



COMMISSION SCOLAIRE
DU LAC-SAINT-JEAN

'Savoir être et agir'

***THE TRADITIONAL CHINESE DINNER
OR THE IMAGE OF A SYSTEMIC MODEL OF
LEARNING IN A SCHOOL ENVIRONMENT***

Michel Gravel, Ph. D.
General director

THE TRADITIONAL CHINESE DINNER OR THE IMAGE OF A SYSTEMIC MODEL OF LEARNING IN A SCHOOL ENVIRONMENT

During a recent trip to China, for an international conference on research, development and evaluation of multiple intelligences, I had the opportunity to familiarize myself, for a few days, with the Chinese culture and to become aware of my Chinese hosts preoccupations with educational success.

Observing everyday life activities, speaking with my interpreter, discussing with other lecturers and participants, as well as visiting a school allowed me, during the synthesis of the conference, to put forward the idea of exploiting the learning reality implemented during the traditional Chinese dinner in a theoretical model showing the systemic aspect of learning in a school environment.

The traditional Chinese dinner environment is a round table grouping together seven to ten persons. The meal is made up of a variety of dishes arranged on a large circular tray, placed at the centre of the table. The tray rotates allowing the guests to take many small portions of their preferred dishes throughout the meal. This environment creates a dynamic and rich learning context. This image illustrates the transition from the practical to the theoretical as developed in this paper.

This paper is an attempt to integrate different elements likely to promote learning in an organized environment, the school environment and more precisely the classroom environment. The organization of relationships between people on one hand, between people and the environment on the other hand, being considered as giving life to the whole.

The first part of the text tackles the learning conception on which is based the proposed model. A dynamic competencies development is also proposed. In the second part of the text, five systems are successively presented and fitted together. Their union constitutes a systemic model of learning in a school environment.

PRELIMINARIES

A LEARNING CONCEPTION

All activities related to learning rely on values, principles and beliefs. In fact, when one is proposing a learning model, it is preferable that it be in agreement with a way of conceiving this learning. It will then be easier for the reader, if his beliefs are well rooted, to make the choice to adopt or reject the model. For the application of the proposed systemic model, the learning conception is based on the student being able to take charge of his own learning.

The foundation of this learning conception is based on the idea that each human being has a unique set of experiences and potential. Each student learns at his own personal rate using a multitude of accesses which are significant to him. So the learner will benefit by being in a rich and stimulating environment. He also needs to be accompanied in his learning, especially in his younger years. Finally, the learning context must be characterized by harmonious and positive interpersonal relationships.

This perspective which can be qualified as systemic or organic, rather than normative, the entire school organization is oriented around and intervenes in favor of the learner, his learning process and his educational success. In a more concrete manner, this paradigm² is based on a built knowledge, on a development of this knowledge through practical and contextualized production, on active learning situations, on a multitude of knowledge, links and competencies and also on the realization of projects, simulations and real life situations. Piaget (1967) in his book « La psychologie de l'intelligence » was one of the first contemporary researchers to present elements relating to such a perspective of learning. His works initiated much advancement in education. It is possible to illustrate this paradigm of learning by comparing it to a paradigm with a more normative nature.

TWO PARADIGMS OF LEARNING

NORMATIVE APPROACH	SYSTEMIC OR ORGANIC APPROACH
√ Descriptive logic.	√ Logic of the living.
√ Assimilation of knowledge.	√ Built knowledge.
√ Development by the follow-up of an established set of rules.	√ Development by contextualized construction and production.
√ Passive learning situations.	√ Active learning situations.
√ Encyclopaedic and compartmentalized knowledge.	√ Combination of knowledge, links and competencies.
√ Manifestations in relation with conditioning and exercise.	√ Manifestations in relation with projects, simulations and real life situation.

