University "Babeş-Bolyai" Cluj, Romania, 1999.

III. Energy
(1. Essentials about energy. What is energy? [Definitions, classifications, scientific use of the term. Energy sources. Forms of energy. Energy transfer. Efficiency, loss of energy. Conservation of energy. Depreciation of energy] 2. Other perspectives. Interrelations. Unconventional sources (solar-photovoltaic, thermal, hot water) 3. Elements of the history of science. 4. Energy and life).

IV. Information
(1. Information. [Introduction. History of information. Informatology. Levels of information transmission process. Cognitive vision. Limits of human intellect. New ideas contesting classic cognitivism] 2. Shannon's information theory. 3. Information and entropy. 4. Information and cybernetics. 5. Information and life. 6. Information and society. [Communication, Art as a form of communication] 7. Informational revolution. [Development of electronics, PC, Artificial intelligence] 8. Conclusions).

V. Mathematics and natural science
(Interdisciplinary potentials of mathematics. Applying the notional content of mathematics to physics, chemistry, biology and geography).

VI. The Water
(1. General problems. [Water in ecosystems. Drinking water. Pure - distilled - water. The phases of water cycle in nature. The importance of water for living organisms. Use of water, practical approach.] 2. Composition of water. 3. Property of clear water. 4. Solvation. [Effects following solvation: variation of temperature, volume. Factors influencing solvation] 5. Solubility. [Classifying substances according to solubility. Factors that influence solubility] 6. Chemical properties of distilled water. [Reacting with metals, metal-oxide, unmetal-oxide, chemical reactions by hydration and deshydration] 7. Interdisciplinary view of "Water" issues).

VII. Air pollution
(1. Introduction. 2. Pollution due to combustion. 3. Some balances. [Wood illness. Ozonhole above Antarctic. The hothouse effect. The Photochemical smog.]. 4. Conclusions.)

Data Processing

(Summary of lesson)

1. Amplifiers
   The energy carried by the data is amplified
2. Data Processing
   a) the structure of a PC
      - the computer
      - the peripheries
         - internal (keyboard, mouse, sensors etc.)
         - external (screen, printer, loudspeaker etc.)
      - the memory (to store information)
         - the data memory
         - the work memory
   b) the natural system of data processing
      - the brain the computer itself
      - sensing organs the internal processing unit
      - sounds, the writing hands external processing units
      - books, sketches external memory
   c) the hard structure of a PC
      - the transistors (switch-amplifier)
         processing with binary codified data
      - the chips (bidimensionary transistor array)
         operate (memorize, calculate, codify, etc.)
         the neuron, the neuronal system
   d) the computer program
3. Generalizing the concept of the data quantity
   - the communication (transmitter - receiver)
   - the receiver handles data with less quantity of information (bytes) more easily
   - the redundancy
   - the quantity of information

Homework:

1. Give an example when a man is playing the role of an amplifier.
2. Write a TurboPascal program in order to arrange a progress of numbers.
3. Calculate the information quantity in order to find out a number between 1 and 64.
4. How many weighings with a two-armed balance are needed to select a ball the mass of which lightly differs from the other 26 ? Which is the best measuring strategy.

DATA PROCESSING

The structure of an interdisciplinary lesson based on analogy[ii]

Methodological items	**Topics:** ***Data Processing***			. **Time** min
	Owned knowledge (recall to mind)	**New knowledge**	**Experiments, applications**	
Teaching	Content 1. **Amplifiers**			20
	- loudspeaker; - TV screen; - aerial; - eardrum; - record player; - coil; - TV transmitter; - telecommunica-tion satellite; - cable TV system;	- relation between the transmission of data and energy; - amplifiers; - amplification factor; - binary signs; - photodiode; - perturbation (noise)	- an electric current is inducted in the aerial; - the human eardrum and the loudspeaker's membrane vibrates; - record player; - megaphone; - relay, amplifier for two binary signs; - wireless telephone (to illustrate the noise);	
	Content 2. **Data processing (DP)**			
	- the transport and storage of data in nature and in technique; - reading the linecode by using a laser; - the sense organs and the brain; - electronic devices;	- the hierarchic structure of the DP systems; - the structure of a PC; - the natural system of the DP; - the global structure (the hard); - the transistor as a quick relay; - the chips vs.the nervous cell; - the history of computers; - the optical computer; - the computer- program (the soft); - the nervous cells' system vs. computers; - the competition between man and computer;	- the brain; - the electronic computer; - the transducers: T, p, concentrations; - the command of execution (to operate the switch, mechanical process); - to run a computer program;	

[ii] F. Herrmann: **Physik**. Der Karlsruher Physikkurs. Band 2. Universität Karlsruhe, 1994.

Methodological items	**Topics:** *Data Processing*			. **Time** min
	Owned knowledge (recall to mind)	**New knowledge**	**Experiments, applications**	
	Content 3. **Generalization of data quantity definition: the information quantity**			
	- the concept of probability;	- to realize an event; - the redundancy; - the quantity of information;	- example of events (to drop the coin, the arithmetic progression, letters); - the lottery; - to choose by the strategy of weighing ; - good luck and bad luck; - music and data quantity.	
Reinforcement	1. Example for the data transport and for its way of amplification; 2. The example of a man who plays the role of an amplifier; 3. Analogy between the function of human organs and computers;			5
The operation-alization of the objectives	1. Students should be able to apply the scheme of an amplifier in certain cases: megaphone, electromagnetic relay, photorelay, pick-up; TV amplifier station; 2. Students should identify by analogy the functions of some animal organs with that of a computer; 3. Students should write a TurboPascal-program to select the even numbers from a series of numbers;			15
Checking students' knowledge	1. They have to write some examples for data transport and to present some ways of its amplification; 2. They have to calculate the information quantity of realizing a certain value of numbers by throwing a dice; 3. Having two vessels with volume 3l and 5l, how many steps do we need to separate a liquid volume of 4l?			5
Homework	1. Give an example when a man is playing the role of an amplifier. 2. Write a TurboPascal program to arrange a progress of numbers. 3. Calculate the information quantity to find out a number between 1 and 64. 4. How many weighing with a two-armed balance are needed to select a ball whose mass lightly differs from the other 26? Which is the best measuring strategy?			5

STUDIA UNIVERSITATIS BABEŞ-BOLYAI, PSYCHOLOGIA-PAEDAGOGIA, XLIV, 1-2, 1999

IMPLICIT MEMORY IN AMNESIA

OPRE ADRIAN[1]

ABSTRACT. Amnesic patients have impaired explicit memory that is evident in poor recall and recognition of words, yet can have intact implicit memory for words as measured by repetition priming, the enhanced efficiency for reprocessing those words. In the present study we reiterated the Schacter, Church and Boltons experiment (1995), but in a new paradigm. The purpose of their experiment was to investigate whether amnesic patients exhibit normal levels of voice-specific priming on a test that is known to yeld such effects in nonamnesic subjects. Actually we intended to evaluate the effect of mixed variables (voice specificity and level of processing during at encoding phase) on the magnitude of auditory priming. The goal of our experiment was to estimate the effects produce by within modality study - test changes in speaker's voice on magnitude of auditory priming in non-amnesic and amnesic subjects. The most important result of the present experiment is: the amnesic patients failed to exhibit more priming in the same-voice condition than in the different-voice condition ($t=2.24$, $p<0.5$); by contrast, control subjects showed significantly more priming in the same- than in the different-voice condition ($t=4.12$, $p<.001$) .These results can be simulating by ussing an amnesia model and an artificial neural network.

Amnesia refers to difficulty in learning new information or in remembering the past. These impairments can have a functional origin, but more commonly they result from neurological injury or disease. Very often amnesia occur as a strikingly circumscribed impairments in the absence of other cognitive deficits. Patients with this disorder have intact intelligence test scores, intact language and social skills, and an intact memory for a great deal of information from the remote past, especially childhood. In addition, immediate memory is intact. Amnesic patients can held a small amount of information in mind for several minute, provided the material can be rehearsed. For this reason, they can carry on a conversion and after appear quite normal to causal observation. The difficulty arises when information must be recalled after a distraction filled interval, or when recall is attempted directly after the presentation of an amount of information that exceeds immediate

[1] Catedra de Psihiologie, Facultatea de Psihologie și Științele Educației.

memory capacity (7+/- 2 items). In this situation, normal subjects will usually recall more items than amnesic patients. Furthermore, if the items are repeated a number of times, normal subjects quickly became proficient but the amnesic may never learn the whole list.

It is useful to distinguish between anterograde and retrograde amnesia. Anterograde amnesia refers to loss of memory for events and experiences occurring subsequent to the amnesia-causing trauma; in other words, for amnesic patients is very difficult to store new information. In case of complete anterograde amnesia the patient is incapable of forming new memories although recall of material learned prior to the onset is largely unaffected. By contrast, retrograde amnesia means that the subjects lost the memory for events and experiences occurring in a period of time prior to the amnesia-causing trauma. Since retrograde amnesia involves the inability to recall material once known, most memory researches consider it to be a failure of the ability to retrieve or to recall the information rather than a true loss of information. In some cases of amnesia this retrograde aspect of memory loss is temporally limited, affecting memories from the recent but not the remote past. In other cases of amnesia, for examples Korsakoffs syndrome, amnesia can be extensive and cover the majority of past life. The extensiveness and severity of this remote memory loss does not appear to be related to the severity of anterograde amnesia, which raises the possibility that is caused by different lesions from those that cause the anterograde amnesia.

Amnesia can occur for a number of reasons e.g., after temporal lobe surgery, chronic alcohol abuse, encephalites, head injury, electroconvulsive therapy, anoxia etc. The memory disorder appears to depend on disruption of normal function in one of two areas after temporal lobe and the diencephalic midline. Intense interest has focused on the hypocampus and amygdala as the site for long term declarative (explicit) memory consolidation (Amaral,1987).

Usually amnesic syndrome is produced by lesions to the medial temporal and diencephalic region of the brain (Moscovitch,1982; Rozin,1976; Squire,1986) but there are also other causes for amnesic behavior. For examples many researchers believe that Korsakoffs syndrome is related with a vitamin deficiency. Studies suggest that alcoholics who develop Korsakoffs syndrome have an abnormal sensitivity to thiamine deficiency; certain thiaminedependent enzymes in these individuals have markedly abnormal saturation curves. One implication of these studies is that Korsakoffs disease might be preventable if adequate thiamine intake absorbtion were maintained in alcoholics. Investigations with modern neuroimagistic techniques revealed that Korsakoffs patients suffer from damage to the thalamus (dorsolateral and

anterior nuclei) and occasionally to the mammillary bodies of the hypothalamus, although researchers now believe the thalamic damage is most likely to cause the memory loss (see Zola-Morgan and Squire,1985}). In contrast, herpes simplex encephalitis (which involves inflammation of the brain) has been found to cause widespread damage to the lateral and medial temporal cortex, often extending to the orbital-frontal cortex and the parietal lobe. There are also a number of cases in which some of the temporal lobe was removed from epileptic patients in an attempt to reduce the incidence of epileptic seizures. As a consequence, many of these patients (including the much-studied HM) became severely amnesic. For Alzheimers diseases recently findings have shown that the diseases proeminetly disrupts corticolimbic conections (Hyman et al, 1994) thereby isolating the hypocampal formation from neocortex. This finding is critical, because damage to the hipocampal formation causes a selective amnesic disorder in humans. In such cases, amnesia occurs without impairment of other functions, such as language and intelligence. But it is very important to note here that Alzheimers disease is progressive in the sense that there is a steady deterioration with memory impairment in the early stages being followed by more general cognitive impairments. This evolution reflect the gravity and extension of brain damage. Therefore very often amnesic syndrome and Alzheimers diseases are treated separate, because amnesic syndrome imply just memory.

In human amnesia even though longterm memory (LTM) is impairment, short-term memory (STM) is fully intact (Cave and Squire,1982). The distinction between STM and LTM is also present in experimental animals (Zola-Morgan and Squire, 1992) but, the most relevant examples for this is the famous case H.M. whose amnesia was due to a temporal lobectomy. Such kind of data led to a conclusion, that amnesics were incapable of transferring verbal information from a relatively intact short-term store to a long-term store. The researchers proved that even profound amnesics such H.M. were capable of learning and retaining motor skills at about the same levels as were normal subjects (eg.Corkin,1996) but retention of verbal information in amnesics was quite poor after a brief delay. Thus the inability to transfer or consolidate verbal information from STM to LTM seemed to play a critical role in amnesia. The reverse problem of very poor short-term memory combined with normal long-term memory is relatively rare, but a few such cases have been reported. These cases include KF, a patient who suffered damage in the left parieto-occipital region of the brain following a motorcycle accident. KF had no difficulty with long-term learning and recall, but his short term store was seriously reduce (Shalice and Warrington,1970).

This perspective of the amnesic syndrome was changed in the 70s, when new results revealed intact long-term verbal memory in amnesics on tests called implicit or indirect (Warrington and Weiskrants,1970). Thus, although amnesics perform poorly when they are asked explicitly to recall or recognize material presented only a few minutes ago, they can exhibit sparing of certain memory function, as indicating by normal performance on test of reading of mirror-inverted script (Cohen and Squire,1980), puzzle solving (Brooks and Baddeley,1976) rule learning (Kissbourne and Wood,1975) despite their failure to remember explicitly that they had previously performed the skills. The researchers proved that even profound amnesics such H.M. were capable of learning and retaining motor skills at about the same levels as were normal subjects (Corkin,1968) but retention of verbal information in amnesics was quite poor after a brief delay. These facts about amnesia have suggested that memory is organized in the brain as a set of dissociable processes or systems (Cohen,1984; Squire,1986). The term declarative memory has been used to describe the memory system that is impaired in amnesia. Declarative memory is available to conscious awareness and includes the facts and specific episodes learned in everyday experience. By contrast, procedural (non-declarative) memory is implicit and is available only through performance. Skill learning, simple classical conditioning and priming (priming = an increased ability to detect and identify a stimulus as a result of the recent presentation) have been considered to be examples of procedural memory. Because procedural memory is separated in amnesic patients, it must depend on brain regions other than the medial temporal and diencephalic structures known to be affected in amnesia. It is important to note that intact priming in amnesic patients has been demonstrated for novel materials that have no preexisting representations (Squire et al, 1993). These results indicate that priming is not derived simply by activating stored memory representations, but rather is based on the sensory-perceptual traces created by stimulus presentation.

Presentation of items can also influence preferences and judgments about the items. For instance, both amnesics and normal subjects are more likely to judge a common name as famous if the name has presented recently (Neely and Payme,1983; Squire and Mckee,1982). Normal subjects can suppress this effect in same circumstances because they can draw an declarative memory to recall that the items were just presented (Jacoby,1989). By contrast, amnesics continue to exhibit a fame judgement bias even through they are informed that all the names presented were no famous.

The great majority of research on priming and implicit (non-declarative)

memory has focused on visual paradigms and processes; there has been relatively little investigation of, or theorizing about, implicit memory in the auditory domain. Therefore recently several researchers have developed paradigms and procedures for examining auditory priming. In a study of college students, Schacter and Church (1992) have demonstrated priming effects on a task in which subjects attempt to identify words that are masked in white noise. The observed auditory priming was largely unaffected by depth-of-encoding manipulations and by study to test changes in speakers voice. Another study (Schacter et al,1994) examined whether such priming is preserved in amnesia. Amnesic patients and control subjects heard a series of spoken words and judged either the category to which each word belongs (semantic encoding task) or the pitch of the speakers voice (nonsemantic encoding task); the speakers were 1:1 male and females. Priming was assessed with an auditory identification test in which studied and non-studied words were presented in white noise and the subjects had to report what they heard. Half of studied words were spoken in the same voice as during the encoding task and half were spoken in a different voice; voice change always involved a change in the speakers gender (male-female or female-male. The results demonstrated that: (1) amnesic patients showed just as much priming as control subjects; (2) the semantic and the nonsemantic encoding task yielded similar levels of priming in both subjects groups: (3) priming effects were nearly identical in the same voice and different voice conditions for both groups. Additionally amnesics were impaired on an explicit recognition test that followed the identification test. These results demonstrated that auditory priming, like visual priming, can be preserved in amnesic patients. One important finding was that priming in both amnesic patients and control subjects was unaffected by study-to-test change. One important finding was that priming in both amnesic patients and control subjects was unaffected by study-to-test changes in speakers voice. Other experiments (Church and Schacter,1994; Schacter and Church,1992) without noise study-to-test changes in speakers voice can influence the magnitude of auditory priming. Similar effects has revealed for study-to-test changes in linguistic or emotional intonation within a single voice, and the fundamental frequency of a single speakers voice. Thus we can conclude that auditory priming appears to include a component that is specific to speakers voice, which depends on acoustic or prosodic information, as well as a nonspecific component that depends on abstract phonological information. Although the above data revealed that amnesic patients exhibit normal implicit memory on the identification-in-noise test, it seems that the question of whether the voice specific component of

auditory priming is also intact in amnesia, remain open.

5. Experiment

In the present study we are going to reiterate the Schacter, Church and Boltons experiment (1995), but in a new paradigm. The purpose of their experiment was to investigate whether amnesic patients exhibit normal levels of voice-specific priming on a test that is known to yeld such effects in nonamnesic subjects. Actually we intended to evaluate the effect of mixed variables (voice specificity and level of processing at encoding) on the magnitude of auditory priming. The goal of our experiment was to estimate the effects produce by within modality study - test changes in speaker's voice on magnitude of auditory priming in non-amnesic and amnesic subjects.

Method

Subjects. Four amnesic patients and twelve control subjects participated in the experiment. Three of the patients became amnesic as a consequence of alcoholic Korsakoff's syndrome, and one of them became amnesic as a consequence of temporal and parietal lobe surgery. The amnesic's overall level of intellectual function was in the normal range and also exhibited normal attention abilities. By contrast, they consistently exhibited severe deficits on a variety of explicit memory tests.

Materials. Target materials comprised 40 words (selected from the list of Rey verbal memory test) that were divided into two subsets of 20 words for the encoding task. Target words were recorded at normal conversional levels by speakers - a man and a woman. Any word that was spoken by the man was also spoken by the woman so there was two versions. The words were recorded on a IBM computer in order to be modify as the experiment required. Each item was filtered (three times) with the low pass filter function founding the SoundEdit program. One each pass through the filter, the intensity of a distribution of frequency above 2 kHz was reduced by 20 dB, and the distribution of frequencies between 1 and 2 kHz is reduced between 5 dB and 20 dB. The words were recorded on a tape. For the study phase, the list contained 20 words spoken clearly. For the filter identification task the list included 40 degraded words, 20 that have been studied previously and 20 that had not been studied. For the recognition test the tape contain 40 words spoken clearly (20 studied and 20 non-studied). On both the identification and recognition tasks, half of the words were presented in the same voice as on the study phase, and half of

the words were in a different voice. All words were presented using cassette deck and headphones.

Design and procedure

We used a mixed-factorial design 2x2x2x2. The between-subjects variable was subjects group (amnesic vs. control) and the within-subjects variables were item type (studied vs. non-studied), speaker voice (same vs. different) and type of test (auditory identification vs. recognition). The same words were used on both the filter test and the recognition test. Words were counterbalanced across studied and non-studied conditions, and same- and different-voice conditions. All subjects were studied individually. During the encoding phase, 20 words were presented auditory, and subjects were asked to count the number of vowels for each word (incidental acquisition). There were 5 s between items for subjects to identify and count the vowels. Subjects then performed a distractor task (approximately 5 minutes) during which they generated the names of 15 cities beginning with the letters given by experimenter. Thereafter, the subjects were given the filter identification test. Subjects were told that they would hear a series of modified words, that we were interested in their subjective perceptions of the words, and that they should respond by providing the first word that came in mind in response to each stimulus. In order to make more difficult the task we increase also the speed of presentation of the word list. Upon completion the filter identification task, were given the explicit auditory recognition test. They heard 40 clearly spoken words and were asked to judge which of those words had been presented during the encoding phase. They were warned that many of the woodshed also been presented in the filter task and that it is important that they only provide a yes response for items they remembered specifically from the encoding task. With amnesic patients we repeated all tasks three times, in order to obtain enough data.

Results

Table 1 presents the proportion of studied items and non-studied items correctly identified on the filter identification task and the proportion of hits and false alarms recognized during the recognition test as a function of same or different speaker's voice.

	TYPE OF TEST							
	IDENTIFICATION				**RECOGNITION**			
	SV	**DV**	**M**	**NS**	**SV**	**DV**	**M**	**NS**
Amnesics	0.43	0.38	0.40	0.28	0.48	0.42	0.45	0.31
	(0.15)	(0.10)	(0.12)		(0.17)	(0.11)	(0.14)	

Control	0.54	0.39	0.46	0.33	0.85	0.78	0.81	0.29
	(0.21)	(0.06)	(0.13)		(0.50)	(0.49)	(0.52)	

Recognition

An analysis of variance was performed on corrected recognition scores (proportions of hits/false alarms). It revealed that amnesic subjects exhibited much lower levels of recognition accuracy than did control subjects as indicated by highly significant main effect of the subject group $F(1.22)=48.62$, $p<.0001$).

Although we found effects of speakers voice changes, for both auditory identification and recognition, the main effect of speaker's voice was not significant: $F=4.12$. Also, for the subjects x speaker's voice interaction we didn't find significant effects: $F=1.6$.

Filter Identification

In the same table, we presented the proportion of studied and non-studied words correctly identified by the control and amnesic subjects. The performance on the identification task for the non-studied words was higher for the control group (.33) than in the amnesic subjects (.23), but this difference was not significant from the statistical point of view.

The "t" test that compared the proportion of studied/non-studied items correctly identified, demonstrated that priming occurred in both amnesic and control subjects: $t=2.24$, $p< 0.5$ and $t=4.12$, $p< .001$. Control subjects showed considerably more priming in the same-voice condition than in the different-voice condition. Whereas amnesic patients exhibited a difference in the same sense but not significant. Actually, the statistic estimation proved that priming scores in the same- and different-voice conditions differed significantly for control subjects: $t=1.08$.

However, the global priming scores of amnesic patients (.12) are very closed to that of control subjects (.13). This effect is due both to the fact that amnesics exhibited significant priming in the different-voice condition ($t=2.20$, $p<.05$) and the lack of different voice priming by control subjects.

Discussion

The most important result of the present experiment is that amnesic patients failed to exhibit more priming in the same-voice condition than in the different-voice condition. By contrast, control subjects showed significantly more priming in the same- than in the different-voice

condition, thus replicating the previous findings (Church & Schacter, 1994; Schacter et al., 1995; etc.).

For amnesics, our results contrast with the frequent observation that perceptual priming is normal in amnesic patients (see Bower & Schacter, 1994; Shimamura, 1986), but are consistent with those of Schacter et al. (1995).

In order to explain the auditory priming effects, we have to invoke the Perceptual Representational Systems (PRS) postulated by Schacter (1990). PRS is a presemantic system composed of a number of subsystems that process and represent information about the physical form and structure, but not about the meaning of associative properties for words, objects and other stimuli. The PRS is assumed to be a cortically based system, that is distinct from a system based on limbic structures (e.g. The hipocampus), that is necessary for explicit, episodic retrieval. The primary function of PRS is believed to be perceptual recognition.

The data from several previous investigations indicated that auditory priming contains a substantial abstract component.

The magnitude of the various voice-specificity effects were relatively modest, and the subjects consistently showed evidence of significant priming in the changed-voice condition. Therefor, Schacter and Church (1992), speculated that there may be two PRS subsystems contributing to auditory priming, one that represents abstract phonological information and another that represents specific acoustic information. Our results are consistent with such speculations.

The absence of voice-specific priming in amnesics leads us to suggest that in order to exhibit voice-specific priming on the filter identification test, it may be necessary to bind together phonological information concerning the voice of the speaker who enuciantes the words. Moreover, such binding may require the participation of limbic and diencephalic structures that are damaged in amnesic patients. Many investigators have argued that a major function of the limbic-diencephalic system is to bind together outputs of various different systems and subsystems. Although such bound traces normally provide the basis for explicit recall and recognition, it is highly possible that they can also influence priming. Thus, voice specific priming may not depend on the PRS alone. It is important to note that similar results have been reported for visual priming. Kinoshita and Wayland (1993) reported that control subjects exhibited more visual priming on a fragment completion test, when typography is the same in the study and test phase then when it differs. Korsakoff's amnesic, however, show similar levels of priming both in same-typography and different-typography conditions. This

visual specificity effect may require bindings between features of words and abstract orthographic words forms.

These points of convergence from different lines of research suggest that it may be useful to distinguish between two forms of priming which, descriptively, we referee as Type A and Type B. Type A priming is supported by the PRS, it is preserved in amnesic patients and depends on relatively abstract perceptual information. Type B priming results from an interaction between the PRS and the limbic-diencephalic structures that normally support explicit memory, it is impaired in amnesic patients and it depends on highly specific perceptual and contextual features that have been found together with abstract phonological, orthographic or semantic representations.

In light of this distinction, it may be questioned whether voice-specific priming should be viewed as an implicit memory phenomenon. Further studies that examine the relations between spared and impaired components of priming in amnesic patients, are likely to elucidate this intriguing but little-understood phenomenon.

REFERENCES

1. Amaral, D. G. (1987). *The nervous system.* In Brookhart, J.M. & Mountcastle, (Eds.). Handbook of Psychology.
2. Brooks, D.N. & Baddeley, A.D. (1976). *What can amnesic patients learn?*, Neuropsichologia,14, 111-122.
3. Cave, C. & Squire, L. R. (1991). *Equivalent impairment of spatial and nonspatial memory following damage to the human hyppocampus.* Hyppocampus, 1, 329-340.
4. Church,B.A. & Schacter, D.L. (1994). *Perceptual specificity of auditory priming: Implicit memory for voice intonation and fundamental frequency.* Journal of Experimental Psychology: Learning, Memory and Cognition, 20, 521-533.
5. Cohen,N. & Squire,L.R. (1980). *Preserved learning and retention of pattern analyzing skills in amnesia: Dissociation of knowing-how and knowing-that.* Science, 210, 207-210.
6. Cohen,N.J. (1984). *Preserved learning capacity in amnesia: evidence for multiple memory system.* In L.R.Squire & N.Butters (Eds.) Neuropsychology for memory (pp. 83-103). New York: Guilford Press.
7. Cohen, J.D. & Servan-Schreiber,D. (1992), *Context, cortex, and dopamine: a connectionist approach to behavior and biology in schizophrenia*, Psychological Review, vol.99.,pp. 45-77.
8. Corkin,S. (1968). *Acquisition of motor skill after bilateral medial temporal-lobe excision.* Neuropsychologica, 6, 255-266.

9. Craik, F.I.M. & Lockhart, R.S. (1972). *Levels of processing: a framework for memory research*, Journal of Verbal Learning and Verbal Behavior, vol.11., pp. 671-684.

10. Fujii,H., Ito,H., Aihara,K., Ichinose,N. & Tsukada,M. (1996). *Dynamical cell assembly hypothesis - Theoretical possibility of spatio-temporal coding in the cortex.* Neural Networks, vol.9., pp.1303-1350.

11. Gleitman,H. (1987). *Basic Psychology*, W.W. Norton, New York.

12. Kinoshita, S., & Wayland, S. V. (1993). *Effects of surface features on word-fragment completion in amnesic subjects.* American Journal of Psychology, 106, 67-80.

13. Kinsbourne, M., & Wood, F. (1975). *Short term memory and the amnesic syndrome*. In D. D. Deutch & J. A. Deutch (Eds.), *Short term memory* (pp. 258-291). New- York: Academic Press.

14. Moscovitch. M. (1982). *Multiple dissociations of function in amnesia*. In L. S. Cermak (Ed.), Human memory and amnesia (pp. 337-370). Hillsdale, NJ: Erlbaum.

15. Neeley, J. H., & Payne, D. G. (1983). *A direct comparison of recognition failure rates for recallable names in episodic and semantic memory tests*. Memory and Cognition, 11, 161-171.

16. Rozin, P. (1976). *The psychobiological approach to human memory*. In M. R. Rosenzweig & E. L. Bennett (Eds.), Neural mechanisms of learning and memory. Cambridge, MA: MIT Press.

17. Schacter, D.L. (1987). *Implicit memory: history and current status*, Journal of Experimental Psychology: Learning, Memory and Cognition, vol. 13, pp.501-513.

18. Schacher, D.L. & Church, B. (1992). *Auditory priming: implicit an explicit memory for words and voices.* Journal of Experimental Psychology: Learning , Memory and Cognition, vol. 18, pp. 915-930.

19. Schacher, D.L. & Church, B. & Bolton, E. (1995). *Implicit memory in amnesic patients: Impairment of voice specific priming.* Psychological Science.

20. Schacher, D.L., Church, B. & Treadwell, J. (1994). *Implicit* memory *in amnesic patients: Evidence for spared auditory priming.* Psychological Science, 5, 20-25.

21. Squire, L. R., (1986). *Mechanisms of memory*. Science, 232, 1612-1619.

22. Squire, L.R. & McKee, R. (1992). *The influence of prior events on cognitive judgements in amnesia.* Journal of Experimental Psychology: Learning, Memory and Cognition, 18, 1837-1841.

23. Tulving, E. (1989). *Memory: performance, knowledge and experience*. The European Journal of Cognitive Psychology, vol. 1, 3-26.

24. Zola-Morgan, S., & Squire, L. R. (1984). *Preserved learning in monkeys with medial temporal lesions: Sparing of motor and cognitive skills*. Journal of Neuroscience, 4, 1072-1085.

25. Zola-Morgan, S., & Squire, L. R. (1985). *Amnesia in monkeys following lesions of the mediodorsal nucleus of the thalamus*. Annals of Neurology 17, 558-564.

26. Warrington, E. K., & Weiskrantz, L. (1970). *The amnesic syndrome: Consolidation or retrieval?* Nature, 228, 628-630.

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APPROCHE PSYCHOPHARMACOLOGIQUE DANS LE TRAITEMENT DE L'AUTISME

CRISTINA BACONSCHI-MUREŞAN

ABSTRACT. **Psychopharmacological Approach in the Treatment of Infantile Autism.** The aim of the psychopharmacological treatment for children with autism is, as we already know, to diminish the behavioral symptoms and to promote development and learning. The pharmacotherapy is able to make the autistic child readier to receive specialized education, behavioral therapy and other psychosocial treatments. The studies showed that some of the medicines were in the same time effective and without any danger as administrated for a short period of time.

1. Introduction

La littérature de spécialité retient, en général, comme un dénominateur commun la soit-disante impossibilité de traiter l'autisme. Néanmoins des recherches contemporaines démontrent que la pharmacothérapie, c'est-à-dire l'utilisation d'un médicament sans danger et qui soit efficace, peut être prise en considération comme une modalité de traitement qui peut rendre l'enfant autiste plus accessible à l'éducation spéciale, à la thérapie comportementale et à d'autres approches psychoéducatives, voire augmenter l'effet de ces traitements. Une ligne de conduite thérapeutique complète et soigneusement planifiée, adaptée aux besoins de l'enfant autiste et entraînant une diminution des symptômes comportementaux, peut, par voie de conséquences, favoriser le développement et les apprentissages et a des chances d'aboutir à une amélioration évidente.

Il faudrait ajouter que l'un des principes de base pour tout traitement médicamenteux dans le cas de l'autisme est identique à celui de n'importe quelle thérapie: plus l'enfant est petit, plus les résultats sont meilleurs. En effet, aussi longtemps qu'un médicament n'a pas été administré à des enfants en bas âge (2-3 ans), on ne saurait l'éliminer en tant que traitement possible.

Il est également vrai que la pharmacothérapie n'est pas considérée comme une intervention souhaitable par certains spécialistes. C'est pour cela que dans beaucoup d'institutions cette méthode n'est pas prise en compte, même si elle est à même de soulager certaines manifestations présentes chez l'enfant autiste. Dans d'autres établissements, un médicament psycho-actif n'est prescrit que lorsque d'autres interventions ont échoué ou lorsque le comportement de l'enfant devient intolérable et trop distructif. Cette attitude persiste encore, bien que l'expérience et la recherche reconnaissent que certains médicaments peuvent modifier des comportements inadaptés, surtout s'il n'y a pas d'effets secondaires graves, lorsqu'ils sont administrés pour une courte période et utilisés en synergie avec des techniques de modification du comportement et/ou d'éducation spécialisée. Aussi, ces pratiques complexes aident-elles l'enfant à acquérir des capacités essentielles pour une vie quotidienne près de la normale.

Notre commentaire se veut une présentation des différentes étapes de la recherche pharmacologique et des résultats obtenus dans la réduction de la symptomatologie de l'autisme infantile.

2. Le traitement et sa durée

Comme pour d'autres maladies considérées incurables et non seulement, il n'existe pas de médicament unique, spécifique, pour le traitement des enfants autistes. Les agents psycho-actifs disponibles actuellement, qui ont demontré leur valeur thérapeutique dans certains cas, semblent notamment très efficaces pour réduire certains symptômes-cible. Comme le constatait M. Campbell[1], les enfants dont les symptômes sont décrits comme hyperactivité, agressivité, impulsivité, stéréotypies et retrait, réagissent le mieux aux neuroleptiques majeurs tels que l'halopéridol. Les enfants qui présentent en alternance des symptômes d'hypo- et d'hyperactivité paraissent aussi bien réagir à ce médicament. Les expériences ont démontré que seuls les enfants hypo-actifs et anergiques, avec peu d'initiative, ne réagissent pas à l'halopéridol, dont ils ne rendent manifestes que les effets indésirables, en particulier, la somnolence et le retard psychomoteur.

D'ailleurs, les informations sont plutôt absentes lorsqu'on parle des enfants autistes hypo-actifs, anergiques, apathiques, qui ont peu ou pas

[1] M. Campbell, B. Geller, I. L. Cohen (1977), *Current status of drug research and treatment with autistic children*, in *Journal of Pediatric Psychology,* 2, p. 153.

d'initiative et manifestent du retrait. D'après les données offertes par M. Campbell, L. T. Anderson et A. Small[2], la L-dopa et la triiodothyronine (T_3) paraissent réduire ces symptômes «négatifs» et augmenter la production verbale chez certains d'entre eux. (Ex.: l'administration de la trifluopérazine, à fortes doses à une petite fille de 2 ans, a été associée à une amélioration générale, tandis que l'interruption de l'admnistration du médicament avait eu pour suite un retour rapide de l'apathie, de l'anergie et de l'hypo-activité).

Les mêmes auteurs mentionnent le fait que dans les cas d'automutilation grave ou d'agressivité et, où la modification du comportement et les médicaments standards ne réussissent pas à réduire les manifestations dangereuses, l'administration du lithium peut être indiquée.

L'expérience clinique a montré qu'il était possible de dire au bout de trois ou quatre semaines si un médicament est efficace ou non dans l'amélioration des symptômes-cible, lorsque le dosage est titré. Aussi, on devrait interrompre tous les quatre à six mois un traitement par un médicament considéré comme efficace, pour voir si l'enfant nécessite la poursuite de la pharmacothérapie et si des phénomènes de retrait n'apparaissent pas quand on le supprime.

Dans un inventaire des effets indésirables des médicaments et de leur évaluation, M. Campbell, W.H. Green et S.I. Deutsch[3] ont affirmé que tout au long de la période ou le/les médicament(s) est/sont administré(s) et aussi pendant au moins un mois après son/leur arrêt, un minutieux monitoring clinique et de laboratoire est requis. Chez de nombreux enfants autistes qui participent à un programme de traitement complet, il arrive que l'administration du médicament ne soit plus nécessaire après six mois de traitement.

Dans la pratique quotidienne, la prescription d'un médicament à un patient se fait généralement par essais et erreurs et l'efficacité doit être déterminée individuellement pour chaque cas. Dans la recherche, cette évaluation doit se faire sur la base d'études bien étapisées, avec un nombre convenable de sujets homogènes et l'utilisation d'échelles d'évaluation ou de mesures sensibles aux changements dus à la médication.

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[2] M. Campbell, L. T. Anderson, A. M. Small (1978), *A comparision of haloperidol, behavior therapy and their interaction in autistic children*, in *Journal of the American Academy of Child Psychiatry*, 17, p. 640.

[3] M. Campbell, W. H. Green, S. I. Deutsch (1985), *Childhood ans Adolescent Psychopharmacology*, Beverly Hills, Sage Publications, p. 185.

3. Les recherches contemporaines en pharmacothérapie

I. De 1966 à 1978

La période mentionnée est caractérisée par B. Fish[4] par la mise en place des bases de la recherche en psychopharmacologie concernant les enfants autistes. Il s'agissait de chercher des médicaments plus efficaces et moins dangereux pour des patients chez lesquels une diversité de traitements n'avait entraîné que de faibles améliorations. Selon une observation importante de B. Fish, les enfants autistes réagissent médiocrement au neuroleptiques mineurs, par exemple la chlorpromazine, et présentent souvent, même à des doses faibles, une sédation, sans qu'aucune amélioration clinique visible puisse être observée. Avec l'administration d'un neuroleptique majeur, tel que la trifluopérazine, une diminution des symptômes a pu être obtenue, sans qu'elle soit accompagnée de sédation, état qui empêche les apprentissages.

Divers autres médicaments présentant des propriétés stimulantes ont également été explorés pour favoriser l'acquisition du langage et des comportements adaptatifs et sociaux. Toutefois, ces traitements qui incluaient l'imipramine, la d-amphétamine, la triiodothyronine, le L-dopa, n'ont entraîné, dans l'expériment de B. Fish, d'effets positifs que chez quelques enfants ou bien ces effets ont été minimisés par les effets secondaires indésirables. En général, les résultats ont montré le fait que les dopaminergiques et spécialement les d- et l-amphétamines produisent des effets médiocres.

II. De 1978 à 1985

Pour cette période, ce qui est le plus caractéristique, c'est l'évaluation systématique et critique de l'antidopaminergique puissant (considéré comme un neuroleptique majeur) qu'est l'halopéridol. Comme les diverses études de J. C. Young[5] le démontrent, un sous-groupe d'enfants autistes manifestent de manière incontestable un excès d'activité dopaminergique et, d'après les traités pharmacologiques et biochimiques, l'halopéridol est un agent antidopaminergique puissant.

Dans une étude effectuée en 1978 par M. Campbell et L. T. Anderson sur un groupe de 40 enfants autistes d'âge préscolaire soigneusement

[4] B. Fish, T. Shapiro (1966), *Long-term prognosis and the response of schizophrenic children to drug therapy: A controlled study of trifluoperazine*, in *American Journal of Psychiatry*, 123, p. 32-33.

[5] J. C. Young, M. E. Kavanagh, G. M. Anderson (1982), *Clinical neurochemistry of autism and associated disorders*, in *Journal of Autism and Developmental Disorders*, 12, p. 148.

diagnostiqués, les résultats ont démontré que l'halopéridol (administré à des doses de 0,5 à 4 mg/j, soit une moyenne de 1,65) était significativement supérieur au placebo dans la réduction du retrait et des stéréotypies. A ces doses, le médicament n'avait pas d'effets contraires sur la cognition et les auteurs n'ont pas observé d'effets indésirables non plus.

Une autre étude a été programmée pour évaluer les effets de l'halopéridol sur l'apprentissage discriminatif, sur les symptômes comportementaux dans certaines conditions d'écologie du milieu et pour mesurer les taux du médicament dans le sang (L. T. Anderson, M. Campbell et D. M. Grega). Quarante-cinq enfants âgés de 2-7 ans ont participé à l'étude. Les résultats indiquent le fait que l'halopéridol administré de 0,5 à 3 mg/j a été supérieur au placebo dans la réduction du retrait, des stéréotypies, de l'hyperactivité, des affects de colère, du négativisme et de l'incapacité de se tenir tranquille. Dans le laboratoire automatisé, l'administration de l'halopéridol a été associée avec une certaine facilité acquise dans l'apprentissage discriminatif, alors qu'aucun effet significatif n'a pu être constaté sur les stéréotypies, l'hyperactivité et «l'activité sur le tapis». L'analyse effectuée dans la classe a démontré le fait que le comportement inadapté, évalué par les enseignants, a diminué de manière considérable. Le dosage pour l'administration du médicament a été calculé pour chaque sujet; à des doses thérapeutiques, aucun effet contraire n'a été remarqué. Au-dessus des doses thérapeutiques, les effets secondaires de l'halopéridol les plus fréquents ont été : une sédation excessive et une réaction dystonique aiguë. L'halopéridol reste efficace pour réduire les symptômes lorsqu'il est administré à long terme, jusqu'à quatre ans et demie et il n'a pas d'incidence négative sur le Q.I. des patients. Cependant, son administration pendant une période de trois ans et demie et jusqu'à quatre ans et demie a été associée, comme l'affirment M. Campbell et W. H. Green[6], au développement de dyskinésies tardives réversibles ou de retrait, dans 22% des cas. M. Campbell remarque aussi le fait que sur la croissance staturale l'effet à long terme ne paraît pas significatif.

III. De 1982 à 1986

La recherche de nouveaux médicaments plus efficaces et plus inoffensifs pour le traitement de l'autisme infantile a continué pendant cette période, caractérisée par de vastes études multicentres et par certaines études

[6] M. Campbell, W. H. Green, S. I. Deutsch (1985), *Childhood and Adolescent Psychopharmacology,* Beverly Hills, Sage Publications, p. 185.

individuelles sur la fenfluramine et la naltrexone. La raison pour laquelle ces deux médicaments ont été choisis concerne leurs propriétés biochimiques: la fenfluramine est un agent antisérotoninergique, alors que la naltrexone est un agent antimorphinomimétique puissant.

R. Ritvo[7] et ses collaborateurs ont émis l'hypothèse que les anomalies comportementales et cognitives chez les enfants autistes étaient associées à des anomalies du système sérotoninergique; les chercheurs sont partis de l'idée qu'une réduction des taux de sérotonine dans le sang par un agent antisérotoninerqique puissant entraînerait une diminution des comportements inadaptés. Au cours de la période de quatre mois de cette étude, 33% des sujets ont bien réagi à la fenfluramine. Les améliorations des comportements ont été accompagnées d'augmentations significatives des Q.I. verbaux et de performance; une corrélation inverse a été enregistrée entre la réponse clinique et les taux originels de la sérotonine. Des taux originels plus faibles de la sérotonine étaient associés à des Q.I. plus élevés. Les auteurs ont donc constaté que la réduction de la sérotonine par l'intermédiaire de la fenfluramine était importante chez tous les sujets.

Dans une étude pilote sur la fenfluramine réalisée par M. Campbell avec 10 patients dont les âges allaient de 3 à 6 ans, la réponse clinique a été liée à un Q.I. faible. A des doses de 1,09 à 1,78 mg/kg/j, les effets tranquillisants ont favorisé une diminution de l'instabilité, des accès de colère, de l'automutilation, de l'agressivité et de l'hyperactivité et une amélioration du sommeil. L'auteur a considéré que le fait d'obtenir de la part des sujets une relation avec autrui plus consistante et des expressions faciales animées était le résultat des effets stimulants de la fenfluramine. Une perte de poids passagère a constitué l'effet secondaire le plus constant, à part la somnolence; cette dernière n'a été observée que pour des doses supérieures aux doses thérapeutiques.

Certains chercheurs, comme J. C. Young et M. E. Kavanagh[8] ont considéré, en prenant comme point de départ leurs études, qu'un sous-groupe d'enfants autistes présentent des anomalies du système opioïde endogène. L'administration, dans ce cas, des antimorphinomimétiques a entraîné une diminution de l'automutilation chez quelques sujets retardés mentaux. La naltrexone, antimorphinomimétique oral puissant, a été efficace pour diminuer l'agressivité sévère, l'hyperactivité à long terme,

[7] E. R. Ritvo, B. J. Freeman, E. Geller (1983), *Effects of fenfluramine on 14 outpatients with the syndrome of autism*, in *Journal of the American Academy of Child Psychiatry,* 22, p. 549.

[8] J. C. Young, M. E. Kavanagh, G. M. Anderson (1982), *Clinical neurochemistry of autism and associated disorders*, in *Journal of Autism and Developmental Disorders*, 12, p. 152.

l'impulsivité, le retrait et les stéréotypies, lors d'une adminstration de courte durée. Le sujet de l'expérimentation, enfant de 5 ans, a manifesté aussi une augmentation de la production du langage sous l'effet du médicament. Les seuls effets secondaires observés ont été une hyperactivité temporaire et un comportement de type «hébété».

4. Conclusions partielles

Les recherches et les expérimentations concernant l'utilisation de la pharmacothérapie dans le traitement de l'autisme infantile ont, certes, démontré leur efficacité. Il n'est pas moins vrai que les futures explorations médicamenteuses doivent tenir compte d'une intervention simultanée des pharmacothérapies et des méthodes psychosociales et psychoéducatives, conçues comme des volets complémentaires d'une finalité commune. (A suivre).

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LA MODIFICATION DE LA CONTRIBUTION INFORMATIONNELLE ET LES IMPLICATIONS DE CES MODIFICATIONS SUR LE LANGAGE ORAL

MARIA DORINA ANCA

ABSTRACT. **The Modication of the Sensory-Informational Contribution and it's Impact on Oral Language.** The aim of the present study is to show the impact of hearing impairement on the constitution of oral language and to show effectiveness of other sensorial modalities in the accomplishment on this task. I made a synthesis of the bibliographical date in concerning research in the field of new linquistic modalities and the inside language.

Introduction

La sourdité représente un expériment naturel pour les recherches de psycholinquistique. En tenant compte de sollicitations de la pratique dans le domaine de la psychopédagogie des déficiences d'ouïe, des recherches des mécanismes de perception et du traitement de l'information linguistique ont toujours été possibles et le sont encore. On s'arrêtera sur trois cathégories de recherches dans ce domaine.

I. *Des recherches qui visent le rôle des informations auditives dans la constitution du langage verbal, ainsi que le rapport entre les informations auditives et d'autres cathégories d'informations sensoriales impliquée dans le traitement linquistique.*

II. *L'utilisation de nouveaux milieux linquistiques pour l'amélioration de la communication et pour l'augmentation de l'efficience de l'information dans des processus et des activités linquistiques et cognitifs.*

III. *L'investigation du langage intérieur qui veut surprendre la nature des représentations mentales des enfants qui ont des déficiences d'ouïe, ainsi que l'évaluation de l'efficience de ces représentations dans des activités comme la lecture, l'application de l'ortographe, la mémorisation.*

I. Le rôle des différentes informations sensoriales dans le traitement linquistique.

1. La perception sur la voie visuelle de la parole

Il y a de recherches qui mettent en valeur la liaison étroite entre la voie auditive et celle visuelle, elles se réfèrent au *phénoméne de l'interaction auditiv-visuelle*. McGurk et Mac Donald[1] ont étudié ce phénoméne en ce qui concerne la perception de la parole. Ils ont démonstré que, si sur le canal auditif on donne des informations qui contredisent celles fournies par la lecture labiale, l'information visuelle influencera inévitablement ce qui est entendu.

Le phénoméne de l'interraction auditiv-visuelle a été mis en valeur dans les tâches de mémorisation à court terme. Si sur la voie auditive on présente une liste d'items (mots, chiffres, syllabes sans signification) et si on sollicite l'évocation de ceux-ci dans l'ordre de leur présentation, on peut remarquer que les derniers items sont mieux retenus que ceux qui se trouvent au milieu de la liste. Ce qui est intéressant c'est que ce phénoméne n'apparaît pas à la présentation de la même liste sous forme écrite. On suppose que cet effet apparaît grâce au type de mémoire sensoriale spécifique à la modalité auditive, ce qui explique l'abscence de l'effet pour les mots écrits. Le même effet a été mis en evidence pour les stimuli présentés par la labiolecture. La lecture labiale, comme l'information auditive d'ailleurs laisse un tracé sensorial qui est transformé par les mécanismes de traitement de l'information phonologique.