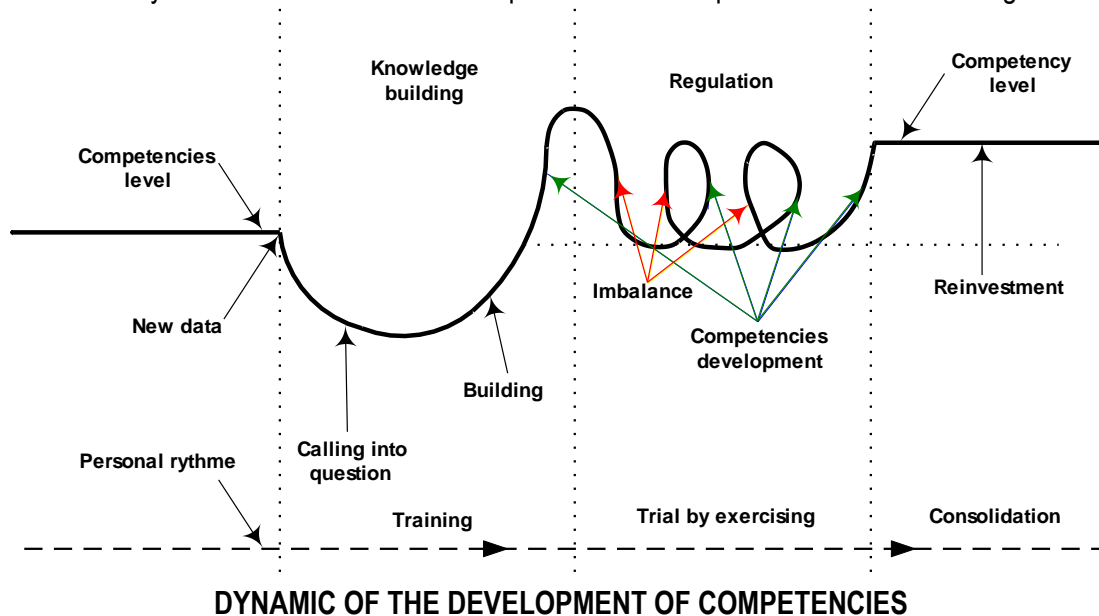
This learning conception considers the student and the intervenor as embarking together in a continuous learning process based indeed on knowing how to act but equally on a capacity to act which is guided by operational systems relating to classroom management, school management and by the orientation given by the decision-makers which has the responsibility to propose a rich, pertinent and coherent curriculum.

² A paradigm being « a way to see and do something in accordance with the adopted approach » (Spady, W.G. (1994).

THE DYNAMIC OF THE DEVELOPMENT OF COMPETENCIES

The operationalization of the evolution of the competencies level is established in a back and forth and osmosis movement between the training activities, the exercise and the competencies consolidation. The learners, having taken charge of their learning process, can then develop different competencies and refer to others (as need be) in many various activities.

This variety allows in particular to consolidate or to progress in the development of competencies. The illustration of the dynamic of this evolution of competencies level is presented in the next diagram.



Such an operationalization represents a complex movement and is difficult to photograph at a precise moment, all the more so since it adjusts itself to rythme which varies from one learner to another.

THE CONSTITUTION OF A SYSTEMIC MODEL OF LEARNING IN A SCHOOL ENVIRONMENT

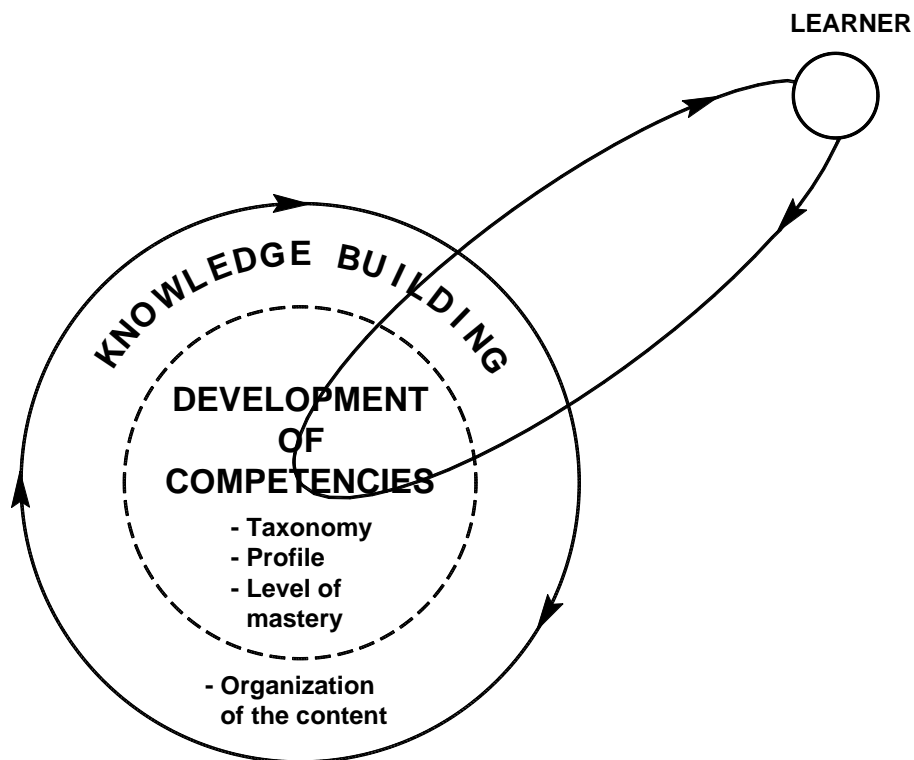
The constitution of the systemic model of learning is gradually elaborated by the joining together of the following five systems: the curriculum, the multiple intelligences, the schools strategies, the personal learning profile and the teaching.