Ces recherches montrent que les formes auditives et verbales de la parole, partagent une structure commune de traitement du signal dans les processus de perception de la parole (Summerfield[2]). Des nos jours on considère que l'objet de la perception verbale n'est ni pur auditif, ni pur visuel, ce que le sujet perçoit ce sont les *gestes articulatoires executés à l'intention communicative.*

[1] H. McGurk and J. Mac Donald (1976), *Hearing lips and seeing voices,* "Nature", pag.264.

[2] Q. Summerfield (1991), *Visual Perception of Phonetic Gestues,* I.G. Mattingly & M.S. Kennedy (Eds.) Modularity and the Motor Theory of Speech Perception. Hillsdale: L.E.A.

2. Mécanismes de perception de la parole

En ce qui concerne les mécanismes de la perception de la parole, i ly a encore des divergences:

- Liberman et Mattingly[3] ont formulé la *théorie motrice de la parole*, théorie qui soutient l'existence d'un trasé spécialisé pour la perception phonétique qui traite les informations auditives mais les informations visuelles aussi. Ce système est inné, mais il est modélé à la suite d'un processus d'adaption selective pour la modification des gestes articulatoires.
- Fowler[4] propose une théorie dérivée de la théorie de la perception directe (Gibson, 1979), selon cette théorie, dans la perception de la parole on peut utiliser non seulement les informations auditives et visuelles mais toutes les informations pertinentes qui existent dans l'environnement. Par conséquent, le système de traitement de l'information ayant une charge linquistique peut être activé par les signaux non-naturels si ceux-ci possèdent une valeur phonémiques.

La dernière théorie est soutenue par des recherches qui ont évidencié la production de *l'effet McGurk* à la présentation simultanée de stimuli divergents sur les voies auditive et tactile. La perception de la parole peut utiliser des informations fournies par la voie auditive si celles-si ont une valeur phonémiques. En conséquence il est possible que *l'être humain puisse apprendre à extraire du milieu des informations pertinentes en ce qui concerne les contrastes phonémiques, même si ces informations ne sont pas liées naturellement à la perception-production de la parole*.

3. Le développement de la perception de la parole

Dans la tentative de trouver une réponse à la question si le traitement bimodal (auditf-visuel) des informations linquistiques est inné ou acquis, on a realisé une série de recherches sur les nouveaux-nés:

- dès la naissance les enfants peuvent s'orienter vers la source sonore;

[3] A. M. Liberman & I. G. Mattingly (1985), *The motor Theory of Speech Perception Revised.* "Cognition", 21.

[4] C.A. Fowler (1991), *Listening with Eye and Hand. Cross-Modal Contribution to Speech Perception,* "Journal of Experimental Psychology", 17, 816-828.

- á 3 ou 4 mois les enfants répondent différemment aux signaux auditifs, verbaux, en fois ont comparaison avec des signaux auditifs d'autre nature;
- á 10-16 semaines le temps du maintien de l'attention est plus long si les sons et les mouvements des lèvres sont synchronisés que dans la situation ou ceux-ci ne sont pas synchronisés.

Ces constatations soutiennent l'idée que dès les premiers mois de vie il y a des habiletés sophistiques de traitement de l'information linquistique, *habiletés qui permettent de traiter différemment les stimuli linquistiques et ceux nonlinquistiques, mais aussi le fait qu'on traite linquistiquement non seulement les stimuli perçus sur la voie auditive mais aussi ceux qui sont perçus sur la voie visuelle.*

Les représentations mentales qui résultent par le traitement des informations linquistiques seront très complexes parce que dès l'âge tendre ces représentations incluent aussi bien les informations auditives que les informations visuelles liées par l'intérmédiaire de la lecture labiale. Autrement dit, *les représentations des bébés, qui se réfèrent aux informations linquistiques, sont bimodales*, les mécanismes responsables de la modification de ces informations sont inées.

Ces conclusions permettent la réalisation d'une interférence liée par la transformation des informations linquistiques par les personnes sourdes. Même si les sourds congénital doivent élaborer des représentations mentales de la parole en partant des informations visuelles, théoriquement il est possible que ces représentations atent des points communs avec celles des entendants.

II. Langage parlé complété (L.P.C.)

1. La description de la méthode[5]

L.P.C. consiste dans la réalisation des configurations manuelles, nommées clées, qui sont disposées autour de la bouche. Ces clées complètent les images labiobuccales, facilitent la réception et le décodage de la parole en

[5] J.M. Capouillez & O. Périer (1987), *Langage Parlé Complété et Français Signé*. "Questions de logopedie. L'enfant a l'ouie deficiente". Périodique, coord. Walter van Bers, 14, pag. 80-97, Belgique.

réduisant l'ambiguité. L.P.C. n'est pas un code en soi, il complète seulement la lecture labiale, réduit l'ambiguité en contribuant à l'appropriation du système phonologique y compris le système morphosyntaxique.

2. L'influence de L.P.C. sur l'acquisition lexicale

On a suivi les influences de L.P.C. sur la nature des acquisitions lexicales en comparant l'acquisition de ces éléments dans des conditions habituelles, c'est à dire chez les enfants entendants et chez les groupes d'enfants ayant une déficience auditive et qui ont reçu une éducation stricte oraliste.

Chez les déficients auditifs qui ont reçu une éducation uniquement orale on présente d'abord (dans le cadre du systême éducatif) les mots qui ont un charge significative, ceux qui peuvent donc être présentés dans une manière *objectuelle, imagistique on relationnelle*. Dans le cas où on ne leur donne aucun système d'appui pour la communication orale, les enfants sourds ont la tendance d'élaborer des signes propres pour désigner des objets, des êtres, mais on n'a pas constaté une tendance de recouvrement gestuel des mots ayant une valeur syntaxique.

3. La spécialisation hémisphérique et linguistique

Neville et les col.[6] ont réalisé une série d'investigations sur différentes catégories de sujets ayant des déficits auditifs (différents niveaux de compétences dans le langage gestuel et verbal. Voici une synthèse de leurs constatations:

- la spécialisation hémisphérique n'est pas déterminée par la modalité de la présentation de la langue (visuelle, auditive) mais par présence des caractéristiques morpho-sintaxiques;
- il y a une période critique pour la spécialisation hémisphérique, en ce qui concerne le traitement des informations linguistiques;
- la symétrie hémisphérique pour les mots de liaison est un indicateur pour la stimulation des mécanismes de traitement syntaxique;
- l'acquisition précoce d'un langage formel (gramatical) est la condition nécessaire et suffisante pour la consolidation de la

[6] H.J. Neville (1991), *Whence the Specialisation of the Language Hemisphere,* in I.G. Mattingly & M.S. Kennedy (eds.), Modularity and the Motor Theory of Speech Perception. Hillsdale: L.E.A.

spécialisation hémisphérique pour le traitement du langage, qui est déterminé génétiquement.

4. Le rôle de L.P.C. dans l'acquisition des habiletés syntaxiques

Des nombreuses études, parmi lesquelles celles de Mogford[7] ont visé les habilités morpho-syntaxiques par l'investigation des habilités de flexion et de dérivation. Les conclusions ont établi que les règles de flexion peuvent être maitriser plus facilement que ceux de dèrivation. On a constaté un retard considérable chez les sourds face aux entendants et certains auteurs soutiennent non seulement un rétard mais aussi un dévience (ex: la réalisation de l'accord se fait en tenant compte de la voyelle finale du mot cible et pas de son nombre ou de son genre. Il paraît que l'exposition à la langue de signes ne facilite pas l'acquisition des règles syntaxiques de la langue orale. De même, ni la labiolecture seule ne constitue un moyen suffisant pour obtenir les informations dans ce domain (les fins des mots et les mots de liaison sont difficilement perçus).

L'étude de Karmiloff-Smith (1979, cité par Lepot-Froment and colab.[8] Á mis en valeur, chez les enfants de trois ans une connaissance générative des genre des mots inconnus. Tatiana Slama-Cazacu[9] a investigué une série d'aspects grammaticaux et stylistiques, parmi lesqueles l'expression du génitif-datif, en surprenant les fautes les plus fréquentes faites par les petits-enfants.

Chez les enfants sourds on a évidencié des difficultés en ce qui concerne l'identification et l'expression des genres grammaticaux à cause de la difficulté de perception et de l'emploi de l'information critique, du fin des mots, mais aussi des difficultés dues à l'instabilité des détérminants (articles, adjectifs possessifs, pronoms etc.).

[7] K. Mogford (1988), *Oral Language Acquisition in the Prelinquistically Deaf.* Edinburgh: Churchill Livingstone.

[8] Chr. Lepot-FromentcN. Clerebaut (1996). *L'enfant sourd; communication et langage,* pag. 289-299 *Bruxelles: De Boek Universit*é. pag. 289-299.

[9] T. Slama-Cazacu (1957), *Relații între limbaj și gândire în ontogeneză,* București:E.D.P.

III. Le langage intérieur

Le langage intérieur représente *l'ensemble des représentations construites et utilisées par l'enfant pour réaliser une tâche de: mémorisation verbale, de lecture et écriture, ainsi que des tâches métalinquistiques qui impliquent la segmentation et la manipulation des parties de mots.*

Borel-Maisonny[10] considère que le langage intérieur est égale avec la pensée opérationnelle. Il assure la réalisation du processus intime de la pensée. On souligne le caractère nonsonore de ce langage, l'aspect abrégé, le fait qu'il dérive de la parole extérieure (chez les entendants).

La recherche de cette forme de langage a comme point de départ les formes extérieures, qui chez le sourd en train de demuetisation sont: la mimico-gesticulation et la communication orale et écrite. On peut enregistrer les périodes latentes qui apparaissent dans l'expression du même contenu de la pensée par mimico-gesticulation ou par le langage oral, ou on peut enregistrer les kinestésies articulatoires dans différentes étapes de la demuetisation (C. Pufan[11]). Selon cet auteur le langage intérieur opère avec des images et ses symboles, des aspects indispensables pour la formation et le fonctionnement de la pensée en images, spécifique au sourd-muet. A mesure que le mimico-gesticulation se schématise, dans le langage intérieur les transformations qui se produisent mènent à la simplification et à la synthèse de ce langage.

On se demande si *ce médiateur cognitif peut se développer en l'absence de l'information auditive, considérée comme étant la variable fondamentale dans le processus de l'élaboration du langage intérieur*. Autrement dit, si chez les sourds profond, congénital, le langage intérieur est similaire à celui des entendants quelle est son efficience cognitive, étant donné que les performances de ces sujets sont plus faibles que celles des entendants dans des tâches qui font appel à cette forme de langage.

Dodd (1977, 1987, cité par Lepot-Froment and col.[12]) soutient que le langage interne peut être élaboré conformément aux informations perçues par la lecture labiale, mais dans ces cas on constate des différences entre ce type de langage interne et celui élaboré conformément aux informations complexes et complètes: auditives et visuelles.

[10] S. Borel-Maisonny (1969), *Education auditive et perceptive,* "La revue du practicien", no.20.
[11] C. Pufan (1982), *Probleme de surdo-psihologie,* pag. 136-139, București: E.D.P.
[12] Idem 8, pag. 299-312.

L'habileté de manier des fragments de mots (parties) en liaison étroite avec l'assimilation de la lecture dans un système alphabétique, peut être investiguée en fonction de plusieurs tâches: de détection et de production des rimes, de mémorisation, de lecture, d'écriture.

1. Tâches de détection et de production des rimes

Chez les enfants entendants l'habileté de juger si deux mots riment, se développe avant du début de l'assimilation formale de la lecture. On sait que les jugements s'élaborent en fonction d'indicateurs phonologiques et dans certains cas des ceux ortographique. Chez les enfants qui ont des déficiences auditives précoces et profondes, on a constaté que dans ces tâches des indicateurs ortographiques sont mis au travail sans tenir compte de la présentation de l'information linguistique: sous forme graphique ou imagistique. Ces indicateurs sont plus efficients parce que les représentations élaborées conformément au langage écrit à la lecture labiale, qui ont un degrée plus grand d'instabilité. On a constaté *l'existence d'une corrélation positive entre ces tâches de détection des rimes et l'age de la lecture.*

Charlier[13] a comparé les résultats aux tâches de détection des rimes sur différents lots de sujets et dans des différentes conditions expérimentales. Selon lui, lorsque les sujets s'appuient dans leur jugement seulement sur la lecture labiale il y a des choix possibles pour les mots qui ne riment pas mais qui présentent des similitudes labiales. Il est possible qu'on réalise des comparaisons entre les résultats des sujets sourds et ceux qui entendent ayant le même niveaux de développement de la lecture. *En tant que variables on peut manipuler: la congruence ortographique des deux mots et le type de stimulus (mots ou images).* Lorsque les mots sont présentés sous leur forme écrite, *la congruence ortographique* va intervenir, dans tous les cas, comme critère, mais dans le cas des stimuli non-congruents du point de vue ortographique et lè, ou la présentation se fait sous la forme des images, la production des rimes sera, avec certitude, le témoignage d'une stratégie phonologique. Pour résoudre ces tâches, les sourds qui ont bénéficié de LPC ont demontré qu'ils ont des compétences pour opérer avec des informations phonologiques.

[13] B. Charlier (1994), Complete Signed and Cued French. An Original Signed Language-Cued Speech Combination, "ASHA", 137.

2. Tâches de mémorisation

L'investigation du functionnement des capacités phonologique se fait par l'intermédiaire de certaines tâches de reproduction des séries de mots juste aprés la présentation, dans l'ordre de leur réception. On a démontré que les entendants opèrent avec des informations *sous forme verbale*, durant les tâches de mémorisation et de reproduction immédiate, en suivant l'ordre des items, qui peuvent être denommés, sans tenir compte de la manière de leur présentation (images, objets, mots écrits). Le recours au langage intérieur n'est pas la solution de ces tâches, mais il est, sűrement, le plus efficient. Pour les mêmes tâches on peut utiliser des répresentations gestuelles aussi (imagistiques). Conformément au schéma de la mémoire verbale de travail, selon Badeley (1994, cité par Lepot-Froment), on peut trouver une explication pour les difficultés qui apparaissent chez les enfants sourds dans les tâches de mémorisation. A cause du *codage phonologique* des confusions apparaissent aux tâches d'évocation immédiate des mots présentés sous forme écrite, lorsque ces mots riment. Cet effet est moindre que chez les entendants et il n'apparait pas chez tous les soujets sourds.

L'effet de la rime, selon P. Oléron[14] est plus frappant quand le matériel verbal est présenté sous forme écrite que s'il était sous forme d'images ou d'objets. Les enfants entendents ont de meilleurs résultats si les paires de mots (images) riment. Les enfants sourds avec LPC ont des résultats plus modestes s'ils doivent évoquer des mots longs ou qui riment, que dans le cas des mots habituels. Cela démontre que c'est le codage phonologique qui intervient et que la *boucle articulatoire* est mise au travail, mais qui dans le cas de ces enfants agit par la détérioration de la performance dans certaines conditions: rimes.

3. Lecture et écriture

En dépit de la considèration que l'assimilation de la lecture et de l'écriture par les enfants sourds ne devrer pas poser des problémes pour ceux –ci, cette opinion a été systémetiquement infirmée. On a évidencie des difficultés et des retards dans l'assimilation de la lecture et de l'écriture chez

[14] P. Oléron (1981), *Aspects recentes de l'étude psychologique de enfants sourds,* Les enfants handicapés, coord. Harrison-Covello et colab, Paris: PUF.

les enfants sourds. Selon Rondal et col.[15] il y a quelques facteurs qui influencent le niveau atteint dans ces domains. L'un d'eux est le degrés de la détérioration auditive.

Les tâches de lecture et d'écriture mettent au travail *les mécanisme de codage phonologique*. Deux modéles théoretique essaient d'expliquer les stratégies d'identification des mots écrits:

a) On commence par surprendre et traiter d'une manière conscientes les regularités et les correspondances entre des considérés comme des segments de la parole, d'ou résulte *la représentation phonologique du mot á identifier*, qui permet l'arrivée à la signification.
b) On part des connaissances sur les aspects ortographiques des mots stockés en MSD, même si on fait la liason entre la forme du mot et une séquence phonologique qui porte la signification.

On se demande si les sourds utilisent les règles de correspondances phonème-grafème pour les opérations de lecture et d'écriture. Certaines opinions considèrent que les sourds identifient (ou produisent) des mots écrits globalement, comme dans l'écriture chinoise (idéogrames). Il y a des recherches qui en dèpit de l'infirmation de cette hypothése, surprennent toutefois les différences entre les sourds et les entendants en ce qui concerne le traitement de l'information écrite. Cele serait dű aux représentations ambiguu sur la parole, à cause du caractère vague et incomplet de la lecture labiale. *Le test critique est la tâche de lecture et d'écriture des mots nouveaux et des pseudo-mots*.

[15] J. A. Rondal & B. Piérart (1989), *Les troubles de l'audition et leur réeducation,* Psychopedagogie de l'éducation specialisée: aperçu théoretique, recherches et pérspéctive, vol. III, Problemes "physiques", Bruxelles: Labor, pag. 23-68.

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ON LINGUISTIC COMPETENCE

ALINA PREDA

ABSTRACT. Chomsky's 'Methodological Preliminaries' is an attempt to outline the requirements that have to be met by any grammar that aims to account for the speakers' capacity to generate and understand an indefinitely large number of sentences they have never heard before. By pointing out the limitations of traditional and structuralist grammars, which give no account of linguistic universals, but only of particularities characteristic of individual languages, Chomsky tries to clarify the need for a generative grammar in the study of language. Generative grammar seems to be the only one possessing the necessary tools for solving the puzzle of language acquisition, by not only describing the intrinsic competence of the speaker, but by also providing an explicit analysis of his contribution.

Keywords: linguistic competence, linguistic universals, internalised grammar, generative grammar.

Chomsky's 'Methodological Preliminaries' is an attempt to outline the requirements that have to be met by any grammar that aims to account for the speakers' capacity to generate and understand an indefinitely large number of sentences they have never heard before. Starting from the Humboldtian idea that language is based on a system of rules that determines the way in which speakers interpret and generate an infinitude of sentences, Chomsky draws our attention to the concept of "underlying competence as a system of generative processes"(Chomsky 1965, p. 4). By pointing out the limitations of traditional and structuralist grammars, which give no account of linguistic universals, but only of particularities characteristic of individual languages, Chomsky tries to clarify the need for a generative grammar in the study of language.

Modern linguistics has attacked traditional and structuralist grammars and also rejected universal grammars, but has failed to provide descriptive adequacy, being unable to account for the creative aspect of language use and for the existence of linguistic universals. The idea of a 'natural order of

thoughts' mirrored by word order is misleading and naďve. This way of looking at language is equivalent to using questions as answers: instead of questioning, we use what should be explained as an explanation in itself. Generative grammar seems to be the only one possessing the necessary tools for solving the puzzle of language acquisition, by not only describing the intrinsic competence of the speaker, but by also providing an explicit analysis of his contribution (see Chomsky 1965, p. 4). The image of generative grammar conveyed by Chomsky in the first chapter of 'Methodological Preliminaries' is as follows: a grammar that describes the speaker-hearer's intrinsic competence, provides an explicit analysis of his contribution during linguistic performance, accommodates the creative aspect of language and accounts for linguistic universals. A generative grammar is a system of rules that explicitly assigns structural descriptions to sentences and "attempts to specify what the speaker actually knows, not what he may report about his knowledge", because although it is clear that

> "every speaker of a language has mastered and internalized a generative grammar that expresses his knowledge of his language [this] is not to say that he is aware of the rules of the grammar or even that he can become aware of them, or that his statements about his intuitive knowledge of the language are necessarily accurate" (1965, p. 8).

In the second chapter of 'Methodological Preliminaries' Chomsky summarises the study of performance models and,~by showing its limitations of memory, time and access~, defends generative grammar from the criticism that it concentrates on competence at the expense of performance:

> "the only studies of performance [...] are those carried out as a by-product of work in generative grammar. In particular, the study of memory limitations [...] and the study of deviation from rules, as a stylistic device, have developed in this way. Furthermore, it seems that these lines of investigation can provide some insight into performance. Consequently, this criticism is unwarranted, and, furthermore, completely misdirected. It is the descriptivist limitation-in-principle to classification and organization of data, to 'extracting patterns' from a corpus of observed speech, to describing 'speech habits' or 'habit structures', in so far as these may exist, etc. that precludes the development of a theory of actual performance" (1965. p.15).

There are not only linguistic, but also psychological and philosophical implications in the case of generative grammar. Stich's definition of grammar relies heavily on the speaker's intuition about language:

> "As I have depicted it, a grammar is a modest portion of a psychological theory about the speaker. It describes certain language-specific facts: facts about the acceptability of expressions to speakers and facts about an ability or capacity speakers have for judging and classifying expressions as having or lacking grammatical properties and relations."

The psychological element is present, whether we deal with 'competence theories', or with 'performance theories'. As Fodor points out (1981, in Katz 1985, p. 154):

> " 'Competence theories' account for facts about the behaviours and capacities of a speaker/hearer by reference to properties of his internalized grammar, whereas 'performance theories' account for facts about the behaviours and capacities of a speaker/hearer by reference to interactions between the internally represented grammar and other aspects of the speaker/hearer's psychology."

The philosophical element is obvious in the parallelism between linguistic theory and the theory of knowledge. While the empiricists considered experience as the source of human knowledge, the rationalists claimed the mind to be site of principles and ideas, which become manifest in the presence of external stimuli in the environment. Chomsky (1965, p. 49) illustrates these beliefs by quoting Lord Herbert who claimed that without these principles "we could have no experience at all nor be capable of observations"; "we should never come to distinguish between things, or to grasp any general nature". As Chomsky points out, Descartes and Arnauld both expressed the idea that senses are not the one and only source of human knowledge:

> "sight…presents nothing beyond pictures, and hearing nothing beyond voices and sounds, so that all these things that we think of, beyond these voices or pictures, as being symbolised by them, are presented to us by means of ideas which come from no other source than our faculty of thinking, and are accordingly together with that faculty innate in us, that is, always existing in us potentially; for existence in any faculty is not actual but merely potential existence, since the very word 'faculty' designates nothing more or less than a potentiality…[Thus ideas are innate in the sense that] in some families generosity is innate, in others certain diseases like gout or gravel, not that on this account the babes of these families suffer from these diseases in their mother's womb, but because they are born with a certain disposition or propensity for contracting them… (Descartes)".

> "It is false, therefore, that all our ideas come through sense. On the contrary, it may be affirmed that no idea which we have in our minds has taken its rise from sense, except on occasion of those movements which are made in the brain through sense, the impulse from sense giving occasion to the mind to form different ideas which it would not have formed without it" (Arnauld).

The parallelism is obvious: linguistic competence is one of those specific faculties that humans are endowed with, which play an essential role in the acquisition of knowledge. This competence enables the native speakers to produce and understand grammatically correct sentences. The speakers do not only acquire the language by being exposed to it, do not learn only the sentences that they hear being pronounced, as it is not through experience and senses only that the process of language acquisition takes place. Humans have an innate capacity for language, which constitutes the basis for language acquisition, a capacity that is productive, and thus accounts for the creative aspect of language use. Children are born with the ability to learn languages, and the particular language(s) they learn depend on the community they grow up in. But they are all endowed with an 'internally represented grammar' that plays a crucial role in the development of a creative command of language. This 'internalized grammar' consists of highly restrictive universal principles, which are to be described and explained by grammarians, as the speakers are not aware of their existence, and unable to explain them. As Leibniz points out, referring to thoughts and ideas, ~ but the similarity is clear:

> "[There are innate general principles that] enter into our thoughts of which they form the soul and the connection. They are as necessary thereto as the muscles and sinews are for walking, although we do not at all think of them. The mind leans upon these principles every moment, but it does not come so easily to distinguish them and to represent them distinctly and separately, because that demands great attention to its acts. [...] Thus it is that one possesses many things without knowing it."

A two-level justification of generative grammar is given in the fourth chapter of Chomsky's study (1965, p. 27). On 'external grounds', on the level of 'descriptive adequacy', generative grammar is justified because it can provide us with a correct description of the linguistic intuition, the 'tacit competence', of the speaker. The much deeper justification, on 'internal grounds', at the level of 'explanatory adequacy', is conferred by the fact that generative grammar is "a

principled descriptively adequate system" which, based on the idea of 'internal representations', enables us to construct a theory of language acquisition.

Linguistic competence, the intuition of the speaker and the notion of 'internal representations' are central to generative grammar. However, all these very important issues were placed under scrutiny and used to attack transformational generative grammar. The attacks were facilitated by certain problems with metalanguage, and by the sometimes insufficiently explicit use of terminology. One of the best-articulated attacks came from Devitt and Sterenly (1987). According to them, the problem with generative grammar seems to be its attempt to simultaneously accommodate both a syntactic description of sentences and the linguistic competence of speakers. While the first problem is a linguistic one, the latter is psychological. Sentences are a 'human product'; linguistic competence is 'a characteristic of the human mind'.

> "A theory of a part of the production of linguistic symbols is not a theory of the products, the symbols themselves. Of course, given the causal relation between competence and symbol, we can expect a theory of the one to have a bearing on a theory of the other. But that doesn't make the two theories identical" (Devitt and Sterenly 1987, p.132).

Due to the 'conflation' of symbols and competence promulgated by generative grammar, the adequacy of the transformational theory is dependent upon the coherence of a highly controversial notion, namely 'internal representation'. As Fodor (1981, p. 152-153) points out:

> "It is thus only because it allows itself free use of 'the internally represented grammar (the internal representation of the grammar)' that the Right View [generative transformational theory] can define truth-for-a-linguistic-theory in the way that it does: as correspondence between the grammar that the theory postulates and the grammar that the speaker/hearer learns. If, then, the notion of internal representation is *not* coherent, the only thing left for a linguistic theory to be true of is the linguist's observations (*de facto,* the intuitions of the speaker/hearer as extrapolated by the formally simplest grammar). Take the notion of internal representation away from linguistic metatheory and you get positivism by subtraction."

Stich (1972, in Katz 1985, p. 143) finds Chomsky's view and his use of words like 'internalization' and 'internal reprezentations' rather confusing:

> "The [generative] grammarian's theory mirrors or describes the knowledge that the speaker has 'internalized' and 'internally represented'. [...] My own view is that the notion of competence is explanatorily vacuous and that attributing knowledge of a grammar to a speaker is little more plausible than attributing knowledge of the laws of physics to a projectile whose behaviour they predict."

The problem with Stich's argument is that it allows a terminology problem to stand in the way of a correct understanding of Chomsky's theory. Let's take one example from 'Methodological Preliminaries', chapter six, where Chomsky presents the language acquisition device to be used for constructing a theory of language:

> "The child who acquires a language in this way, of course, knows a great deal more than he has "learned". His knowledge of the language, as this is determined by his internalized grammar, goes far beyond the presented primary linguistic data and is in no sense an "inductive generalization" from these data"(1965, p. 32-33).

Thus, the task of the generative grammarian, according to Chomsky, is to provide a description of the grammar internalised by the speakers, which determines their knowledge of the language. The fragment above makes it clear that the 'internalized grammar' is not *knowledge* of the language, but something that *determines* the speakers knowledge of the language. To stick with the example used by Stich as a counter-argument, the speaker does not, indeed, have *knowledge* of the rules of grammar, as a projectile does not have knowledge of the laws of physics, because knowledge is supposed to be something we acknowledge and are conscious of. However, it is not absurd to claim that the speaker is endowed with an 'internalized grammar', not learned, but innate, nor is it absurd to say that the laws of physics are part of the design procedure when the projectile is built. On the basis of this 'internalized grammar', the speaker acquires language, just as the projectile reaches its target on account of the laws of physics according to which it was designed. Knowledge of the laws of physics is not necessary for the projectile to reach its target, ~ and from this we cannot conclude that the laws of physics do not exist~, as knowledge of a grammar is not necessary for the speaker to understand and produce grammatically correct sentences,~ and this does not mean that there is no such thing as an 'internalized grammar'. Furthermore, it is exactly these laws that make it possible for the projectile to function and reach its target,

as it is the 'internalized grammar' that makes it possible for the process of language acquisition to take place, and for the speaker to learn the language.

There are, indeed, quite a few instances where Chomsky uses the phrase 'knowledge of grammar', instead of 'internalized grammar', and though the error is regrettable, we should try not to fall into the trap of taking a terminology problem for a mistaken theory. The attempt to avoid repetition, although it does not justify an inadequate use of words, can account for the so confusing lack of consistency and coherence that we encounter at times in Chomsky's papers.

Stich's opinion, according to which the generative account of language doesn't hold unless the notion of 'internalized grammar' makes sense, is correct, it is only his conclusion, based on a misunderstanding, that is mistaken. 'Internalized grammar' does exist, whether referred to as 'knowledge of grammar' (though mistakenly), as 'internally represented grammar', or as 'internal representation'.

REFERENCES

1. Chomsky, N. (1965) *Aspects of the Theory of Syntax*. Cambridge, Massachusetts: M.I.T. Press.
2. Devitt, M., K. Sterelny (1987) *Language and Reality: An Introduction to the Philosophy of Language*. Oxford: Blackwell.
3. Fodor, J. A. (1981) *Some Notes on What Linguistics Is About*. In: N. Block (ed.) *Readings in the Philosophy of Psychology*, vol.II, Cambridge, Massachusetts: Harvard University Press.
4. Katz, J. J. (ed.) (1985) *The Philosophy of Linguistics*. Oxford: Oxford University Press.
5. Stich, S. (1972) *Grammar, Psychology and Indeterminacy*. In: *Journal of Philosophy*, vol. 79, No. 22.

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SCHOOL LEARNING AND INSTRUCTION

RAMONA RĂDUŢ-TACIU

ABSTRACT. A detailed analyses of learning process includes as fundamental components, teaching-learning act, school education and didactic instruction. All of them are organizes as a communication act, taken into account o lot of psycho-pedagogical references.

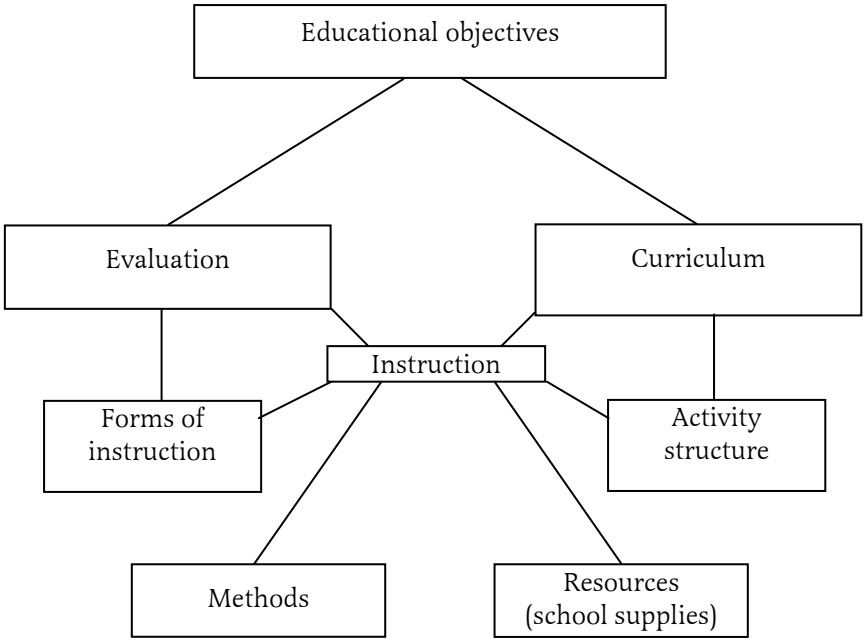
Researches referred to the applicability of "differential pedagogy" or "pedagogical differentiation" is, in fact, a new issue in specialized vocabulary.

It is talking more and more today about a " pedagogy of a person" founded on the dynamic of some interpersonal relations in which pedagogical dialog is the central element.

1. Conceptual Determinations. Particularities. Comparative approach

A detailed analyses of learning process includes as fundamental components, teaching-learning act, school education and didactic instruction. All of them are organized as a communication act, taken into account a lot of psycho-pedagogical references. Following the dynamic learning sequences or of the instruction situations (which sometimes coincide), it can be noted easily and frecquently the formative valence of each pedagogical concept, they get ahead of frame of modern didactisis and reflected into school practice.

For example, instruction overview:



(adaptation after Oprea, Olga – Tehnologia instruirii, EDP, Bucureşti, 1979, cap.I, p.22)

emphasizes that the instruction is a componnent of a general didactics, whose reference discipline gives the framework and apply conditions of theoretical rules. Thus, the instruction process realizes network with educational objectives, with curriculum and all of them are connected through varied methods, resources or other forms contribute at the Evaluation.

Today there is the problem of set again the instruction process on actual and theoretical fundaments without denying the remarkable contributions of the predecessors regarding this field. In this way, Jerome Bruner blaming at a moment learning theories and those of personality development of being so descriptive and unilateral (Pentru o teorie a instruirii, EDP, Bucureşti, 1970, cap.3, p.53). As a psychologist, he treated the problem of cognitive processes, analyzing the education as a social investment. In his point of view, learning is studied descriptively by psychology and its perfecting as a didactic act is the field of theory and instruction methodology, having the tasks:

a. to indicate the best experiences for determining to an individual of an inclination towards learning and in generally towards a particular learning.
b. to indicate the way in which a group of knowledge has to be organized to be understood faster and better by who learns it. The concept of "optimal

structure" is absolute and relative, it refers to a simplification of information, to the generalization possibilities or the transfer of them.

c. to determine the most efficient order in which has to be presented the learning subjects, following all the didactic principles.
d. to precise the nature and the rhytm of rewards, respectively of punishments in learning-teaching process.

In these conditions, not only the instruction gives information to who learns over the relevance of his efforts. Bruner's pedagogic ideas are completed by the contribution in instruction field of Gagne, (Gagne, Robert M., Briggs, Leslie J., Principii de design a instruirii, EDP, București, 1977). Starting with the premise that instruction means the organization of extern condition which conditioning the learning, Gagne noticed the necessity of permanent reconsideration of those conditions depending on the dynamic of tasks and of performances which education follows at a particular moment.

A theory of instruction adapted of learning conditions should constitute the subject of a new didactic. The applicability field of this depending not only the grade of its fundamental rules generalization, and especially on the capacity to intensify the teaching-learning process on its adaptability of diversification the particular learning.

Ethimologic analysis of the concepts of instruction, learning, school education reveals that their semantic sphere make them semnificatively different. So, the latin "instructio" refers to a build something, to arrage, to to furnish, to decorate, but the strict term of "didactis" means to teach somebody something. As a derivation of the verb, the school instruction is a pedagogical category with education and through it it's realized the learning process.

A similar translation ("to teach somebody") is used for teaching. This refers that at the pupils' subjects and also at the teaching-learning process between these permanent pendulating interactive activities.

Instruction doesn't mean only teaching, but Wittgenstein (Caietul albastru, Ed. Humanitas, București, 1993), too demonstrates learning. He specifies that "learning is instruction"; in his point of view instruction means an operating action with which we can associate a visual image of all things. Because of that, learning through instruction drives of the constitution of some psychomecanisms, it accours some identical associations.

Practical, in a wide sense, learning reflects processually the act of experiences obtainig. It has as a general tasks the assimilation of axiological

derivations on the level of human knowledge: knowledge approach, the obtaining and forming of new skills, habitations, dexterity, abilities.

From the references of Liviu Vlăsceanu (1981), it infers that even the instruction, not only the learning has a participation nature. Look what should be the content of these notions and especially their specific finality: "there are transmitted, compared and modified valence... it reorganizes structures being into an social and conscious interaction.. it improves attitudes".

Sometimes the concept of education, coming from the latin"educatio" is translated in "to teach" but education is, in fact, a result of instruction and learning. Forming a pupil means to take him from the natural stage and to bring him to the culture. As a an effect of unfolded activities in view of forming the human being, according to the model proposed by the society, the education remains an unitary process having two distinctive sides:

a. Informative side, based on information transmission, superposed in a way on the instruction.
b. Formative side referred to finding, forming, developing and maturation of the skills, habitation, abilities.

These distinctions could be due to the fact that school, next to other institutions having educational objectives, is implied in the efforts of finding. Building and improving of the human personality seeing as interior – having sensitive, assurance reflexive, anticipative and as exterior opened to the world through communication, action and confronting.

Between learning and human subject who learns and over which he actions, there is a logical paradigm. Taking into account that and thinking about pupil, Gagne defines instruction as "a set of event destinated to initiate, to activate and to support learning at a human being."(Condițiile învățării, EDP, București, 1975, p. 2).

Facing the instruction and learning problems, the teacher can refer himself efficiently at the education issue. For that, he must satisfy the following the three complex actions:

a. to know the theory of school instruction, adecquated to the established objectives through the correlation with thought contents;
b. to recognize the instruction process and to project after a schedule of learning secquences.
c. to identify and to describe the educational situations and proper or unsuitable environments.

The actual field of developing the educational sciences imposes the exceeding of incertitude existed in that field. There is obvious that every theory of instruction cannot be supported totally only on the terminological connections and actual operations. Historical and retrospective analyzing the issues we must admit that before nowadays there were successful things but also errors; the validity of conclusions can be demonstrated, meanwhile the other are contested.

The impulse towards the experimental research, testing, psycho-diagnosis and scholar prognosis remains a very actual task of education.

All the paradigms connected with instruction demonstrated once again that science can't be absolutely precise. We must admit the hazard, too.

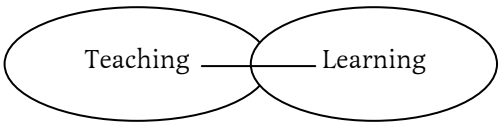
Series of explicative models referred at learning and instruction opened new extents of pedagogical theories. We can analyze following some compulsory steps from the autonomy to the co-evolution of models.

So, respecting the basic structure of the forming of pupil, instruction is an effort of helping and modeling the developing..., a theory over the way in which the developing is helped through the varies resources. In the framework of functional analysis of the learning process, the instruction has the task to organize the living environment of the pupil, in a way that learning process goes to reaching the efficient parameters.

Today there are some main orientations in the field of instructions' models.

a. quantitative and qualitative co-relation between instruction and learning;
b. learning influence over the instruction
c. re-valorization of those two process signification.

From this point we realize that being more points of view over the instruction, each of them contents limits and also advantages. As I. Neacşu specifies, it is known instructive-educative sphere more didactic patterns, as follows:



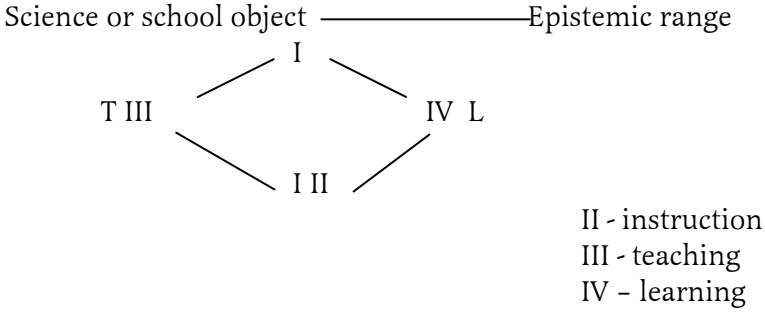
This first pattern has a sample structure, relatively narrow. In its frame, instruction means only that field in which learning and teaching are supported in a conscious and planned way; reason for that some of us could name instruction as "special teaching style".

Is it useful for pupils, too... does it help them to be stimulated? Let's see the completion and explanations of next patterns.

The second didactic style is sampled, too and it is alike in many components with the first one. In this case, the concepts of teaching, learning and instruction are situated in the wide context of society.

Systemic and functional relations that are settled between them are not explained and relevant. Other didactic style find relation aspects of different components (specific for school instruction), but more significant. Among other authors, Wall and Summerlin introduced in its inside feedback circulation, offering the possibility of self-adjustment in comparison with success or insuccess parameters, unfolded by the evaluative component of educative and instructive process. On the other hand, some patterns relieve the functionality of behavioral values.

The actual form of educative-instructive pattern certifies clearly that the modeling of school instructive system could have as starting interference.



The pattern, as the extension of interference range is progressively diversified. Its efficiency becomes optimal in proportion as the components are jointed and gradually appears a convergence.
Four of the basic components are:

1. knowledge range offered by science or school object, emphasized by all didactic support
2. instruction qualities
3. range of action and influence that come from the teacher, the person who teaches: experiences, values, attitudes, personality patterns, competencies or/and didactic styles.
4. events, activities and learning experiences, connected with the school progress and regress of the pupil.

These aspects can be affected in "learning styles", in pupil's attitudes given by the school.

The continuing of historical-pedagogical reflections over the instruction patterns relieves the improving of relation between previous components mentioned through cyber approach of instruction process.

The program, self programming, control and auto-control allowed the conversion of learning theories into instruction patterns.

After Eugen Noveanu, some of learning theories hase as a basis the constructive scheme, they being the following:

a. instruction patterns based on learning approached as storing of knowledge and processing of sensitive experience; they came from association theories;
b. instruction patterns based on conditioning mechanisms, coming from learning theories;
c. instruction patterns based on semiotic (verbal) theories of learning;
d. instruction patterns based on operation theories of learning.

For school instruction there were more patterns types. For example, in 1968, German Psychological school sustained the formative pattern, informative pattern and separately didactic pattern. One year after, R. Titone diversified everything into logocentric pattern, psycho-centric, empiric-centric and modular pattern. In our country, Ioan Neacşu approached in a different way the instruction problem as structure and also under the impression of secquential specific. In this way, trying to identify the instruction with teaching, but in a restrictive way, he helped to consider instruction as a unit structure, following three types of patterns:

1) time pattern

Based on this pattern, teaching could be justified by some episodes partially determined by teacher and/or pupil. It contains three stages as follows:

a. entering or direct contact teacher-pupil in which is produced the searching image of the last mentioned person. As didactic tasks, teacher has to established the educational objectives, the rules of his dialog with pupils;
b. developing, namely the decompose action of instruction in operating proportions.
c. exit, in fact, the actions oriented towards synthesis, detachment and conclusion formulation.

2) action segments pattern

This pattern refers to intensive and extensive relations, manifested during teacher-pupil relation, connected precisely with curriculum (teaching–learning exposing, achieving the objectives, real perception of new information).

3) generative and integrative patterns the last that close this cycle

Only now it can be passed the instructive-educational pattern for learning act, seen as informational process.

The quality of instruction pattern depends on the way in which all its components are assured and distributed. Modeling operationally the instruction, even the learning, we establish that is the superior pattern that which instruction – education- learning that assures the logical improving of the probability.

2) Learning efficiency assurance on the basis of knowing the individuals.

a) The necessity of knowing the pupils

All the psychologists sustain that personality, as components structures and also as its assembly is the result of learning process. Modern researches tried to answer to some questions, considered essential for the comprehension and explanation of the learning phenomenon, as follows:

- Which are the limits of school learning?
- How we could estimate the role of personal practice, of pupil's individual study in order to get and to establish the learning approaches?
- Which is the contribution of individual tendencies in the release and energetic sustaining of the didactic act of learning?
- Which is the relation between learning and performance or school output?
- What transfer value has the informational achievements?
- These problems got in the historical evolution of scientific researches varies answers, derived from varied scientific fields (psychological concepts of Piaget, of modern didactis, of applied didactic and of cognitive psychology) even from the organization and interpretation of studied dates, educational environments and subjects with whom experimental stages were developed.

However, the utilization of an assembly of learning techniques doesn't come only from the individual experience of pupil and even from the characteristics and particularities of learning disciplines. For example, learning a sample verbal material (impregnated by the ideatic connections and new concepts are not thought serially), occur the repetition and algorithm; in the case of a complex material, difficult or wide as volume, pupils will be helped by symbols, codification, reorganizing subjectively the presentation way of the mnezic and intellectual procedures reminded before.

For from choosing a unique strategy or learning method, the teacher must find- depending on mental organization which are specific for each pupil – varied forms of learning existed in the same case (individual, subjects, pupil) to be able to make the difference between didactic instruction to the individual limit.

The limit, which was mentioned before, is not confronted to the less beneficial effects of segregation principle. It relieves the mechanisms and the necessity of reconsideration the individual learning. In its frame, pupil is face to face with the source of learning disciplines. In comparison with instruction (didactic act being represented by the complementary of two or three processes: teaching-learning and/or instruction–education- learning – teacher is here to less present; learning methodology returns the style or particular strategies and the contents are taken over according to learning experiences, cognitive style, intrinsec motivation.

Of course this kind of learning is included in didactic instruction and at the same time, presumed by that. For this reason, the teacher's knowledge of a learning pattern, of structural components of that, of its dynamic, developed and formative actions. In the last instance, teacher's role is forming to pupils an optimal learning strategy, that which can give them the opportunity to achieve contents through passing the teacher presence, being able to develop himself in a proper way, fitting his personality.

For the realization of this didactic aspect, there is necessarily a deep knowledge of each pupil's personality including the status, interpersonal relationships supported by this in the micro-group of a class to whom belong.

To know a pupil means to decode the main features of his personality, to identify and understand the reasons, which determines him to act in a way or in another and to foresee what should do expect from him.

Socio-psycho–pedagogical knowledge is necessary for assuring a different character of didactic instruction even in terms of varied strategies used by teachers, which can satisfy at least three functions in a teaching-learning act:

a. praxis function through which it's assured the applicability and efficiency of didactic activities.
b. diagnosis functions through which is framed the profile of individuality from the school class.
c. prognosis function through which is anticipated the dynamic of individual developing of pupil personality in the frame of school activity.

(Stoica, M., Psihopedagogia personalității,
EDP, București, 1996, p.121-132)

Permanent network that is spread out in every situation between pupils and teachers remains the support of image of each. Often, for his pupil, teacher represented the essence of knowledge, the pattern that have to be followed in profession and or in life another dimension of any educational finalities.

On the first hand, we are talking about "the modeling effects" (Bandura, Al., 1980). Even if there have been identified on the basis of social learning analysis, there are rediscovered even in the school learning type, because the pupil through, the reference to teacher, the first one realizes his cognitive and behavioral integration of a new valence or, he achieves new information. All depends on the following factors, in every moment of instruction situation:

- the intensification of motivation which accompanies learning;
- pedagogical capacity to ensuring the complementariy of didactic act (transmission–reception or teaching–learning).
- presence of oriented stimulative sets, which focus the getting the school results.

Next to modeling effects, we rediscover the inhibitory effects as well as facilitation effects. The last type reveals cognitive and behavioral transfers, often very difficult to noticed, while the professor (alone), is in the front of a classroom in which the number of subjects is still big.

b) The individuality - semnificative reference of instructive-educative activity

The problem is not new; about individual education was talked a long time in the specialized literature. Expresion of "differential pedagogy".