THE KNOWLEDGE BUILDING AND THE DEVELOPMENT OF COMPETENCIES: THE CURRICULUM

Based on the postulate, which expects the learner to be the primary artisan of his learnings, the curriculum must integrate itself into a coherent system which motivates the learner's involvement . A good way of doing this consists of identifying and organizing the knowledge and translating it into competencies. This

facilitates the implementation of learning in a context which incites the learner to act. The definition of a competency from Gravel (2002a) illustrates well this link between knowledge and competency: « L'utilisation d'une combinaison de connaissances, d'habiletés, d'attitudes et du comportement social s'exprime dans une action ou une série d'actions contextualisées et visant un but ». This definition of a competency resembles, in many ways, what English literature gives to the term « skill ».

The following diagram is a systemic representation of the curriculum and development of competencies sub-system.



KNOWLEDGE BUILDING AND DEVELOPMENT OF COMPETENCIES

Given that the learner always has the choice to enlist or not in new learnings, he is located outside the circle which represents the content of the training. The arrow also illustrated that the development of competencies occurs through the combination of acquired and new knowledge.

The taxonomy or the organization of competencies should be structured around competencies considered as systemic or transversal in such a way that these can be applied to many situations, objects of intervention, activities or disciplines and to disciplinary competencies which apply to various fields of training. (MEQ, 2001) « Programmes de formation de l'école québécoise ». Even though this classification of competencies is very useful and relevant, it is possible to go further as suggested by Spady (1994), a well-known author in the advances in education in United States with his works on the approach « outcome education » often translated by the terms « goals », « objectives » or « results ».

This author speaks of the importance of ensuring that all students acquire knowledge, competencies and the qualities which will be necessary to their success after having left the school system. In fact, Spady

establishes a fundamental principle, which states the necessity of a clear orientation which aims at mastering significant final learnings. The next step is to implement this principle based on a given competencies profile. This profile, which defines the competencies to be developed through the students' schooling, clearly determines the expectations.

It should be noted that the development of a competency cannot be measured with quantitative tests and cannot be translated into a marking system. Competency is assessed according to mastery levels. The evaluation is based on qualitative tools such as observation and production. This form of treatment and logging of information is discussed by Gravel et Al. (2001) for the school and by Stefanakis (2002) for the classroom.

THE MULTIPLE INTELLIGENCES

A conception of the systemic or organic learning implies that we focus on the learner. In considering this conception Stefanakis (2002) identifies a challenge that has been confronting teachers for a long time: « Understanding what individual children do know, rather than what they do not know ». According to Stefanakis, the challenge of placing the emphasis on the individual potential of each student is still to be achieved in today's schools.