Researches referred to the applicability of differential psychology in education are at the beginning but with encouraging perspective. Differences endorse the cognitive style of the pupil, his creativity, behaviour, self image. These differences are taken into account in specialized studies. The eterogenity of classrooms and the imposibility to apply uniform educational procedures drive stadialy to what is called "differential pedagogy". It

concentrates concernings of the organization of learning activity at pupils, the defining of educational objectives, didactic problems, the framework of procedure to solute personal relations having the task of helping pupil to define his personal learning strategy or "pedagogical differentiation" is, in fact, a new issue in specialized vocabulary. Only in '70s it was written explicitly about this new discipline and in Europe it took an institutional dimension at the same time with popular education in the 18th century.

On the other hand, the assessments of Druța Florian (Psihologie și educație, EDP, București, 1997, p. 63) pedagogical differentiation could have two complementary senses:

- education adaptation to the social and professional aim of pupil
- paying attention to the individual diversification to forming pupil's personality, to develop their talents, the creativity conforming with that concerning referred to "pedagogical differentiation" drives to the frame of mental activity type which characterized it and which must be used optimally. Pedagogical dialog in this case, has an aim to explain to the pupil intellectual resources which he can use to succeed, to favour inter-individual relations for stimulating them, to find other possible itineraries for reacting proposed object: "knowing which are cognitive and affective steps of pupil to help him personally this is the concerning of those who start from personalized didactics."

It is talking more and more today about a "pedagogy of a person" founded on the dynamic of some interpersonal relations in which pedagogical dialog is the central element. In fact, the previous dialog is "an action though which pupil is helped to built himself his own education". This presumes as teacher should have the authority (psychological, moral, cultural) of a personality which is able to dialog. Through pupil's status and functions and of teacher's educative dialog presents an asymmetric character. Symmetric dialog should presume a simultaneous progress of partners in discovery of a new fact, in the elaboration of new information, a simultaneous crossing of teaching- learning steps. Asymmetric character of dialog is inherent to the pedagogical situation.

On the other hand, education's action is focused on the pupil accepting the compulsions of his own position. He shows the way, which has to be followed leaving pupil to explore himself the intellectual way. He intervenes only to correct the mistakes. On the other hand, the asymmetry of the educational dialog came from its temporal dimension. Teacher knows the semnification of his action in a given time, situating this time in a

leading (directional) assembly. Pupil is informed regarding a partial task – a specific level that he has to reach it in a given time. Only the teacher can replace this pragmatic task, in some cognitive, operational, affective, social contexts. He situates pupil conforming with his objectives and tends to see the children who are staying in front of him as a future adult.

Pupil's personality is not make it only in the frame of school dialog, but engages educational environment in its assembly. More of the studies regarding "education individualization" and of the identifying genesis start from an analitical reflection over the pupil considerating him "the center of Universe" (Dewey) neglecting his situation in a given social historical context. Due to the education, pupil becomes a subject enrolled in a culture.

BIBLIOGRAPHY

1. Bruner, J., *Pentru o teorie a instruirii*, EDP, București, 1970
2. Druța F., *Psihologie și educație*, EDP, București, 1997.
3. Gagne, R. M., Briggs, L. J., *Principii de design a instruirii*, EDP, București, 1977.
4. Oprea, O., *Tehnologia instruirii*, EDP, București, 1979.
5. Reuchellin, M., *Les differences individuelles a l ecole*, PUF, Paris, 1991.
6. Stoica, M., *Psihopedagogia personalității*, EDP, București, 1996.

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TEACHER - STUDENT FORMAL RELATIONSHIP. THE AUTHORITY PERSPECTIVE

ADINA GLAVA, CĂTĂLIN GLAVA

ABSTRACT. The chapter focuses on the complex field of teacher – student relationship, aiming to stress the defining features that make this relationship an authority based one. We will define teacher's authority specific features, revealing the issues of its acceptance by the student. The teacher-student relationship dynamics will be described both in the formal and informal settings, as it occurs in and outside the school context. In the end of the chapter an appropriate definition of the "authority" concept will be given in its pedagogical perspective.

Teacher-student relationship a human interaction

On the model of any human interaction, the teacher-student relationship implies communion, affectivity, reciprocal dependence. Jean Piaget distinguishes in his "Moral Judgement to the Child" (Piaget, J., 1968, 1980) three main types of relations between human beings: intellectual based, affective based and moral based. The teacher – student relationship develops every of these three dimensions, both in a formal plan and in an informal one.

In the formal plan the teacher-student relationship is a traditional work relationship that is mainly an intellectual one, based on certain moral rules and principles. The third dimension, the affective one is more specific to the informal plan, in the relationship settled between teacher and an individual student as well as in that between teacher and the class group. Most frequent affective relationships occurring in the educational context are the sympathy and antipathy based ones, and less frequent the indifference ones. This is partly due to the fact that teachers and students interact for long periods of time and partly due to the specific of there work together that predisposes to affective implication.

In the intellectual relationship, the affective dimension is present as an atmosphere created by the echo of it, and acting subconsciously to influence the cognitive interaction. The affective processes are present in any of the cognitive acts but they are not entirely subordinated to them. Affectivity takes benefits from the improvement and enrichment of the cognitive operational schemes, it cultivates and refines itself with the intellect.

The place where this relationship finds its sense is the school context. The issue is the permanent tendency of it to come out from this limited field, outside the school in the schooling period and beyond it after that.

Teacher-student relationship is submitted to different types of compulsions:

-of an institutional-academic nature;

- generated by the different way in which teacher and pupil relate themselves with the science;

- generated by the specific of the teacher-pupil relationship as a human relationship.

In the same order of ideas there are certain instances that propose and impose a certain regime to the teacher-pupil relationship: the school itself as an academic institution, society (family, informal groups, mass media), political regime, and the church. All these instances lead to the construction of a model of the educational relation between teacher and student.

The dimensions of this relation become evident in its analyses as an authority relationship.

Teacher as an Authority

The authority is a complex social phenomenon, developed in the biological, psychological, sociological, cultural dimension of human society, required by the human life together. The literature interested in this issue describes five perspectives of authority simultaneous analysis: psychological perspective, seeing authority as an internal disposal, as an aptitude; interacting perspective, as an influence and communication relationship; psycho-sociological perspective, the leader plays a role beside the roles of others; sociological perspective, authority is seen in its relation with the macro-social context and the pragmatic perspective, authority in relation with political power. Each of these perspectives describes the authority as a subordination relationship of the individual towards an organization or another individual. This subordination is one specific to the teaching process as well, given the organized, institutional context in which the teacher- pupil relationship

develops. School is an organization and organizations are authority structures (V. Prelici, 1997).

Paul Evdokimov defines the authority as a force that watches to the growing of a thing more then to its preservation. It doesn't determine the obedience but the fulfillment. In this order, authority is rather an instance of enhancement. Authority can be seen as a *support* in a uncertain situation, support asked and recognized as it is by the subject himself (G. Albu, 1998). Authority is a way to overcome the incertitude. In the school context generally speaking the uncertain situation precedes any act of knowledge, and the appellation of the authority represented by the teacher is a necessity in order to reach the knowledge. Bearing all these in mind, we strongly sustain that in school teacher must be the authority. Pupils need to relate to them in order to achieve, to develop themselves.

The authority of the teacher is deliberately recognized by the pupils if this is a rational one. Rational authority of the teacher implies *consensus* between the two agents of the relationship. Consensus is the fundamental condition for the rational authority to function. Shattering of the consensus is the end of authority. Practically, the authority loses when the motivation of the subordinated, in our particular case the pupil, can no longer be preserved, when the pupil is able to solve its problems by himself without the support of the superior agent.

Rational authority of the teacher implies *obedience*. This obedience must be seen merely as a means not as a goal of the educational process. It must be rational and limited but it is absolutely necessary. To obey, says Geissler (Geissler. E., 1975, 1977), has sense in three situations: when the one that obeys doesn't know yet what he wants or what he is able to do, when, though he knows, he is in a decisional situation where he needs the advice of another and when there is a discrepancy between the conceptions and a need for a consensus for doing an action. Each of these situations justifies the existence of the obedience in the behaviour of the educated one towards the educator. But the last one has to exercise this relation for the welfare of the educated one and the efficiency consists in the enhancement of the autonomy of the last one. In an rational authority the obedience is oriented to its own self-elimination when the appeal to the authority is no longer needed. Obedience implies compulsion, but temporary and rational compulsion doesn't threaten the liberty of the pupils. Studies prove that being in a situation of uncertainty pupils need the obedience and compulsion to an authority for there mental hygiene and balance.

Obedience must not unjustifiably limit the vital free space of the pupil. It must not resume to compulsion and to some requirements without giving there justification to pupils. Educators can cultivate this obedience by permanently encouraging the pupils to independent thinking, to critical examination of things before accepting them, to exercise there capacity of decision in the case of new experiences.

Rational authority implies *trust* from the pupil in the competencies and right intentions of teacher. These features of the teacher are the condition for the recognition of the authority and there lose determine the lose of authority.

Further on we will describe some of the types of authority that occurs in the school context.

Formal authority. This form of authority appears when the two agents of the relationship are related together through a formal contract. This is the most rational of the authorities, though it is the less enhancing one. It is the authority that children recognize when they become pupils, the authority that teacher have by there institutional status. It is the type of authority that is the most predisposed to become irrational, oppressive.

Epistemological authority. Teachers that aim to the recognition of this authority must prove there competence in a certain domain of knowledge. Once accepted by the student, this authority gives the relationship between the two the feature of an initiating relationship.

Model authority. It is the most affective type of authority and is based on the prestige obtained by the teacher in the mind of students. In this context, the teacher becomes for pupils an immediate model, especially for his features of personality. This authority can be preserved and recognized by the pupil even after the epistemological authority is no longer recognized.

Leader authority. Though based on the prestige of the teacher, this type of authority is less rational then the previous one. It answers to the double need of the pupil to admire and to obey (to follow somebody).

Each of the described types of authority in the school do not exclude the others. In the school context teacher is most of the cases an authority of every of these types.

Limits of the authority of the teacher

The limits of the teacher's authority are the limits of the rational authority. The theoretician of the authority from a philosophical perspective, Bochenski (1974) describes the authority as limited considering the criterion of its domain. He argues that there is no absolute authority. Nobody can claim

that he is an authority in everything as well as nobody can claim that is an absolute authority in something. Still, argues Bochenski, the authority is given by the difference between the ways the superior agent and the subordinated agent relate with the domain of knowledge. The owner of the authority stands close to the domain of the authority, he possesses experience in the domain, and there is no need for a mediator between he and the domain. The subordinated agent, in our particular case the pupil doesn't have a unmediated relation with the facts of knowledge, his participation to knowledge is mediated. His obedience not being originated in knowledge, the link isn't one mediated by facts but by a certain person. Personal features of the authority owner facilitate the mediation. Actually, one's closeness with the domain of knowledge doesn't give one the real authority in that domain. Authority appears in the human relationship. It must be recognized by one in order for it to exist. For this to happen the person who exercise it needs certain features of personality, described by O. Reboul in his "Philosophy of Education"(Reboul, O., 1989):

- an obvious superiority of spirit, knowledge, social skills;
- the quality of decisions and prescriptions;
- the opportunity, superiority and efficacy of solutions that helps the subordinated one to overcome the critic moment;
- collaborative and communication skills;
- moral-spiritual qualities;
- awareness of his limits of knowledge
- openness to critics and capacity of self-development.

Educators need all these features in order to be recognized by the pupils as authorities in a certain domain and implicitly support factors in there development in those domains. Teachers should not extend there authority of knowledge beyond there domain. They still preserve certain forms of authority not specifically related with a domain of knowledge.

The authority of the educator is limited in another dimension as well, that of time. Rational authority aims a temporary coordination of a person not yet independent. Its goal is to make itself redundant. The educator works to make his pupils equal partners of knowledge, encouraging them to act rationally, forming the premises for an behaviour free from its field dependence, and thus renouncing gradually to its authority according as there pupils become able to solve the uncertainties by there own.

Considering especially the formal and leader types of authority we can describe a third criterion for authority limitations, the space. Rational formal

authority must be exercised by the teacher only in the spatial limits of the school and has to be always doubled by the epistemological authority.

The limits of the authority as we described them are not its limitations. There are the limits in which the authority of the teacher in school context stays rational and constructive. The acceptance of the authority by the students is made as we stressed firstly because of the need of students to have a support in there process of knowledge. Yet there are other reasons of students for accepting the authority: the indolence, the fear of the novelty, fear of being different, fear of responsibility etc. Here is the role of the teacher to teach there children the relation with the authority. In this rational relationship the pupil remains free to obey, to refuse or to change the authority. He has to preserve and use his option, critical thinking and freedom. In the teacher-student relationship authority is only an necessary moment to child development in a variety of fields. The final goal of the teacher- student relationship as an authority relationship is the freedom of the educated ones, there autonomy and there independence of the educational field.

BIBLIOGRAFIE

1. Albu, G., 1998, *Introducere într-o pedagogie a libertății*, Ed. Polirom, Iași.
2. Geisller, E., 1975, 1977, *Mijloace de educație*, E.D.P., București.
3. Piaget, J.,1968, 1980, *Judecata morală la copil*, E.D.P., București.
4. Prelici, V., 1997, *A educa înseamnă a iubi*, E.D.P., București.
5. Reboul, O., *Philosophy of Education*, P.U.F., Paris, 1989.

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MANAGING IN TRANSITION

DAN IONESCU

ABSTRACT. This paper is trying to present some reasons why the Romanian transition toward a free market economy is so slow and painful. A presentation of the situation before 1989 and of the transition that followed reveals the difficult environment where managers are acting. Attitudes that were developed during Communism like the fear of assuming individual responsibilities are completed now by a lack of knowledge in different areas of management, mainly for the older managers. This makes a large gap between the old managers and the young and inexperienced ones. For the companies to become dynamic and visible there is a great need for a new generation of managers, much better prepared for this profession.

1. The Management in the past regime

Most of the population of Romania experienced, fir the most of their life, a political regime that finally was proved to be an unrealistic and undemocratic one - the Communism. All the East European countries, including "mother" Russia, went almost brankrupt after some decades of social experiments based on utopic principles like "we are equal", very centralized development plans, single political party, supremacy of workers and peasant and so on.

However people were sensing a sort of stability at that time because they felt everything was under control. In the "Control beliefs in the transition period in Romania" [1] this perception of the population and the major shift caused by the instability created after 1989 are very well analyzed.

Everybody knew what he or she could do, what kind of future they can have, there were no major threats to think about as well as no high expectations for better. Everything was gray, but because we couldn't see something else for comparison it was a sort of pink in it. In most of the

companies there was a feeling of stability: the salaries seemed reasonable (maybe because it was nothing to buy), there was no bankruptcy, bosses even when very authoritarian were having a paternalistic attitude. No one was looking too stressed by the problems of the companies; every important decision (and sometimes those less important) was coming from the top political leaders.

The things started to get worse at the end of the 80's when the system's crisis was revealed by it's incapacity to satisfy the population's basic needs (food, heat, electricity, fuel) and the crisis became very threatening.

A Romanian manager in the Communist regime was having double subordination. The first one was a very bureaucratic, hierarchical one, used for *informing* him about the next year budget, funds for investments, number of employees, clients etc. The word "informing" is important because the manager was not really listened. The other subordination was to the political structures. In each company there was a Secretary of the Party (Communist of course) who was very powerful. He was in good relation with the general manager but his reporting line was a parallel one, the political structure being organized geographically. It became a norm for the political leaders to interfere with the managerial decisions, imposing their point of view. They were the "Court of Appeal" when a misunderstanding or conflict was appearing.

This double subordination confused managers because they were not allowed to take significant decisions and the decisions coming from above were contradictory and inconsistent. No wonder the usual saying in the companies was "they pretend they are paying, we pretend we are working, so everyone is happy".

The most important effect of this general climate on the managers was that they were not assuming individual responsibilities and the decision making process was a constant shift from a passive to an aggressive style.

2. The Transition

Transition is a word very much in fashion. There is no wonder since everything around is changing. Sometime changes are very slow, almost invicible, sometime these are having such a speed that people can't understand what is happening - there is no time for analysis.

In the last decade very often have been mentioned the planet scale changes that are faster and faster: computerization, global markets and global competition. Romania entered this new era in a very sudden way and we may

say it was not prepared at all for this. In December 1989, after the Romanian Revolution, we were emptied by a lot of things on which we built our expectations, good or bad as they were. New expectations and hopes, most of them very naive, took their place.

An important political leader, Mr. Silviu Brucan, said one of the most surprising things those days. He was asked when we would see some results and when we would have a decent living standard. The answer was: "We have to wait at least 20 years because we can do nothing until the mentality of the people will change and probably a whole generation has to disappear before". It is known how much was he blamed at that time !

So the transition started and the entire nation was thrown in something very new. A lot of political parties replaced the only one that we had before. New people, not known yesterday became leaders of the moment. Free elections, a real Government and a President ... and food and fuel ... everything was so exciting. Slowly but firmly things started to move on: the companies started to be privatized, some went bankrupt and unemployment went up to 12 %. Very soon most of the companies faced dramatic problems: state subsidies stopped, high inflation sucked all the cash, Unions became very strong and aggressive, economy almost collapsed going down by 60 %.

Unfortunately the political leaders were not determined to make real major changes. Most of the companies were state-owned by and the process of privatization was almost absent. The Government was pretending, on one hand, that they do not interfere with the administrative issues of the companies, but the companies did not have real stakeholders or owners to make decisions. On the other hand this uncertainty led to a huge corruption, controlled by people with contacts at high level.

At the end of 1996 a new group of parties won the elections and started a more courageous process of privatization with other side effects. Companies with bad results were closed, inflation was still high but the macroeconomy was stabilized for a while, foreign investors became more interested, private companies started to successfully compete with large state owned companies.

Probably the most dramatic influence was on the managers. Together with the wind of change in the early 90's many managers faced difficult times. Their authority was no more underpinned by the Communist Party and the newborn unions insisted for them to be replaced. More than 60 % of the existing top managers in December '89 were replaced by new people,

some of them with no managerial experience at all. No wonder that after a while, the same people that threw the old managers out insisted for them to come back when the companies started to have problems.

During an interview with representatives of the employees, they were asked if bringing back the same manager they were not happy with some time before will make difference ? *"It is a huge difference because now WE have appointed him"* was the answer.

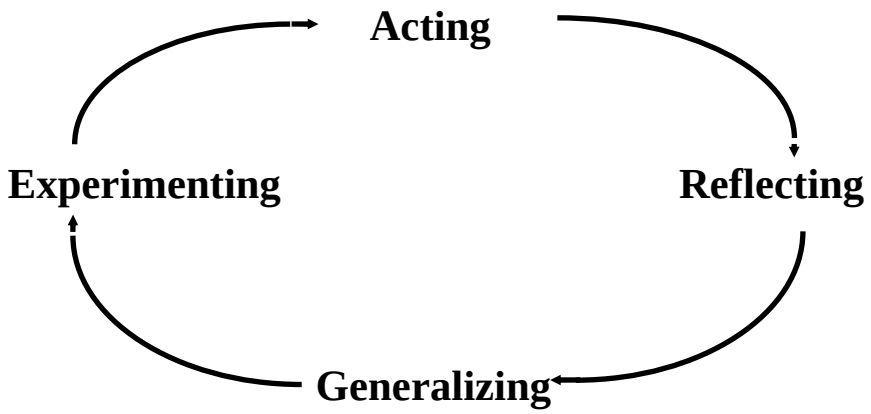
The legal system, very weak and unstable, and the general climate of uncertainty increased manager's feeling of lack of control. After some attempts to do something for their companies most of them adopted a passive attitude, expecting changes to come from outside, generated by others. A typical "learned helplessness" is characterizing even today many managers' behaviour. Comments like: *"we can not change anything"*, *"the legislation is blocking all our initiatives"*, *"nothing can be done"* etc. can be heard very often.

In these circumstances it is no wonder that assuming responsibilities is still a major problem of the managers, even now, ten years after the Revolution of 1989. And this is very visible to foreign people. When asked what is the most difficult thing when working with Romanian Managers, Mike Plumridge, a consultant from Roffey Park Management Institute in UK having some years of experience in Romania insisted on managers' refuse to take responsibilities. That is a reason for the lack of clarity of companies' strategies and internal relations.

3. Today management's limits

3.1. Gaining information

For collecting all these information and to study managers' behaviours and styles we used the experience accumulated in the last five years as management trainers and consultants. We had the opportunity to work with managers at different levels in large state owned companies, small and medium size private companies and NGOs. Most of the work was done in the field of management development, managerial skills, interpersonal relations, human resources and strategic planning. The training courses were short (three to five days), very participative, with lots of discussions, group exercises, questionnaires and psychological tests. Consultancy included organizational diagnosis, HR systems design, and management assessment. One of the questionnaires we used is the Learning Styles questionnaire. It is based on the theory regarding the Learning Cycle.



It is about the preferences people have when learning. After doing something (Acting) they usually spend some time to think about what have they done (Reflecting), then they tend to use the new facts for explaining other situations or scenarios (Generalizing) and then they try to do the things differently (Experimenting). The cycle it is closed because this learning is causing a new action and so on. All the stages are equally important and an effective learning process should allow all these four phases to take place.

Managers are usually active, dynamic people who tend to focus more on Acting and Experimenting. They feel a sort of waste of time when asked to reflect more or to generalize their experiences. At least this is a common pattern for Western managers. Strange enough (or not ?) most of the Romanian Managers that completed this questionnaire are situated in the opposite corner - they tend to think a lot, to consider a lot possibilities, to ask themselves a lot of questions. This makes the decision making process much longer and sometimes the executive decision is postponed so much that it becomes obsolete. Such an attitude should be more appropriate to scientists and people from the academic world !

Another interesting difference was revealed from a questionnaire used in training and consultancy. This is about a list of 10 circumstances that may help a manager to become an effective one. The participants had to prioritize them according to the importance. There is a result list according to a large group of British managers that could be compared with the one coming from Romanian managers.

The main difference was that the item *"Opportunity to have managerial responsibilities early in their career"*, very much appreciated in British culture, was always at the end of the Romanian lists. This may say that our culture is more conservative and young people are not welcomed in the managers' clan.

3.2. Management knowledge and experience

There are a lot of definitions of what a manager has to do (e.g. McKinsey model of 7S). Most of them are describing the functions of planning, organizing and controlling. All these functions are important but different people have different preferences. Some are more interested in planning things, in looking to the future; others are very good in organizing all the details trying not to miss something or are looking if the process is going on as it was planned, checking what can be improved. It is important to balance all three aspects.

An Italian investor who started a business in Cluj was very happy with the workers but was complaining that he could not find a manager for his factory - seven persons had been already tested in this position ! *"The Romanian managers are having a strange understanding of what management means: they are like guards, walking all day long among the workers controlling what and how are they doing"* - he said.

I don't suggest this is the description of a Romanian manager but the question still is: *What makes someone a good manager ?* To responding to this it is important to present another understanding of "management" (a new word in Romanian language). Even if lots of people use this word only to describe a function, a position in a hierarchy, a boss, there is another meaning - managing being a profession as any other profession. And as for any other profession (doctor, teacher, lawyer ...) to become a professional you need knowledge and experience.

3.2.1. Knowledge

A general manager said he learnt everything in a special postgraduate School of the Communist Party (Ștefan Gheorghiu Academy) so no one could teach him something new about management. But topics like Marketing were never studied in the past and managers knew nothing about it. Are they ready to accept this ? No, most of them are avoiding it and, as a result, in many companies the Marketing function is almost absent.

Considering management as a profession, having knowledge in the fields of Marketing, Strategy, Finance, Human Resources, Information Technology means to understand and to be capable to put in practice models, techniques and systems like: BCG Matrix, Porter Analysis, Maslow Pyramid, SWOT Analysis etc.

Let's see how Romanian managers can achieve knowledge, apart from individual study by reading books. There are two main sources for managers:

- Universities or similar institutions that mainly teach students, providing basic knowledge by long programs (months or years).
- Non-academic institutions that offer training on specific topics for those having some experience. The programs are shorter: days or weeks.

In the last few years there was an explosion of such educational institutions, considering there were no such institutions apart of one or two, in Bucharest, meant to help directors but being highly politicized in the past.

According to the 1997 Annual Report published by International Management Foundation Bucharest (FIMAN) there were 101 providers of management training services, out of which 14 were Universities or similar institutions (e.g. CODECS - a local partner for the Open University, UK). Speaking about Universities, because of several international programs after 1990 (e.g. TEMPUS) professors had the chance to go abroad and learn new things. However the older professors couln't change that much. Many of them knew only Russian language (not the best for management books !) and they were too indoctrinated. It is known that most of the professors that were teaching Marxism instantly "turned" into Management experts. It is easy to imagine how much they can help young students (... and what are those saying about their professors).

Much more are appreciated the postgraduate courses (2-3 years) delivered by the new Business Schools. Most of them are private and young managers or persons willing to become managers are interested to get a Diploma or a Master degree. Many of them are doing this for practical reasons: an MBA guarantees better jobs.

Moving to the non-academic institutions we have many private firms or NGOs. Most of them appeared because of international Programs and very often foreign organizations are helping them. This is visible even in their approach for delivering training - more flexible and focused on

participants' needs. On their programs are coming mainly those managers that are motivated to learn new things and short courses allows them to participate. However even here most of participants are young (less than 30), the older ones considering they don't need to learn any more.

In spite of some training programs the attendance is very limited. Management training is still not considered a priority for companies or individuals in Romania. This explains how an MBA graduate can easily find a very good job, in Bucharest, for one of the multinational companies, with a salary of many hundred $ (the average net salary in Romania is less than 100 $). Compared with the cost of training / inhabitant that in western countries is about 100 $, in Romania is spent only about 1,7 $.

As a conclusion, management knowledge is still very limited among Romanian managers. Those few that had the chance to learn are young and are having middle and lower positions in the hierarchy, with no real influence on major decisions of the company.

3.2.2. Experience

According to some statistics most of the top managers are rather old (speaking about medium to large companies that are the most important, still, for the Romanian economy). They have significant management experience, most of it in another political system, not in a free market economy. Even without having significant structured knowledge on different management areas, they developed managerial skills in time. Living in difficult circumstances they were exposed to many situations that helped them learn. However most of this learning was by try-and error, quite inefficient and not covering all the needs.

Another problem with the older managers is that they do not accept studying modern theories by attending training courses. Almost none of the top managers are considering a structured program for developing managerial skills and knowledge. The explanation is, in most of the cases, the fear they will be considered not good enough by other participants and this will alter their status. This fear makes some managers to avoid bringing in the management teams younger bright people. This is perceived as a major threat for the top position in the company.

This takes us to a strange situation generated by this transition from one system to another: on one hand managerial experience, even truncated, is held by old people that are not understanding very well the new demands (they have not enough knowledge for this). On the other hand there are young people

(not too many) that have knowledge but have no experience at all. There is a large gap between those two groups.

4. Conclusions

All Eastern European countries are struggling to join the European Community. Romania is holding one of the worst positions and it needs many decades of intense development for achieving European standards of living. The greatest pressure is on economy. Companies need to develop and become viable and competitive. Managers must change a lot themselves so to be able to implement changes in organizations. For the moment they are either inexperienced or have no enough management knowledge to be compared with the "standard" European manager. It is enough a shift in mentality but a sustained and consistent support for them.

Now days there are no more systems to ensure long term stability in terms or job security.

That is why individuals must assume responsibility for their own development and to acquire the necessary skills for a very dynamic and unpredictable world. This is valid for managers too.

Studying modern management theories and putting them in practice with whatever risk will make them learn a lot. For an effective learning they have to develop career plans as early as possible.

If this will happen in less than a decade it will be visible a major shift in the quality of the management in Romanian companies.

REFERENCES

1. Bivolaru, A.; Radu, M. (1997), *Control Beliefs in the Transition Period in Romania*. In Studia Universitatis Babeş-Bolyai, Series Psychologia-Paedagogia, XLII, 1-2.

2. Block, P. (1981), *Flawless consulting: A guide to getting your expertise used*, CA: Pfeiffer & Co., San Diego.

3. Egan, G. (1975), *The Skilled Helper*, Brooks / Cole Publishing Co., Monterey, California.

4. Handy, C. (1986), *Beyond certainty: The Changing World of Organizations.*

5. Kilmann, R. (1984), *Beyond the quick fix: Managing five tracks to organizational succes*, CA: Jossey-Bass, San Francisco.

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LE PERFECTIONNEMENT DES COMPÉTENCES LINGUISTICO-DISCURSIVES DES ÉTUDIANTS À L'AIDE DES DOCUMENTS TÉLÉVISUELS[1]

ŞTEFAN-IOAN BODEA

ABSTRACT. **The Improvement of the Students' Linguistic-Discursive Skills by Means of Visual Aids.** The present article proposes a framework for reflection regarding the didactic exploitation of the **VIFAX** documents (especially of the broadcast journals) during the workshops in wich the speaking skills are developed which concern the French Department students at the Faculty of Letters in Cluj-Napoca. Starting from the necessity of present-day French Knowledge, as well as from its use within varied communication situations, this study offers didactic suggestions for the practice and improvement of the students' discursive skills. The practice of spoken French is conceived here as a complex activity based on a onomasiological approach in the analysis of recorded sequences, which will increasingly led the students to a conscious involvement in watching the **TV5** programs. That will obviously contribute to the improvement of their communication and interpretation abillities.

Rien n'est jamais compris, ni donc appris, qui ne soit un tant soit peu découvert par soi-même.

Michel Perrin

Notre propos, dans ce qui va suivre, est de relever l'importance de l'exploitation didactique des divers documents télévisuels issus de TV5, pour les pratiques langagières des étudiants. Une attention particulière sera accordée aux journaux télévisés, documents concentrés, qui offrent une variété de thèmes d'actualité et qui se prêtent le mieux à l'exploitation par petites séquences. Par ailleurs, le visionnage de ce genre d'émissions rend

[1] Par "compétences linguistico-discursives" nous entendons ici non seulement (a) la connaissance pratique des règles qui commandent l'utilisation de la parole, (b) la maîtrise de codes et de variantes sociolinguistiques, (c) le savoir pragmatique quant aux conventions énonciatives qui sont d'usage dans une communauté linguistique, mais aussi (d) la compétence métalinguistique (ou descriptive) qu'on peut traduire en termes de réflexion sur les phénomènes langagiers.

possible l'appréhension des réalités linguistiques du français vivant d'aujourd'hui, auquel les pratiques de classe doivent, à notre avis, accorder plus de place.[2] Car, la diversité des usages que le français connaît actuellement, met souvent en difficulté l'apprenant roumain qui se confronte avec les situations de discours authentique fournies par les journaux télévisés. Aussi les enseignants se voient-ils obligés de réfléchir sur un ensemble de questions liées au traitement didactique de séquences vidéo enregistrées sur TV5. En l'occurrence, il s'agit, dans un premier temps, d'offrir aux étudiants les points d'ancrage d'un guidage efficace qui vise à faciliter l'accès à la signification des messages; il faut ensuite concevoir un scénario qui favorise le développement de la compétence de communication des étudiants. N'oublions pas que la mise en oeuvre concrète de la compétence communicative – c'est-à-dire *la performance*[3] – est le résultat du fonctionnement de trois types fondamentaux d'aptitudes: *(1) sociolinguistiques, (2) énonciatives et (3) textuelles-discursives*[4]; par conséquent, le travail du didacticien doit prendre en compte ces composantes de la vraie performance langagière. C'est ce qui nous amène à admettre que les projets visant au perfectionnement des compétences linguistico-discursives des étudiants doivent avoir recours à des recherches qui montrent l'intérêt pédagogique de la pragmalinguistique. Au niveau universitaire, on ne peut plus se contenter de démarches qui aient pour seul but d'accroître les connaissances lexicales, grammaticales, idiomatiques et culturelles des étudiants. Les ateliers d'expression orale doivent incorporer aussi des activités qui incitent les étudiants à discuter sur les problèmes linguistiques relevant de l'énonciation, des normes conversationnelles, du caractère argumentatif de telle ou telle réplique, de la logique discursive, de l'implicite conversationnel etc. Ce sont des objectifs pédagogiques au mépris desquels il ne saurait y avoir un enseignement efficace, basé sur la pratique raisonnée de la langue française.

Évidemment, il ne faut pas absolutiser le rôle de tels objectifs, parce que les ateliers d'expression orale ne sont pas des activités destinées entièrement à l'analyse de discours dont sont chargés les cours et les séminaires de pragmalinguistique. Nos remarques soutiennent, en fait, l'idée qu'un bon

[2] Il importe de rappeler ici que nombre d'enseignants travaillent encore sur des corpus de discours qui, volontairement, mettent à l'écart le français oral, perçu comme étranger, voire hostile.

[3] Terme qui traduit l'aspect pragmatique du problème de la communication (voir à ce propos *Dictionnaire de didactique des langues*, dirigé par R. Galisson / D. Coste, Paris, Hachette, 1976, pp. 407-408).

[4] *Cf.*, Roman,D., *Linguistique et enseignement du français*, Cluj-Napoca, 1994, p. 193.

enseignement/apprentissage d'une langue vivante ne peut pas se passer des réflexions métalinguistiques.

Nous allons tout d'abord essayer de montrer le rôle de documents télévisuels dans l'apprentissage et le perfectionnement d'une langue vivante étrangère.

Il faut accepter une évidence de départ qu'on pourrait formuler ainsi: l'acquisition d'une vraie compétence de compréhension – la première condition de la bonne maîtrise d'une langue – est un processus psycholinguistique qui consiste à confronter régulièrement l'apprenant avec la langue-cible sur la base d'un guidage pédagogique efficace.

Les divers systèmes scolaires et universitaires ont essayé de mettre sur pied des dispositifs qui permettent l'acquisition de la compétence de compréhension en langue étrangère, mais ces dispositifs n'ont pas toujours réussi à offrir des solutions satisfaisantes aux problèmes que soulève la médiation didactique inspirée par tel ou tel matériel linguistique.

Au début des années'90, a été mis au point, à l'Université Victor Ségalen Bordeaux 2 un dispositif d'apprentissage multimédia, appelé VIFAX,[5] outil pédagogique moderne, dynamique et motivant, qui aide les apprenants à visionner consciemment un document télévisuel et à l'utiliser comme support d'expression orale ou écrite.

Cinq fois par semaine, les abonnés VIFAX (universités, établissements scolaires, administrations, entreprises) enregistrent sur magnétoscope, selon une grille de programme établie à l'avance, les 30 minutes du journal télévisé retransmis par TV5 (il s'agit des chaînes France 2 et France 3, et des radiotélévisions du Québec[6] , de la Belgique francophone et de la Suisse romande). Le jour même, ils reçoivent par fax ou par courrier électronique les feuilles de travail correspondant aux séquences traitées, leur corrigé et la transcription intégrale. Il est à remarquer que les tâches à accomplir sont

[5] VIFAX est une création du professeur Michel Perrin, directeur du Département de Langues Vivantes Pratiques de l'Université Victor Ségalen Bordeaux 2 (http:// langues-vivantes.u-bordeaux2.fr) et président du GERAS (Groupe d'études et de recherches en anglais de spécialité) et de RANACLES (Rassemblement national des centres de langues de l'enseignement supérieur).

[6] Au risque de nous attirer des critiques des plus dures, nous affirmons ici, en toute franchise, que le québécois, en raison de son phonétisme contus, constitue un facteur perturbateur pour l'activité langagière de nos étudiants; le fait d'avoir cependant eu recours, dans cet article, à une séquence de journal transmis par la radiotélévision québécoise, a pour seule explication l'intérêt que nous avons attaché au contenu de cette séquence-là.

conçues de façon à entraîner un effort cognitif qui permette à chaque apprenant de construire et de gérer, au jour le jour, sa compétence de compréhension du français réel d'aujourd'hui.

Voici quelques verbes qui traduisent autant d'activités cognitives, que les apprenants mettent en oeuvre dans leur entreprise d'organiser la découverte d'un document télévisuel: observer, repérer, reconnaître, associer, classer, deviner, anticiper, formuler (des hypothèses), analyser, reformuler, imiter, critiquer, juger.[7] Rien qu'à y réfléchir un peu, l'enseignant pourra définir avec plus de précision les objectifs d'acquisition visés dans le cadre d'un atelier d'expression orale.

L'ouverture culturelle et l'intérêt de l'immédiateté constituent les deux de la motivation que cet outil pédagogique induit chez les étudiants. Par ailleurs, les praticiens de la formation en langues savent d'expérience que la réunion du son, de l'image et du texte s'avère être extrêmement féconde dans le processus d'appropriation d'une langue. Bien plus, elle devient nécessaire "dans une culture, voire un culte, de la rationalité qui tend à occulter les aspects non verbaux de la communication"[8] (il s'agit, en l'occurrence, de l'espace culturel occidental). En effet, l'apprentissage des langues ne saurait nier le grand avantage que présente le document authentique pour la construction du sens des messages transmis par divers locuteurs. Serait-il possible de ne pas admettre que les informations linguistiques ne constituent qu'une partie d'un message quelconque? Oui, dans la mesure où l'on cherche à pratiquer, dans certains cas, une analyse de discours susceptible d'être infléchie dans des directions interprétatives très variées, qui risqueraient d'occulter les vraies intentions communicatives du sujet parlant. Autrement, on est persuadé du fait qu'un support vidéo apporte des indications essentielles à la construction du sens cherché; à savoir, des informations relatives à la situation de communication, à la gestuelle, à la proxémique, à la kinésie. Autrement dit, les actes de parole sont enregistrés dans leur intégralité, dans leur contexte plein.

Les messages visuels et sonores, ainsi que les messages linguistiques, sont, en fait, indissociables dans les médias, mais, il faut dire que le canal son et le canal image d'une séquence vidéo contiennent chacun une logique spécifique dont il faut tenir compte dans l'analyse des séquences enregistrées; car

[7] Boiron, M., << Apprendre et enseigner avec TV5>> in *Le français dans le monde*, nº 290, 1996, p. 27.

[8] Perrin, M., <<Quand l'oeil écoute>>, in *The Journal of Tesol France*, volume 4, 1997, p. 5.

"l'influence réciproque du voir sur l'écouter, de l'écouter sur le voir"[9], traduite en termes de "gestion mentale concomitante des images et des mots"[10] ou de "symbiose de la perception sensorielle et de la pensée abstraite"[11], exige cependant une analyse de l'apport spécifique de l'une ou l'autre composante du sens véhiculé par une certaine séquence vidéo. En d'autres termes, deux systèmes sémiotiques différents trouvent dans l'enregistrement vidéo un fonctionnement complémentaire qui est objet de réflexion pédagogique. Cette remarque peut paraître banale à première vue; mais, le fait important à nos yeux c'est qu'elle suggère une approche pédagogique onomasiologique du son et de l'image dans la perspective d'une sémiotique composite. Il importe de reprendre à ce propos une réflexion légitime sur le média, appartenant à Michel Boiron, et qui prend appui sur les difficultés liées à l'intégration systématique des informations non linguistiques à la découverte des documents authentiques: selon l'auteur cité, l'échec de l'apprenant, dû à la seule concentration sur les informations linguistiques, peut être prévenu par "l'analyse télévisuelle du document (plans, cadrages, mouvements de caméra, montage, relations bande son / images, etc.)."[12] Cela revient à dire que le travail avec un document télévisuel "requiert les qualités combinées du linguiste, du pédagogue, du journaliste, du technicien maîtrisant les fonctions avancées de l'ordinateur multimédia."[13] Nous ajoutons à ces deux remarques conjointes le fait que, dans ce contexte-là, l'enseignant se voit obligé de choisir avec beaucoup de prudence les documents qu'il veut soumettre au traitement didactique, vu la complexité de ce travail.

Si l'enseignant envisage de concevoir lui-même un support pédagogique télévisuel, la tâche devient, évidemment, encore plus difficile.

Parmi les nombreux critères qui président au choix (ou à la conception) d'un document télévisuel, la longueur de l'enregistrement a retenu l'attention de spécialistes de la formation en langue étrangère. Tous s'accordent à recommander le choix des documents courts, de quelques secondes à quelques minutes (séquences de journal télévisé, extraits de films, de documentaires ou

[9] Formule que nous empruntons à Perrin,M., *art. cit.*, p. 4.

[10] *Idem*.

[11] *Ibidem.*, p. 5.

[12] Boiron, M., *art. cit., loc. cit.*

[13] Perrin, M., <<Apprendre à comprendre. Vifax: un outil multimédia d'acquisition et perfectionnement des langues>>, in *Babylonia*, nº 2/1998, p. 32.

de reportages, bulletins météo, etc.); le fait que les séquences courtes constituent le terrain d'élection de l'expérience de beaucoup de didacticiens est dû à la difficulté de gérer la richesse des informations transmises par le document télévisuel en général. Par ailleurs, il faut veiller à garder plus de temps pour l'activité d'exploitation didactique que pour le visionnement, même s'il y a reprise de celui-ci.

Evidemment, il est possible de choisir des documents plus longs, surtout au niveau de l'enseignement universitaire; encore faut-il que l'enseignant prépare minutieusement les démarches méthodologiques qu'exigent les unités longues (2 heures et au-delà).

Voici quelques titres d'emissions susceptibles, à nos yeux, d'être soumises à un traitement didactique efficace qui puisse satisfaire à la fois aux exigences des didacticiens et à celles des apprenants (il s'agit évidemment, d'emissions issues de TV5).[14]

- TV5 infos
- Thalassa – magazine de la mer
- Journal TV5
- Journal TSR (Suisse)
- Journal France 2 / France 3
- Bouillon de culture – magazine culturel
- Bus et compagnie
- Génies en herbe – jeu
- Le journal des journaux
- Outremers – îles
- Télécinéma spécial Cannes
- La carte aux trésors – jeu
- TV5 questions
- Kiosque – club de la presse
- Questions pour un champion
- Images de pub
- Vivement dimanche – divertissement
- Un livre un jour – littérature
- Voilà Paris

Et la liste pourrait continuer ...

[14] Pour une présentation illustrée des émissions et pour plus d'informations concernant la didactisation de supports authentiques, nous recommandons chaleureusement l'utilisation du site *http://www.tv5.org*

Nous allons maintenant présenter quelques aspects relevant de la problématique de l'exploitation didactique de certains supports authentiques, au niveau universitaire.

Il faut d'abord reconnaître qu'à ce niveau d'apprentissage, les exercices proposés par les équipes VIFAX de Bordeaux et respectivement de Berne[15] s'avèrent souvent insuffisants, mais cet inconvénient peut être dépassé par un travail de prolongement, d'adaptation, voire de modification des exercices en fonction des objectifs qu'on se propose d'atteindre.

Avant d'aborder les problèmes liés à la préparation de cours VIFAX, force nous est de définir quelques grands avantages du dispositif dont il est question ici, à savoir:

a) il offre une variété de sujets d'actualité;
b) il facilite le contact avec le français vivant d'aujourd'hui;
c) il permet la découverte des divers accents du français tel qu'on le parle en France et dans les autres pays francophones;
d) sa flexibilité d'utilisation (on peut reculer, s'arrêter, avancer);
e) il permet le développement des diverses stratégies d'écoute;
f) il permet d'effectuer un travail très détaillé sur l'image;
g) on peut inciter les apprenants à la discussion et encourager le travail en équipe ou individuel sur tel ou tel aspect;
h) il s'appuie sur une réserve toujours renouvelée de langue orale authentique;
i) son adaptabilité à différents niveaux d'apprentissage et son ouverture vers tous les prolongements souhaitables;
j) il peut s'adresser à tout public susceptible de travailler en autoformation;[16]
k) il enrichit les savoir-faire pédagogiques des enseignants;
l) il constitue un véritable terrain de recherche dans divers domaines.

C'est en tenant compte de ces avantages du dispositif VIFAX que le didacticien pourra tirer plein parti de la richesse multimédia de la palette vidéo. Mais, l'activité de didactisation de documents télévisuels pose, surtout au

[15] Il s'agit de l'équipe de l'Université Bordeaux 2 (France) et de celle de Berne (Zolikofen) – ESIA (Suisse).

[16] Voir à ce propos Perrin, M., <<Centres de ressources et autonomie guidée>> in *Les langues modernes. Enseigner aux adultes*, nº1 / 1992.

niveau universitaire, un certain nombre de problèmes qu'il nous semble important de mentionner ici:

- quelle place doit-on accorder à l'exploitation des productions orales en français? Car il ne s'agit certainement pas d'absolutiser l'importance de l'oral dans une didactique du F.L.E.;
- quelles seraient les prémisses de l'enseignabilité de l'oral?
- dans quels types d'émissions pourrait-on trouver des éléments relevant d'une "grammaire de l'oral"?
- quels sont les critères qui président au choix de tel ou tel document?
- quels seraient, en fonction du type d'émission et des objectifs à atteindre, les points forts d'un traitement didactique efficace d'un enregistrement vidéo?

Ce sont des questions qui sont au coeur de la pratique enseignante universitaire et que les étudiants aussi doivent prendre en compte, vu que la plupart d'entre eux se destinent à la carrière didactique.

Nous allons essayer de répondre synthétiquement à ces questions, en nous centrant sur les aptitudes discursives que la pédagogie VIFAX se propose de développer chez les étudiants.

1. ***VIFAX et enseignement du français vivant***

La diversité des usages qu'il y a à l'intérieur de la communauté linguistique française rend difficile la distinction *norme/variation* et par conséquent l'entreprise de classer l'oral.

Nombre d'études ont été consacrées au français parlé, lesquelles ont réussi à montrer qu'une langue vivante évolue hors de l'académisme et que les productions orales méritent d'être considérées comme objet d'étude scientifique.[17]

[17] Nous signalons ici quelques ouvrages que nous considérons comme les plus importants en la matière:

a) Berrendonner, A., Le Guern, M., Puech, G., *Principes de grammaire polylectale,* Lyon, P.U.L., 1983.
b) Blanche-Benveniste, C., *Approches de la langue parlée en français*, Paris, Ophrys, 1997.
c) Gadet, F., *Le français ordinaire*, Paris, Armand Colin, 1989.
d) G.A.R.S. (Groupe Aixois de Recherches en Syntaxe) *Recherches sur le français parlé*, Université de Provence, *s. d., passim*.
e) Morel, M.A., Boileau-Danon, L., *Grammaire de l'intonation. L'exemple du français*, Paris, Ophrys, 1998.

Il n'est pas dans notre propos de théoriser ici cet aspect, mais de montrer que l'approche didactique du français authentique, indispensable à la pratique de la langue française en géneral, exige de la part des enseignants des connaissances relatives aux variations que cette langue incorpore. Ces variations, que la pédagogie VIFAX prend sérieusement en compte, peuvent faire l'objet d'une description grammaticale propre.

On a constaté l'existence, dans la langue française, "de quelques schèmes ou types de variation (deux ou trois), qui rendent compte de la nature de toutes les variantes possibles".[18] Il ne faut donc pas se borner parfois à stigmatiser comme "incorrectes" ou "aberrantes" les différentes façons de dire la même chose, mais il faut les tenir pour "autant d'oppositions constitutives de la structure de la langue".[19] On peut s'en convaincre, rien qu'à examiner les exemples suivants:

a) Ce qui se passe ici / Ce qu'il se passe ici
b) La fille dont je te parle / La fille de qui je te parle / La fille de laquelle je te parle / La fille que je t'en parle / La fille que je te parle d'elle / La fille dont je t'en parle
c) un météorite / une météorite

Il est vrai que les normes académiques n'acceptent pas tous les exemples ci-dessus, mais, abstraction faite de leur image normative, ces structures présentent un intérêt essentiellement pragmatique, en ceci qu'elles augmentent la maniabilité du système de la langue française. Les productions orales véhiculant de tels phénomènes variationnels méritent sans doute une attention pédagogique, car il s'agit de voir comment, un sujet parlant peut satisfaire ses propres besoins communicatifs en utilisant efficacement des structures variationnelles qui correspondent à certaines représentations métalinguistiques. Par ailleurs, comme le remarque à juste titre Alain Berrendonner, "il ne saurait

f) Robillard, D. de, Martinez, P. et collègues, *Projet de Recherche* <<Représentations de la variation, modèles empiriques de la variation: une enquête comparative, Tours, la ville du <<beau parler>>, et la région parisienne>>, UPRESA 6058 Aix-Marseille et EA 2534 E.N.S. Fontanay-Saint-Cloud, 1999, recherche en cours.

g) Rigault, A. (dir.), *La grammaire du français parlé*, Paris, Hachette, 1984.