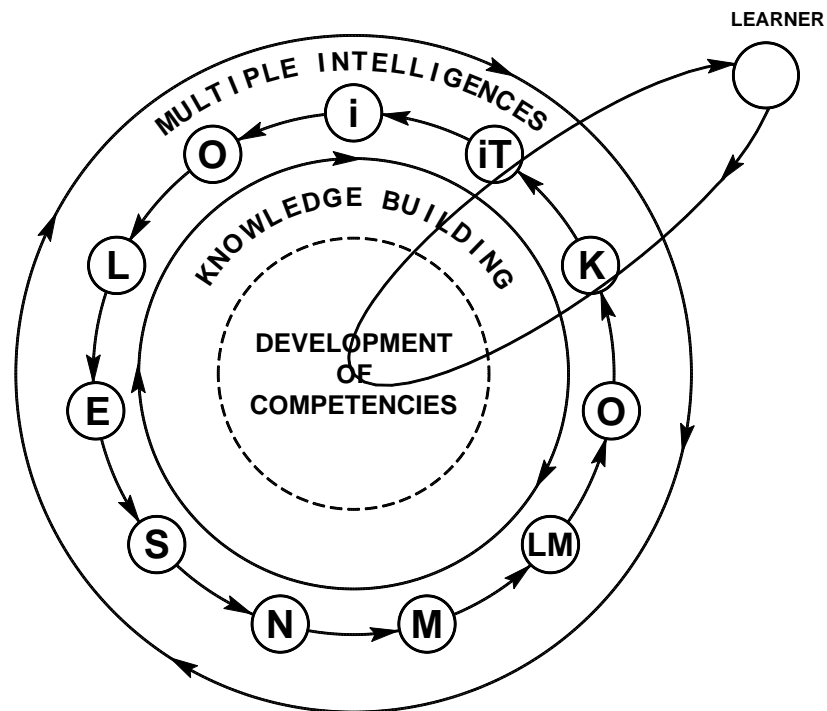
Even so, recent research in education and psychology is explicit regarding the importance of being centered on the learner. Research done by the American Association of Psychology in collaboration with the Regional Laboratory on Education of the central United States (1993) on the psychological principles which center on the learner are significant in this matter. A foundation of solid research and a vast investigation carried out among experts, psychologists and teachers led to twelve psychological principles centered on the learner and likely to serve as a basis for an improvement in teaching and in learning quality in schools in the United States and elsewhere.

The theory of the multiple intelligences of Gardner (1985, 1995) takes into account the learning style, which is unique to each individual, in order to organize the functioning of the classroom as well as the school. For Armstrong (2002): « Dr. Gardner's theory gives educators a more richly textured, complex, and true - to - life model of how our students think and learn ».

Gardner makes a point of clearly mentioning that each person has the eight or nine identified intelligences. In support of this, Mei Ru li (2002) mentions a consensus regarding this point : « According to modern scientific research findings that a two people in the world are exactly alike in terms of intelligence combination ». Each person uses more or less one type of intelligence or another, according to his strengths, to the object of learning and to the environmental context. The multiple intelligences do not have an exclusive character, they are in a way different points of entry to learning. They constitute a variable geometry system which each learner adapts to what he is, to what he is living and to what he desires to learn.

Each individual has a personal and evolutionary profile in the sense that he modifies, completes and enriches himself during his learning process, and this during his whole life. The eight intelligences that Gardner has developed and documented are divided as follows: interpersonal, intrapersonal, bodily-kinesthetic, linguistic, logical-mathematical, musical, naturalist, spatial and finally, existentialist.

The following diagram represents the multiple intelligences in relation to the competencies to be developed by the learner.



i : interpersonal
 iT : intrapersonal
 K : bodily kinesthetic
 L : linguistic
 LM : logical-mathematical

M : musical
 N : naturalist
 S : spatial
 E : existentialist
 O : other learning entry

KNOWLEDGE BUILDING, DEVELOPMENT OF COMPETENCIES AND MULTIPLE INTELLIGENCES

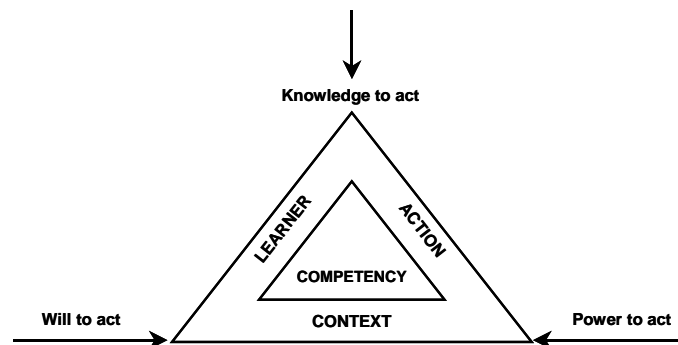
THE USE OF MULTIPLE EDUCATIONAL STRATEGIES

The use of educational strategies helps to create a context wherein the learner feels comfortable to begin new learnings. The variety of strategies used aims particularly at putting the ingredients in place to reach each individual in what he is and thus to stimulate the student to take charge of his learning. The educational strategies allow the learners to count not only on their strenghts but also to develop new ones through a large and varied combination of their multiple intelligences.