[18] Berrendonner, A., <<Normes et variations>>, in *La langue française est-elle gouvernable? Normes et activités langagières*, sous la direction de Schoeni, G.,Bronckart, I.P.&Perrenoud, Ph., Paris, 1998, p. 46.

[19] *Ibidem*. p. 45.

[...] y avoir d'apprentissage efficace des catégories normatives avant (ou sans) l'intériorisation des structures variationnelles objectives".[20]

Ce petit aperçu sur les phénomènes variationnels du français et leurs incidences didactiques n'est qu'un aspect de la complexité devant laquelle se trouve l'enseignement / apprentissage en matière de discours authentique. Car, il est évident que les caractéristiques de ce type de discours sont plus nombreuses (mais difficiles à systématiser du fait que l'oral et l'écrit partagent des phénomènes communs); à cela s'ajoute le fait, important pour une didactique de langue, que les usages oraux se manifestent dans tous les domaines de la grammaire.

En ce qui nous concerne, pour ce qui est du domaine de la didactique du français, nous sommes pour l'étude de l'oral dans une perspective centrée sur le texte et le dialogue (perspective pragmatique).

On sait très bien que certaines caractéristiques des discours oraux tiennent à leurs conditions de production (il s'agit de répétitions, ratés, faux départs, phrases inachevées, reprises, hésitations, corrections, etc.).

Voici, en grandes lignes, les phénomènes linguistiques particuliers du discours authentique, dont les enseignants doivent tenir compte dans l'activité de didactisation de séquences enregistrées[21]**:**

- emploi de phatèmes (termes qui ont pour fonction d'attirer et de maintenir l'attention d'autrui): "hein", "n'est-ce pas?", "bon", "vous voyez" etc.
- procédés de mise en relief (structures emphatiques): "Excelent, ce café!";
- emploi fréquent des déictiques;
- <<simplifications>> de l'oral (par souci d'économie): omission du "ne" négatif, parataxe évitant la subordination, etc.
- répétitions de termes et de structures

Pour ce qui est de l'agencement des segments de l'oral, il est à remarquer le rôle essentiel des indices intonatifs qui assurent, selon Mary-Annick Morel et Laurent Danon-Boileau, la démarcation de l'unité

[20] *Ibidem*. p. 61.

[21] Nous avons emprunté la liste des caracteristiques des discours oraux à Riegel, M., Pellat, J.C., Rioul, R., *Grammaire méthodique du français*, Paris, PUF, 1994, pp. 36-37.

fondamentale de l'oral, qu'est "le paragraphe", et la cohésion interne de ses constituants majeurs, "le préambule", "le rhème" et "le postrhème"[22].

2. *Le laboratoire didactique de l'enseignant*

Nous avons donc vu quelques aspects liés à l'enseignabilité de l'oral. Encore faut-il que l'enseignant trouve les meilleures démarches pédagogiques dans l'exploitation des supports VIFAX. La préparation d'un cours VIFAX s'avère être, au niveau universitaire, une activité extrêmement complexe, qui exige de la part du didacticien tout un ensemble de connaissances psychopédagogiques et techniques.

Le point de départ de l'activité de didactisation des documents VIFAX (en l'occurrence, des séquences de journaux télévisés issus de TV5) est l'acquisition de la vraie compétence de compréhension; l'enseignant ne doit pas ignorer que, la pleine "acception VIFAX" de ce terme se trouve bien au-delà de ce que signifie la simple réception passive, visuelle ou auditive de l'enregistrement vidéo; comprendre c'est construire le sens du message reçu, autrement dit, la compréhension est un processus psycholinguistique complexe.[23] Il s'ensuit que les objectifs d'acquisition, lorsqu'ils sont définis, doivent prendre en compte la dimension psycholinguistique du comportement verbal, ce qui échappe assez souvent à nos enseignants.

Dans l'approche pédagogique d'une séquence de journal télévisé, le modèle onomasiologique (qui permet d'abord la perception du sens pour amener ensuite aux signes qui le transportent) nous semble le plus efficace. Nous présentons ici une petite description du processus de compréhension, dans ce modèle[24]:

- l'apprenant établit, d'abord, des hypothèses sur le contenu du message, au fur et à mesure de son déroulement; ces *hypothèses sémantiques* qui agissent aussi bien au niveau global du message tout

[22] Voir Morel, M.A., Boileau-Danon, L., *op. cit.*; pour une introduction à la réflexion sur la possibilité d'établir une grammaire de l'oral, voir Levêque, C., <<Peut-on établir une grammaire de l'oral?>>, in *BIP (Bulletin d'information pédagogique)* nº 15 / juin 1998, edité par le Centre Culturel Français de Cluj-Napoca, pp. 41-45.

[23] *Cf.* Gremmo, M-J., Holec.H., <<La compréhension orale: un processus et un comportement>>, in *Le français dans le monde. Acquisition et utilisation d'une langue étrangère. L'approche cognitive*, numéro spécial, février-mars 1990, pp. 30-40.

[24] *Ibidem*. pp.32-34.

entier qu'au niveau plus restreint des unités de l'architecture sémantique de celui-ci, sont doublées des *hypothèses formelles* concernant les structures des signifiants. Nous nous voyons obligé de rappeler ici que la signification des messages que véhiculent les supports authentiques ne se réduit pas aux informations linguistiques; (voir *supra*)

- ensuite, l'apprenant procède à la vérification de ses hypothèses, non pas par une discrimination linéaire des informations, mais par une *prise d'indices* permettant la confirmation ou l'infirmation de ses attentes formelles et sémantiques;

- la dernière phase de ce processus consiste à intégrer la signification "préconstruite" du message à la signification en cours; si les hypothèses préalables de l'apprenant sont infirmées, celui-ci va reprendre la procédure à zéro, en établissant de nouvelles hypothèses;

On voit bien que, dans ce modèle, la priorité est donnée à l'opération créative de préconstruction de la signification du message par l'apprenant, grâce aux connaissances de différents ordres dont celui-ci se sert et qu'il nous semble important de mentionner ici, vu que leur examen / réexamen entraîne nombre de conséquences pédagogiques[25]:

– des connaissances sociolinguistiques sur la situation de communication;
– des connaissances socio-psychologiques sur le producteur du message;
– des connaissances discursives sur le type de discours concerné;
– des connaissances linguistiques sur le code utilisé;
– des connaissances référentielles sur la thématique invoquée;
– des connaissances culturelles sur la communauté à laquelle appartient le producteur du message.

Nous y ajoutons les connaissances techniques dont dépend l'efficacité de l'analyse télévisuelle du document.

Ces connaissances que l'apprenant met en oeuvre dans l'entreprise de découvrir le document télévisuel constituent autant de points de repère dans le

[25] *Apud.* Gremmo, M. J., Holec, H., *art. cit.,* pp. 33-34.

travail destiné à guider l'apprenant à élaborer ses propres stratégies. L'enseignant va lui faire comprendre:

– qu'il n'est pas possible de tout comprendre du premier coup et qu'il doit être satisfait d'avoir compris l'essentiel;
– qu'il faut apprendre à puiser un maximum d'information dans l'image;
– qu'il faut apprendre à utiliser un maximum de connaissances antérieures sur la réalité évoquée pour s'aider à faire des hypothèses sur *ce qui a dû être dit* dans la séquence.[26]

Nous allons maintenant voir quels sont les points forts d'un traitement didactique efficace d'une séquence enregistrée de journal télévisé.[27]

Nous allons utiliser comme support didactique concret la transcription intégrale d'une séquence du journal TV5 (SRC) du 18 mars 1998), intitulée "L'homme est-il l'égal de la femme?"

Corrigé

TV5 (SRC) 18 mars 1998 à 08h00

2. L'homme est-il l'égal de la femme?

La question revient toujours: les hommes font-ils vraiment leur part dans les tâches ménagères? Et ben, pour la première fois, on a les chiffres tirés du recensement de 1996 de Statistiques Canada. Conclusion: les femmes en font encore beaucoup plus. Mais là où les hommes sont maintenant presque à égalité, presque à égalité avec les femmes, c'est pour les soins des enfants. Quelques précisions de Maxence Billodeau.

Les femmes jouent encore aujourd'hui un rôle prépondérant dans le déroulement de la vie quotidienne à la maison. Statistiques Canada l'affirme, les hommes le confirment.

[26] *Apud*. Nicov, M., <<L'utilisation de VIFAX en classe>>, in *Atelier VIFAX* (dossier), nº 4/'97, avec le soutien de l'Agence de la Francophonie ACCT, p. 12.

[27] Pour plus de détails concernant l'élaboration des fiches pédagogiques VIFAX, voir (1) le dossier *Atelier VIFAX*, nº 4/'97 que nous avons cité ci-dessus; (2) Niță, A., <<Quelques réflexions sur l'emploi de la méthode Vifax au niveau universitaire>>, in *Analele Universității din Craiova. Multimédia et enseignement des langues étrangères*, Editura Universitaria, Craiova, 1998, pp. 79-86.

Le journaliste: A la maison, les femmes font plus de travail ménager que les hommes, beaucoup plus?

Marcel Saumure: C'est vrai.

Le journaliste: C'est vrai?

Marcel Saumure: Oui! C'est sûr.

Le journaliste: Comment?

Marcel Saumure: Parce que c'est vrai.

C'est là un exemple classique. Marcel Saumure travaille beaucoup plus à l'extérieur de la maison que sa conjointe et c'est donc elle qui se retrouve avec les travaux ménagers.

Statistiques Canada nous apprend que seulement 22% des hommes consacrent plus de 15 heures par semaine aux travaux ménagers alors que 49% des femmes font plus de 15 heures. Si les deux époux travaillent et ont des enfants en bas âge, à ce moment, 60% des femmes font plus de 15 heures de travaux ménagers contre seulement 26% des hommes. Quant aux soins accordés aux enfants, comme jouer avec eux ou les aider dans leurs travaux scolaires, l'enquête ne montre pas de différences marquantes entre hommes et femmes. Sauf s'il y a des enfants en bas âge. Avec des jeunes de moins de 6 ans, 80% des femmes consacrent plus de 15 heures aux soins aux enfants contre 50% des hommes.

Françoise David (présidente de la fédération des femmes du Québec): C'est assez difficile de changer ces comportements-là en l'espace d'une génération. Y'a peut-être les femmes qui devraient négocier plus, insister plus et mettre les points sur les i.

Ginette Paillé: On chiale mais qu'est-ce que vous voulez? Les hommes, euh, ça n'a pas vraiment changé hein.

Marcel Saumure: On est mieux que nos parents et puis euh, nos enfants vont être mieux que nous sommes.

Ginette Paillé: C'est vrai, ça s'améliore, ça s'améliore.

Comme c'est la première fois que Statistiques Canada pose des questions sur le travail ménager, on ne sait pas exactement comment la situation s'est transformée ces dernières années. Il faudra donc attendre les

prochains recensements pour juger de l'évolution de cet autre aspect de la guerre des sexes. Maxence Billodeau, Radio Canada, Toronto.

Mots-clés: travaux ménagers guerre des sexes hommes femmes.

Pour préparer un cours VIFAX qui réponde aux exigences / attentes tant des étudiants que du professeur, il nous semble important de mentionner les étapes suivantes:

I. **Décrire les résultats attendus et définir, en fonction de ceux-ci, les objectifs d'acquisition**

Pour ce faire, le professeur doit tenir compte des intérêts des étudiants et de leur niveau de compétences en français.

Ce sont deux critères essentiels qui président au choix d'une séquence VIFAX, mais ce ne sont pas les seuls. Interviennent ici d'autres critères aussi: l'apport du document au développement des compétences linguistiques et discursives des étudiants; l'intérêt que présente ce document-là du point de vue socio-culturel, etc.

Notre choix est dû à:

- la problématique de la guerre des sexes qui reste toujours un sujet intéressant à traiter;
- l'intérêt social que présente l'étude du statut de la femme aujourd'hui;
- quelques problèmes d'analyse de discours, inspirés par les interventions des locuteurs;
- la succession d'images et paroles qui se prête à de nombreuses commentaires;

Avant de définir les résultats attendus et les objectifs opérationnels du cours, il faut étudier les exercices proposés par les équipes VIFAX de Bordeaux / Berne. Pourquoi faire? Tout simplement pour connaître l'image que les concepteurs de ces exercices se font des résultats attendus par les enseignants de F.L.E. Par ailleurs, l'adaptation des tâches proposées, à des situations d'apprentissage concrètes s'avère être un bon exercice pédagogique pour nos enseignants.

Voici maintenant les résultats attendus dans le cas de l'exploitation de notre séquence VIFAX:

- Améliorer ses capacités de "lecture" de l'image et de la parole dans un reportage télévisé;
- Dégager la signification du message principal de la séquence;
- Analyser les détails d'ordre linguistique, et civilisationnel;
- S'exercer dans l'analyse du discours oral;
- Emettre et argumenter des jugements quant à tel ou tel sujet de débat;

La définition de ces résultats attendus influence celle des objectifs opérationnels du cours, la conception des activités et le choix des méthodes.

Objectifs opérationnels:

- Relever et commenter les relations existantes entre images et son dans cette séquence;
- Suivre les consignes proposées dans les feuilles de travail;
- Inventorier et commenter les caractéristiques du discours oral véhiculé par la séquence;
- Répondre à des questions portant sur le statut de la femme dans divers pays;
- Proposer des prolongements possibles de l'activité didactique;

Stratégies didactiques:

- la conversation;
- la démonstration;
- l'explication
- l'exercice;
- la problématisation;
- le commentaire linguistique;
- le brainstorming;
- la simulation globale;

Activités proposées:

- visionnement de la séquence VIFAX
- compréhension (orale + écrite)
- expression (orale + écrite)
- travail individuel ou en groupe
- dialogue
- débats

II. **Déroulement du cours**

a) Prise de contact, négociation des résultats, des objectifs à atteindre et des activités proposées;
b) Travail sur la séquence VIFAX

c) (i) visionnement de la séquence sans le son, description des images, des protagonistes, hypothèses concernant le sujet traité.

Observation: Cette étape se propose pour objectifs essentiels le repérage des faits situationnels majeurs et un entraînement inférentiel qui va de l'image vers une signification supposée. On peut proposer aux étudiants un travail individuel (ou en groupe) dont la tâche serait de commenter les images par écrit. Après une confrontation des résultats, le professeur extrait les significations essentielles que les étudiants ont attribuées aux images.
(ii) nouveau visionnement de la séquence (cette fois-ci avec le son) suivi d'une analyse télévisuelle de celle-ci (mise en relation des images et des informations linguistiques) et de commentaires des déclarations.

Observation 1: Un exercice intéressant consiste à diviser le document en plusieurs parties, en fonction des intervenants: présentateur, journaliste, personnes interviwées.

Observation 2: Cette étape se propose la reconstitution du document et la compréhension détaillée de celui-ci.

d) Exercices lexicaux et syntaxiques (famille de mots, expressions, constructions) à partir d'éléments présents dans la séquence.

Exemples:

1) - ménagère
   - tâches ménagères
   - ordures ménagères
   - ménage
   - articles de ménage
   - monter son ménage = travailler pour entretenir un intérieur
   - se mettre en ménage = commencer à vivre maritalement
   - scène de ménage = altercation entre conjoints
   - faire bon (mauvais) ménage = s'entendre bien (mal)
   - un ménage uni = un foyer uni
2) "y'a peut-être les femmes qui devraient négocier plus ..." = construction de mise en relief caracterisant le français oral,

dont le pendant standard est: "Ce sont les femmes qui devraient négocier plus ..."

3) chialer = ici pleurer, se lamenter (terme familier)

Observation: Cette étape a pour but pédagogique la pratique libre de la langue.

a) Auto-évaluation par confrontation avec le corrigé

b) Étape visant à entraîner les étudiants à l'analyse des problèmes linguistiques relevant de l'énonciation, du statut et du rôle des protagonistes, du caractère argumentatif des répliques.

Dans le cas de notre séquence, le professeur doit attirer l'attention des étudiants sur quelques aspects qui méritent un traitement à part:[28]

- identification et analyse de la fonction de "parce que" dans le petit dialogue entre le journaliste et Marcel Saumure et à partir de là, analyse d'autres fonctionnements de "parce que";
- l'analyse conversationnelle des répliques des deux protagonistes;
- le problème du fonctionnement de "mais" dans la réplique de Ginette Paillé et dans d'autres contextes;
- les effets de sens du démonstratif "ça";
- l'analyse du pronom "on" dans chaque contexte;

c) Activités de prolongement de l'exploitation standard:

- On peut utiliser, par exemple, la simulation globale, en distribuant aux étudiants les rôles des intervenants; on évitera la reprise des répliques déja connues, de ces intervenants.
- On peut animer des débats autour de sujets tels que:
  - le statut de la femme en Roumanie
  - les femmes vues par les hommes et viceversa
  - "la guerre des sexes"

[28] Pour le traitement des problèmes mentionnés, nous recommandons les ouvrages suivants:

a) Ducrot, O., *Les mots du discours*, Paris, Minuit, 1980.

b) Anscombre, J.-C., Ducrot O., *L'argumentation dans la langue*, Bruxelles, Pierre Mardaga, 1983.

c) Moeschler, J., *Théorie pragmatique et pragmatique conversationnelle*, Paris, Armand Colin, 1996.

- le mariage / le célibat

III. **Evaluation du cours**

Il est nécessaire qu'à la fin du cours, les étudiants et les professeurs réfléchissent, chacun pour sa part et tous ensemble, aux problèmes abordés pour inventorier les avantages ou les défauts de telle ou telle approche et pour pouvoir trouver les activités le mieux adaptées aux résultats désirés.

Conclusions

Les journaux télévisés constituent un excellent support pédagogique pour le perfectionnement des compétences linguistico-discursives des étudiants. Mais quelle que soit l'utilisation, prédominante ou périphérique qui est faite de l'enregistrement vidéo, c'est in fine le traitement didactique du professeur qui le rend ou non fécond.

Au niveau universitaire, l'activité de didactisation des documents authentiques est une activité complexe qui s'étend au-delà des prescriptions de la méthode VIFAX; à part l'acquisition de la compétence orale et de la compétence de communication, un cours VIFAX adressé aux étudiants se propose aussi des objectifs d'ordre métalinguistique.

Dans l'approche pédagogique des séquences de journaux télévisés, le modèle onomasiologique s'avère être extrêmement efficace: il fait appel à tout un ensemble de connaissances (voir *supra*) dont l'apprenant se sert dans la construction du sens. Dans l'acquisition de la compétence de compréhension, le modèle onomasiologique aide l'apprenant à élaborer ses propres stratégies d'investigation du matériau brut que constitue un journal télévisé. Il ne nous reste qu'à donner pleinement raison au professeur Michel Perrin: "rien n'est jamais compris, ni donc appris, qui ne soit un tant soit peu découvert par soi-même".[29]

[29] Perrin, M., <<Quand l'oeil écoute>>, *art. cit.,* p. 11.

BIBLIOGRAPHIE

1. *Analele Universității din Craiova. Multimédia et enseignement des langues étrangères*, Editura Universitaria, Craiova, 1998.
2. Anscombre J. C., Ducrot, O., *L'argumentation dans la langue,* Bruxelles, Pierre Mardaga, 1983.
3. *Atelier VIFAX* (dossier), nº 4/'97, avec le soutien de l'Agence de la Francophonie, ACCT.
4. Berrendonner, A., <<Normes et variations>>, in *La langue française est-elle gouvernable? Normes et activités langagières*, sous la direction de Schoeni, G., Bronckart, J.P. & Perrenoud, Ph., Paris, 1988, pp.43-62.
5. *B.I.P. (Bulletin d'information pédagogique)*, édité par le Centre Culturel Français de Cluj-Napoca, nº 15 / juin 1998, pp. 27-45.
6. Blanche-Benveniste, C., *Approches de la langue parlée en français*, Paris, Ophrys, 1997.
7. Boiron, M., <<Apprendre et enseigner avec TV5>>, in *Le français dans le monde*, nº 290 / 1996.
8. Charaudeau, P., *Grammaire du sens et de l'expression*, Paris, Hachette, 1992, pp.99-116.
9. *** *Dictionnaire de didactique des langues*, dirigé par R. Galisson / D. Coste, Paris, Hachette, 1976.
10. Ducrot, O., *Les mots du discours,* Paris, Minuit, 1980.
11. *Le français dans le monde. Acquisition et utilisation d'une langue étrangère. L'approche cognitive*, numéro spécial, février-mars, 1990.
12. Moeschler, J., *Théorie pragmatique et pragmatique conversationnelle*, Paris, Armand Colin, 1996.
13. Perrin, M. <<Quand l'oeil écoute>>, in *The Journal of Tesol France*, volume 4, 1997;<<Apprendre à comprendre. Vifax: un outil multimédia d'acquisition et perfectionnement des langues>>, in *Babylonia*, nº 2/1998;<<Centres de ressources et autonomie guidée>>, in *Les langues modernes. Enseigner aux adultes*, nº 1 / 1992.
14. Riegel, M., Pellat, J.C., Rioul, R., *Grammaire méthodique du français*, Paris, P.U.F., 1994, pp. 29-37.
15. Roman, D., (1) *La didactique du français langue étrangère*, Baia-Mare, Editura Umbria, 1994; (2) *Linguistique et enseignement du français*, Cluj-Napoca, 1994.

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INTEGRATING LANGUAGE WORK AND OTHER SUBJECTS IN THE PRIMARY CLASSROOM

BIANCA BRETAN

SOMMAIRE. L'article "Modalités d'integration des langues étrangères à d'autres disciplines dans les classes primaires" se propose à explorer cette possibilité et à présenter des arguments en sa faveur. Après avoir passé en revue quelques-uns des éléments communs aux classes de langue anglaise et à d'autres disciplines, l'article parle des modalités concrètes par lesquelles ou peut réaliser l'integration. On y souligne le fait que la tâche du professeur d'anglais qui enseigne dans les classes primaires est rendue plus facile par l'existence des manuels alternatifs qui contiennent un nombre considérable d'éléments interdisciplinaires.

Any starting point for discussing this problem should start with the question whether or not is integration a good idea. For a better understanding of this kind of approach we should think at the purpose of language learning which is (without any doubt) communication. Also, the language taught must be meaningful, useful and manageable (John Haycraft). In other words it is important for the children to see the language they are learning as something normal, useful and natural. That is why it is a good idea not to set the language classes apart from the rest of their learning. The children, even at a young age, should see the new language as something to use, not just something they manipulate in language classes. As S. Halliwell points out "recent language acquisition theory stresses that one very powerful way of learning a language is by receiving and producing real messages".

However good these reasons seem many teachers are reluctant to the idea of integration. This happens because either they doubt their own ability to do it or they think it will be too difficult for the children. But integration is not complicated because teachers do not have to find new communication

skills in order to teach in English, they only have to make a better use of the existing ones.