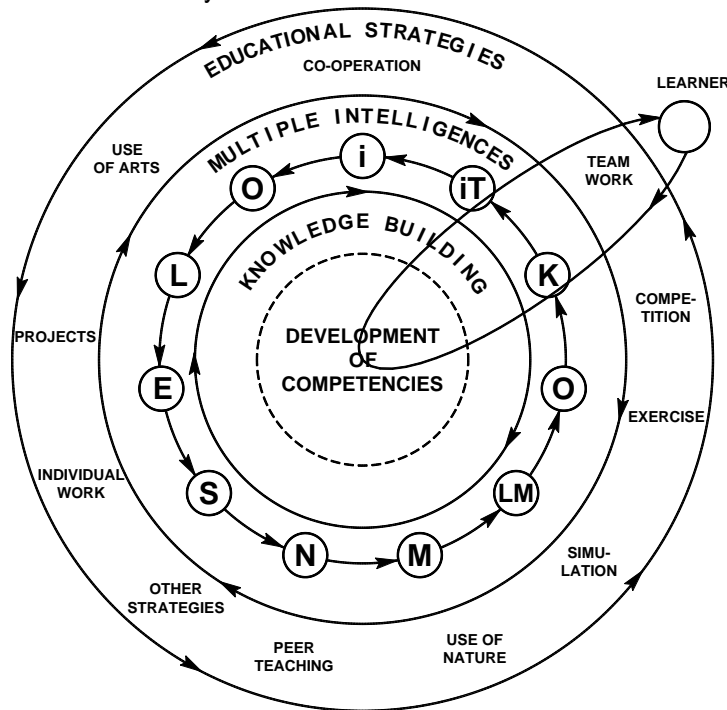
In class, it is the teacher's responsibility to create a learning context capable of reaching every student. To achieve this, he needs to take into account in his planning the four following factors: a variety of strategies, a wealth of exchanges, an adaptation to the content and an adaptation to the context. These factors are underlined by Gravel (2002a, p. 174) when he deals with educational strategies « Il n'y a pas de recettes miracles mais plutôt une application de stratégies variées, riches en échanges et adaptées au contenu diffusé ainsi qu'au contexte d'apprentissage ».

For the purpose of this text, different educational strategies are only mentioned and not developed, as most of them are well known and documented. Furthermore, these strategies do not have an exclusive character, as there are many more. The point here is to highlight the range of possibilities for the teacher. We can talk about strategies centered on co-operation, simulation, competition, research, exercise, project realization, individual work, team work, peer teaching, use of arts, use of nature and all other possible strategies or combination of strategies.

In a paradigm of learning, the set up of elements touching the learner, his action and the context are remain essential. The development of competencies is the resultant of the three following elements: the power to act made possible by organization and class management, the will to act encouraged by individual factors linked to the motivation and the knowledge to act based on individual knowledge. The use of educational strategies which takes into account these three elements will more readily favor the taking-charge of his learning by the learner.



When planned and organized, educational strategies form a system. The following diagram represents this system when put in relation with other systems discussed earlier.

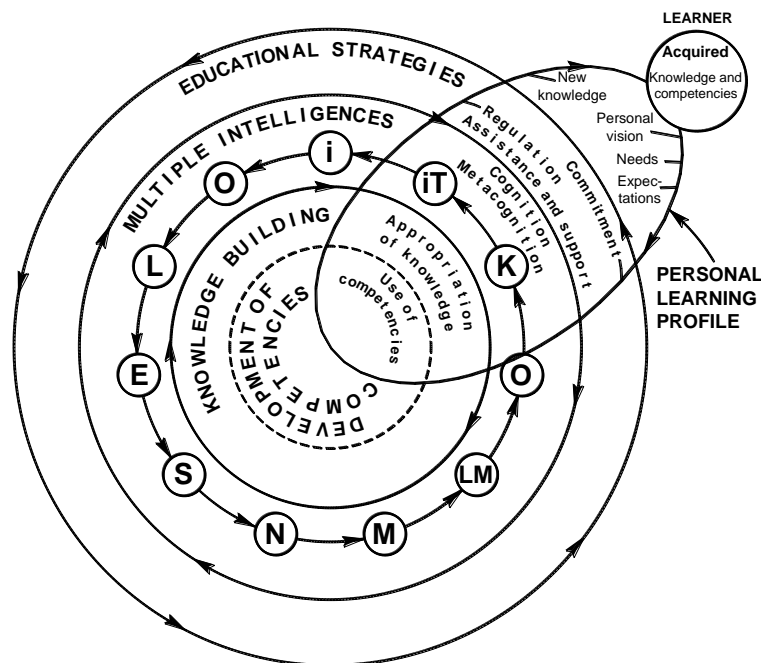


**KNOWLEDGES BUILDING, DEVELOPMENT OF COMPETENCIES,
MULTIPLE INTELLIGENCES AND EDUCATIONAL STRATEGIES**

PERSONAL LEARNING PROFILE

The act of centering on the learner and on his taking-charge, leads to the idea of the development of a personal learning profile (PLP). This profile aims to allow the student, as well as his teachers and parents, to better know his strengths and weaknesses and to maximise his action. It is essential to keep in mind that the starting point of this personal profile consists on the acquired knowledge of the individual, which related essentially to his heredity and his experience. Acquired knowledge when put into action is translated into competencies which evolve and change at the rate of newly-acquired knowledge.