In order to prove this we only have to find out the key elements which language work and other school learning have in common. S. Halliwell says that if one compares the work the teacher does in language lessons and the work he/she does in other lessons one will find that however different the content of the lessons is in certain respects they build on the same processes (S. Halliwell):

- diagrammatic representation of information
- repeated pattern
- understanding through seeing
- responding by doing

Next, we will have a closer look at all these processes trying to find out in which way can they help us to integrate language work and other learning even with young learners.

a) **Diagrammatic representation** means that the information is recorded in chart form. Clearly, this type is mainly used in maths classes but pie charts and block graphs can be also used in language classes for instance when we want to have a clear picture of a class survey. If the children learn about pets during an English class, a final activity on this topic could be an interview conducted by children in which they express their preferences about pets. Later, the information collected can be arranged in a pie chart.

b) **Pattern** is central to maths and science. It is also fundamental to understanding and learning because it is the way we store information in our brains. There can't be grammar without pattern. It is because of the pattern that the children can make the plurals of nouns they have never met before.

c) **Understanding through seeing** is also central to language work. S. Halliwell explains that "something other than language must carry messages. That something else is what we see". Maths and science make full use of seeing in order to understand.

d) **Responding through doing** has a particulary significant role in the early stages of language learning. It is about interpreting a message correctly in a situation in which, for example, we ask the children to do something "Go to the window" or "Point to the map" and they simply perform the actions.

Seeking for integration also means seeking for common elements between language lessons and other lessons. We can incourage integration by introducing little bits of English into other classroom work. And here the other teachers can give us a hand. A teacher of Romanian can use an English poem in a mother tongue class (for example in a literature class if the topic is Romanticism the students can recite a poem by Shelley or Keats). Or, an English song can be used when it's time for music. But there are also other ways, more substantial than this to achieve integration. Before going any further I want to underline again that integration is possible at any level, even in the primary classroom. That is why my examples refering to the practical level of combining language work and other subjects will all be from the "Splash!" textbooks.

One important way in which we can tie in the language classes with the rest of the learning is using language classes to provide material for work in other lessons. How would this be possible? In maths, children ar going to learn at some stage the geometric forms. In the second grade "Splash!" textbook a lesson entitled "A shapes jungle" makes use of forms like triangles, squares and circles in order to teach the children to draw flowers and animals. Later, when they study geometry, it will be easier for them to recognize all those forms. The same is possible in a History lesson. In the same textbook we have the lesson "Pompeii" which is about the famous Roman town. Having this presentation in mind as an example, the children can work on a personal or group project about a famous monument in our country. This means that the children will be able to transfer information from one subject to the other linking language with thinking.

Another way of integration is introducing topics from other subjects into language lessons. The idea here is that the language teacher increases the integration of language work by teaching something that will be dealt later in a mother tongue lesson. For example in the third grade "Splash!" textbook we have the lesson "A project about volcanoes", a topic that will be developed later in a geography lesson. But here the English teacher can precede this in the language lesson explaining facts about volcanoes and having a look inside the mechanism of eruption. Another example is the lesson "Pitcher plants" in the same textbook in which the children learn about some unusual plants that eat insects. In both cases the task of the geography and biology teacher will be easier.

All my examples are from textbooks in use but even without them it is not a problem for teachers to find suitable topics like these to teach in English. However, as I mentioned before, for most people the worry is that the whole event is too complicated both for us as teachers and for the children. This does

not have to be the case. In fact integration is simply a combination of already known techniques and approaches and it involves the four skills. For example, a lesson on the rain forests would probably involve some reading (in the form of a brief presentation of the rain forests), listening (point to the map while listening to the tape), speaking (talk about the map with your friend like this: "Are there any rain forests in the U.S.A.?"), and writing (in the form of a quiz).

What I tried to underline here is the fact that each part of such a lesson involves already familiar skills and techniques for teaching English. That is why the teacher shouldn't be afraid of using them in order to make a lesson look different. Also, she or he shouldn't avoid integrating language work and other subjects. As an immediate result the teacher will notice the children's reaction, their interest and excitement.

BIBLIOGRAFIE

1. Haycraft, John, *Introduction to ELT*, Longman, 1993, pg. 7.
2. Halliwell, Susan, *Teaching English in the Primary Classroom*, Longman, 1993, pg. 131-133.
3. Harmer, Jeremy, *The Practice of ELT*, Longman, 1994.

RECENZII

Adriana Barna, Irina Pop, Agaftea Moldovan, *Biology Teaching in Gymnasium***,** Editura Didactică și Pedagogică, București, 1998.

Since 1983 until now, in the field of the methodics of biology teaching, only one book was published in our country, namely the one prof. Ion Iordache wrote. It was litographed at the "Al. I. Cuza" University in Jassy in 1992 and had a very limited circulation.

The book ***"Biology Teaching In Gymnasium"***, first published at Editura Didactica si Pedagogica Bucuresti in 1998 is the result of the collaboration of reader dr. Adriana Barna and assistant teacher drd. Irina Pop from the "Babeș-Bolyai" University in Cluj-Napoca, the Faculty of Psychology and Education Sciences with prof. Agaftea Moldovan from School No.29 in Cluj-Napoca. This book responds to a natural and actual need of our educational system. In the process of modifying the viewpoint of the teaching staff regarding the latest achievements of educational sciences, the courses in the didactics of every speciality can and must play an active and important role. The work of the above-mentioned authors suggests the introduction of up-to-date scientifical results in the practice of teaching and learning, new achievements of psychopedagogy and didactical logic that are supossed to increase the efficiency of the didactical process and influence upon the conduct of the teaching staff.

Original enough, the authors examined some fundamental aspects of biology teaching in gymnasium. Thus, the objectives of teaching biology, the contents of biological education, the methodology applied in teaching biology, the evaluation of objectives and some aspects of education (esthetic, moral and religious, health and ecological education) are analyzed and offered to teachers of natural sciences from the perspectives of a modern and efficient approach. Individual and team work, lesson projects and sketches, handling of the manual itself, stimulation of pupils' interest in biology and activities that go along with this discipline are some of the chapters of the work; all these sustain the idea of the need to implicate pupils in the specific practical activities of the discipline, in order to mould on them the appropriate attitude.

The three chapters of the book, *Information and Formation Through the Study Of Biology, A Modern Approach To the Biology Lesson* and *Biology Supporting Education* embrace on a broader scale the entire content of a discipline with a very well-shaped specific. The main

merits of this work could be outlined as follows: a psychopedagogical approach to the discipline, systematic and syntetic pointing of some rules of the practice, numerous lessons models, selection of literary texts, integration of the discipline in the natural sciences mainstream, an adequate and recent bibliography in Romanian, French and English (75 titles).

"Biology Teaching In Gymnasium" is a real help to the teaching staff through its substantial contribution to perfecting the teaching methods of this discipline in our school system.

Prof. univ. dr. Dumitru SALADE

L'enseignement et l'apprentissage de la physique
au gymnase et au lycée,

Liliana Ciascai, Editura Albastră, Cluj-Napoca, 1999

Ce travail-ci se situe dans la sphčre de la didactique appliquée ŕ la "Physique" et il se propose l'interrelationalisation et la particularisation des plans descriptif, téléologique et méthodologique ŕ l'aire méthodique de cette discipline d'étude. Conçu d'une maniére interrogative, le livre sera sűrement non seulement un support utile pour les démarches didactiques des professeurs de physique et des étudiants, mais aussi une invitation aux reflections, aux analyses et évaluations personnelles.

Dans les huites chapitres, l'auteur se propose de réaliser la présentation et l'analyse, en vision systémique, des principaux aspects théoriques et pratiques de l'enseignement et l'apprentissage de la physique au gymnase et au lycée.

La succesion des chapitres respecte une démarche logique, qui commence, par le chapitre I, avec la description du procés de la connaissance scientifique dans la physique et elle continue, naturelement, avec l'analyse du contenu scientifique étudié dans l'enseignement préuniversitaire ŕ cette discipline (chapitre II). Etroitement lié au contenu de ces chapitres on traîte, dans un chapitre ŕ part (chapitre III) les obstacles épistemologiques que peuvent apparaître dans l'apprentissage de la physique et on présente, on décrit et on analyse une série de situations d'instruction fréquemment rencontrées dans les leçons de physique (chapitre V). Les chapitres IV, VI VII et VIII sont axés sur des topiques avec une importance tout ŕ fait spéciale pour l'enseignement et l'apprentissage d'une n'importe quelle discipline d'etude: les objectifs pédagogiques, la méthodologie didactique, l'évaluation et respectivement la projection didactique.

Dans son ensamble, le travail met en evidence le désir de l'auteur de réaliser une série de connexions interdisciplinaires en vue de concrétiser et éclaircir des concepts et sintagmes pour le domaine privé de la physique. L'auteur a le mérite d'avoir abordé, détaillé et exemplifié, en premičre, une série d'aspects pédagogiques et épistémologiques en les rendant operationnels dans la physique. Nous faisons référence spécialement ŕ la connaissance scientifique dans la physique, au "status" des ereures et aux

états de demi-compréhension dans le processus d'apprentissage dans la physique, ŕ la analyse des situations d'instruction ŕ la physique, ŕ la description de l'interaction de l'élčve avec les connaissances et ŕ la nouvelle définition des méthodes d'enseignement dans des perspectives multiples - pédagogique, psychologique et épistémologique.

Les problčmes spécifiques du processus de l'enseignement et de l'apprentissage suivis par l'auteur, et la modalité concrčte de les traiter, confčrent au travail une applicabilité immediate dans le domaine théorique et pratique de la méthodologie de l'enseignement de la physique. Les démarches du type pédagogique et didactique sont secondées par des présentations réalisées dans la sphčre de la psychologie cognitive et de l'épistémologie des sciences. Les connexions et les présentations interdisciplinaires réalisées par l'auteur soutiennent d'une maničre considérable la projection pragmatique des démarches éducationnelles et les concrétisations pour la discipline "Physique".

Tous ces éléments assurent la valeur méthodologique du travail et le rend utile pour ceux qui s'intéressent ŕ la théorie et ŕ la pratique de l'instruction de la physique.

Le livre "L'enseignement et l'apprentissage de la physique au gymnase et au lycée" est élaboré dans un esprit moderne et novateur, l'auteur voulant appliquer les résultats des recherches pédagogiques, psychologiques et épistémologiques dans la méthodologie de l'enseignement de la physique en faisant ainsi quelques considérations théoriques et sourtout des démarches pratiquement applicatives.

Dans la structure du travail nous remarquons quelques éléments desquels se lient les apports originnels de l'auteuur, des apports qui se concrétisent dans des suggestions oppérationnelles pour le domaine de la physique, de certains aspects du domaine de la pédagogie, de la didactique, de l'épistemologie etc.

Les contributions personnelles de l'auteur se situent sur le plan des éclaircissements et des développements conceptuels et surtout sur le plan des suggestions pratiques concernant l'enseignement et l'apprentissage de la physique: l'essence du processus de l'enseignement, les objectifs pédagogiques, la méthodologie didactique, l'évaluation et la projection didactique.

La valeur épistémique du travail est agrandie par la logique des démarches, et surtout par le support intuitif (les schémas, les tableaux etc.) qui soutient la décodification du texte et qui assure l'accessibilité de la lecture.

Le livre "L'enseignement et l'apprentissage de la physique au gymnase et au lycée" accentue l'esprit analitique et syntetique de l'auteur, sa capacité d'investigation scientifique et sa créativité, se présentant comme un quide méthodologique utile aux enseignants et aux étudiants qui enseignent la physique.

Prof. univ. dr. **Miron IONESCU**

Mușata Bocoș, *Heuristical Methods in the Study of Chemistry, Presa Universitară Clujeană, Cluj-Napoca, 1998*

The book called "Heuristical Methods in the Study of Chemistry" can be epistemologically situated in the field of practical education, of didactics applied to chemistry.

The content and structure of the book are an attempt to respond to an ever-present teaching requirement - that of extending methodology from teaching to learning. The author is mainly preoccupied by methodology and especially focused on combining problem-solving with experiential learning as part of a complex body and of heuristics. The option of the author is well justified in this respect as it is clear from the first pages of the book that educational strategies are interlinked with methodology, which is a valuable source of innovation in education. Problem-solving and experiential learning are - for sure- premises for a conscientious, rational, intelligent learning which usually occurs when higher levels of intellectual development are incumbed.

Mention should be made that though the topic approached by the author is not a very recent acquisition in didactics, the way in which this subject is treated and tackled leads to novelty and immediate applicability in the theory and practice of teaching chemistry. The strictly educational discourse is mixed with approaches on the basis of cognitive psychology and sciences epistemology, the latter being less developed with us. These new fields and the new perspective from which the author writes will make the book profitable for other sciences of education especially if one considers the interlinks of methodology description, teleology and deontology found in the work.

The author makes a large range of analyses from the view points of education, psychology, methodology, epistemology, axiology. being pragmatic in both the theory and practice and illustration of the principles presented. What is especially interesting is the way in which some theory belonging to general didactics is made particular for the field of chemistry in a valid and operational mannel. In this respect the book redefines and reassesses problem-solving and learning by doing , points out the advantages of the methods and especially the didactics connected to it.

The practically applied part of the book offers valid arguments for the need to learn chemistry by doing and by problem-solving. The chapters referring to experimental test, to data presentation and interpretation, to conclusion writing are concrete, clear and rigurous.

The author knows how to make educational research and makes the educational design according to scientific research rules and standards, from objectives and aims separately drawn for teachers and pupils, to writing down the research hypothesis, to a statistically significant sample, followed by the specific research strategy, the qualitative and quantitative interpretation of the results obtained, later on checked and controlled. The most relevant component of the applied study is the experiment

which follows all the steps required by rigurous scientific research.

The author's personal contributions are mainly dedicated to making clearer some educational concepts in methodology and to offering practical hints for learning chemistry by problem-solving and discovery.

The epistemic stature of the content is supported by a logical presentation, by illustrations which intuitively help learning as well as by the layout of the book and the easiness with which the book can be read. The language is clear, accurate and suggestive, the order of ideas is logical and praxiological.

The structure of ideas supported on a high level discourse highlights the ability of the author to make scientifique research and to be creative. The book is a useful and accessible guide for the teachers of chemistry and for other chemistry oriented specialists.

Prof. univ. dr. **Miron IONESCU**

B. F. Skinner, *Science et comportement humain,* traduction en français de André et Rose-Marie Gonthier-Werren, The Macmillan Company, New-York, 1999.

Parue pour la premiere fois en 1953 en anglais, reimprimée de plusieurs fois, mais dans la meme langue, l'ouvrage de chercheur américan B. F. Skinner fait son apparition, en premičre, en français, au cours de l'année 1999.

La démarche des traducteurs André et Rose-Marie Gonthier-Werren semble ętre outile pour les lecteurs des pays francopfones, mais aussi pour ceux d'autres pays, ou le français s'étudie comme langue moderne dans l'enseignement préuniversitaire et universitaire.

La traduction de ce livre (et d'autres livres de l'auteur) en français, offre aux chercheurs, aux professeurs et aux étudiants intéressés de psychologie et, en général, du domaine des sciences de l'éducation, la possibilité d'évaluer objectivement la contribution de B.F. Skinner au progrčs de la psychologie contemporaine. Il ne faut pas oublier que B.F. Skinner a été le plus connu psychologue américan préoccupé du probleme du comportement et en meme temps le plus controversé, surtout dans les pays francophones, ou il a été peu ou pas du tout étudié.

Pendant 60 ans, ŕ la base de quelques expériments rigoureux, l'auteur américan a élaboré progresivement un modčle opérationnel propre pour l'explication scientifique judicieuse des problemes de l'homme dans le sens le plus large, modele applicable soit au niveau individuel, soit a niveau de la societé.

Parlant en général, plusieurs aspects de l'oeuvre de Skinner sont novateurs ou choquants. De son travail a retenu notre attention l'opinion de l'auteur conformément laquelle l'origine de comportaments ne devrait ętre cherchée qu'au milieu physique ou social et non pas dans des sentiments, états d'ésprit ou idées.

Par chacune le six parties de livre, l'ouvrage playdoie par la

cristalisation d'une science du comportement humain par l'intermédiaire des arguments d'ordre scientifique, qui sont rélevantes commençant de la premiere partie intitulée "La possibilité d'une science du comportement humain" et continuant avec les parties suivantes "L'Analyse du comportement", "La Personne", "Le comportement des groupes", "Les diverses agences de contrôle", "Le contrôle du comportement".

La lecture du livre se constitue au delŕ de l'exercice de langue, dans un exercice scientifique pour ceux intéressés du domaine des sciences de l'éducation et, particuličrement, de probleme du comportement humain. En s'agissant d'une édition en français, les conotations, les significations et les implications des diverses aspects traités, représentent des éléments de nouvauté pour le lecteur et toutes ces choses te dirige vers une reflection profonde.

Nous saluons l'initiative des traducteurs André et Rose-Marie Gonthier-Werren et considérons comme opportune la traduction en français d'un livre, intéréssante par la problématique abbordé, par le moyen de structuration des éléments de contenu et par le moyen originel d'aborder ce probleme. D'ailleurs nous apprecions les efforts des traducteurs, qui ont réussi ŕ offrir aux lecteurs une contribution précieuse, tout du point quantitatif que du point qualitatif, ŕ la traduction de l'oeuvre de Skinner.

Lect. dr. **Muşata BOCOS**

CRONICĂ

CRONICA MANIFESTĂRILOR ŞTIINŢIFICE

Catedra de Stiinţe ale Educaţiei

- Simpozionul Naţional "Formarea continuă a profesorilor", 4-5 iunie 1999
- Prep. univ. Adina Glava – vizită de studiu la Universitatea din Birmingham, School of Education, Marea Britanie - iunie 1999
- Lector univ. dr. Fodor Ladislau – vizită de predare la Universitatea "Eotvos Lorant" din Budapesta – 4 noiembrie 1999
- Asist. univ. Szoke Milinte Eniko – vizită de studiu la Universitatea "Eotvos Lorant" din Budapesta – aprilie 1999-1
- Vizită la Catedra de Ştiinţele Educaţiei a doamnei Nanszakne Dr. Cerefalvi Ilona de la Universitatea Debrecen – ca invitată a cercului ştiinţific studenţesc "Comenius"
- Vizită la Catedra de Ştiinţele Educaţiei a domnului Komloşi Sandor de la Universitatea din Pecs – aprilie 1999
- Vizită la Catedra de Ştiinţe ale Educaţiei a domnilor Dr. Foghtuy Kristina şi Vasarhelyi Tamas de la Universitatea E.L.T.E. din Budapesta – mai 1999

Catedra de Psihologie

- ***martie***: conferinţe ale prof. univ. dr. Mircea Miclea la Universitatea din Chambery, Franţa
- ***martie***: participarea asist. univ. Oana Benga la "Cursul de genetica comportamentului şi a dezvoltării", Sestri Levante, Italia
- ***aprilie***: stagii de cercetare, asist. univ. Daniel David, USA
- ***8-10 mai***: "Primul Simpozion Naţional de Psihologia Muncii şi Organizaţională: o performanţă cu premeditare", Sovata, organizat de Facultatea de Psihologie şi Ştiinţele Educaţiei, în colaborare cu Univer-sitatea "Dimitrie Cantemir" Târgu-Mureş şi Asociaţia Psihologilor din Transilvania, cu participarea prof. Gerrit van der Veer de la Frei Universiteit, Amsterdam şi a colegilor de la Universităţile din Timişoara, Târgu-Mureş şi Academia Navală "Mircea cel Bătrân" Constanţa
- ***mai***: "A treia Conferinţă Naţională de Psihologie Cognitivă Aplicată", Timişoara, cu participarea unor personalităţi ca Michel Posner, Oregon University, USA
- ***iunie***: participarea asist. univ. Adrian Opre la conferinţa "Neural Modes of Cognitive Functions", Washington, SUA, cu lucrarea "Impressive Memory: Neural Networks"

- ***iulie***: participarea conf. univ. dr. Sofia Chirică la " 9th European Conference of Personality Psychology", UK, cu lucrarea "Collective Construction of the Self in Organizational Settings"
- ***august***: participarea prof. univ. dr. Horia Pitariu la APA Convention, San Francisco, USA, cu lucrarea "Predicting Managerial Success: Traditional Methods Versus Neural Networks"
- ***august***: participarea prof. univ. dr. Horia Pitariu la "24th International Congress of Applied Psychology", San Francisco, USA, cu lucrarea "Some Aspects of Stress in Manager in Socioeconomical transition: Romania's case"
- ***septembrie***: participarea conf. univ. dr. Adriana Băban la "European Conference of Health Psychology", Viena, Austria, cu lucrările "Individual differences in coping with uncertainty about the future" și "Health Psychology in Romania"
- ***septembrie***: participarea asist. univ. Oana Benga la Conferința "SHARE", Sheffield, UK, cu lucrarea "Living with autism in Romania"

Catedra de Psihopedagogie Specială

Manifestări interne:

- **Simpozionul național**: Modalități de optimizare a procesului instructiv-educativ în învățământul special (noiembrie 1999)

Manifestări internaționale:

- Sisteme de instruire deschisă și la distanță - workshop (decembrie 1999)

Colaborări din străinătate și vizite la catedră:

- Aalt Riezebos, Jan Scholten, profesori, Institutul Superior Windesheim, Olanda (aprilie 1999)
- Michael Callaghan, De Montfort University, Leicester, UK (mai 1999)
- Cecilia Hannigan, University of Ulster, UK (mai 1999)
- Jan Ottevanger, Maria Venhuizen, Theofaan International, Olanda (noiembrie 1999)
- Mary Foster, Sense International, London, UK (noiembrie 1999)
- Richard Hawkes, Sense International, London, UK (noiembrie 1999)

Participări la manifestări științifice externe:

- Mirela Arion, workshop, De Montfort University, Leicester și University of Ulster, UK (martie 1999)
- Vasile Preda, congres, ALFPHV, Moulins, Franța (iunie 1999)
- Vasile Preda, workshop, Sense International, London, UK (iunie 1999)
- Mirela Arion, workshop, De Montfort University, Leicester și University of Ulster, UK (august-septembrie 1999)
- Vasile Preda, Mirela Arion, workshop on Training of Teachers of the Visually Impaired, Bratislava, Slovacia (septembrie 1999)

- Vasile Preda, Maria Anca, congres, GPEAA, Moulins, Franța (octombrie 1999)
- Vasile Preda, Maria-Dorina Anca, Oltea-Laura Ban, workshop, CNEFEI, Suresnes, Franța (octombrie 1999)
- Vasile Preda, Cristina Mureșan, workshop, RNIB London (noiembrie 1999).

Catedra de Metodica Științelor exacte

6 martie 1999: Simpozionul Național "Interdisciplinaritate în predarea științelor exacte", organizat în colaborare cu Casa Corpului Didactic Cluj, prilej cu care s-a lansat volumul "Conexiuni interdisciplinare în studiul științelor naturii", Editura CCD, Cluj-Napoca, 1999, coordonator lector Constantin Predescu

4-5 iunie 1999: participarea membrilor catedrei la Simpozionul Național "Formarea continuă a profesorilor" organizat de Catedra de Stiințe ale Educației, cu 13 de comunicări științifice.

Catedra de Metodica Științelor socio-umane

Manifestări științifice interne

4-5 iunie 1999: participarea membrilor catedrei la Simpozionul Național "Formarea continuă a profesorilor", organizat de Catedra de Științe ale Educației, cu 5 comunicări științifice.

Manifestări științifice externe

- Lector Ioana Velica, Seminarul profesorilor străini de limba germană ca limbă străină (Seminar der ausländischen DaF-Lehrer), 15-18.05.1999, Universitatea Viena, Austria
- Lector Ioana Velica, A 6-a Conferință supraregională a studenților la limba germană ca limbă străină sau bilingvi (6 Überregionale Tagung der Daf/Daz-StudentInnen), 18-20.06.1999, Universitatea Kassel, Germania.

Stagii de specializare în străinătate

- Lector Ioana Velica, Universitatea Viena, Austria (1.03-31.06.1999)
- Preparator Vasile Timiș, Universitatea Geneva, Elveția (1.03-1.12.1999).