The way in which the PLP is made up or the way in which the learner comes to better know himself is complex, but it is possible to extract some elements to better understand and to intervene in this phenomenon. The following diagram represents the PLP as a system existing within a larger group, that is the learning system presented earlier in this text.



KNOWLEDGE BUILDING, DEVELOPMENT OF COMPETENCIES, MULTIPLE INTELLIGENCES, EDUCATIONAL STRATEGIES AND PERSONAL LEARNING PROFILE

Each individual has his own vision of what he is and what he wants to become. This vision is the reflection of the values, beliefs, principles and hope which motivate him. In the Valence equation which states that (values) x hope = force, Vroom (1964) brings us back to the motivating factors in people. They have also been discussed by authors such as Senge. (1991) and Viau (1994). The latter has added the dimensions of self-esteem and of task perception.

Other authors tackle the motivation from the viewpoint of man's basic personal needs. In this sense, Herzberg (1968) and Glasser (1984) have provided an interesting contribution to the understanding of the fulfilling of personal needs as playing an important role as a factor of motivation. We also know from Locke (1968) that the fact of aiming at hard-to-reach yet feasible goals stimulates the cognition and the individual's behaviour. To analyse the level of completion of these goals, Drucker (1999) proposes a tested

method, that is to confront the expectations with the obtained results, more commonly called feedback analysis. This method allows one to better know his strenghts and weaknesses and to concentrate on improving his strenghts.

If these preceding conditions are combined or even partially combined and the proposed educational strategies meet the factors listed before (variety, wealth, content, context), there is every reason to believe that the learner will engage himself in his learning. Moreover, if the support which is given to him (parents, teachers, peers, community) converges toward his taking-charge of his responsibility for his learning, his chances of success will be greatly increased.

The actual taking-charge of one's learning responsibility is however of a cognitive or a metacognitive nature. It realizes itself through multiple intelligences, by the development of a learner's own meanings, interpretations, representations and explanations of the learning object. It is at this stage that the learner gives a personal meaning to new information by placing it in relation to knowledge already acquired or in gestation; this is the integration of knowledge. It is at this moment that he must make an intellectual effort.

It is on a metacognitive plan (the mind over the mind); a superior level of the mind, that the learner supervises and manages his own mental operations. He reflects on over his learning and as a result can manage its regulation. The learner knows how he is learning, in which situation he excels and what form of intelligence to use. This active learner can contunually count on newly-acquired knowledge.

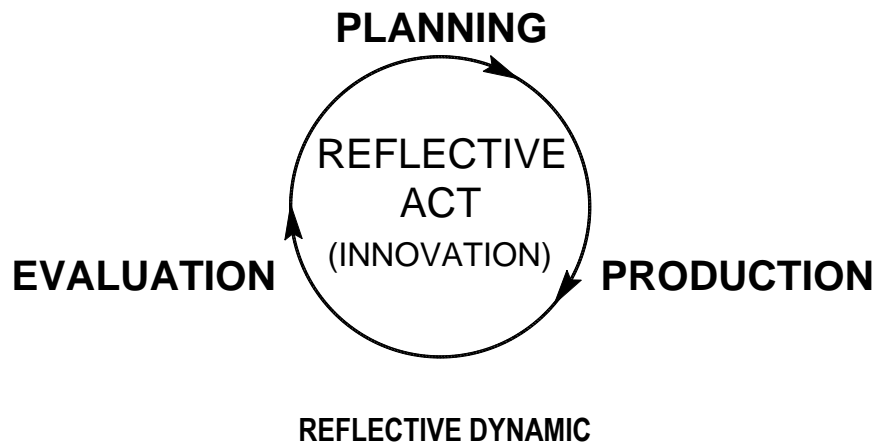
TEACHING

Teaching is too often based on a routine experience which consists of constantly-repeated methods which work, or worse, methods which once worked. A teacher, who is conscientious about envolving in his teaching methods, must introduce on a regular basis, new and ceativite ideas, methods and strategies to his acquired experience.

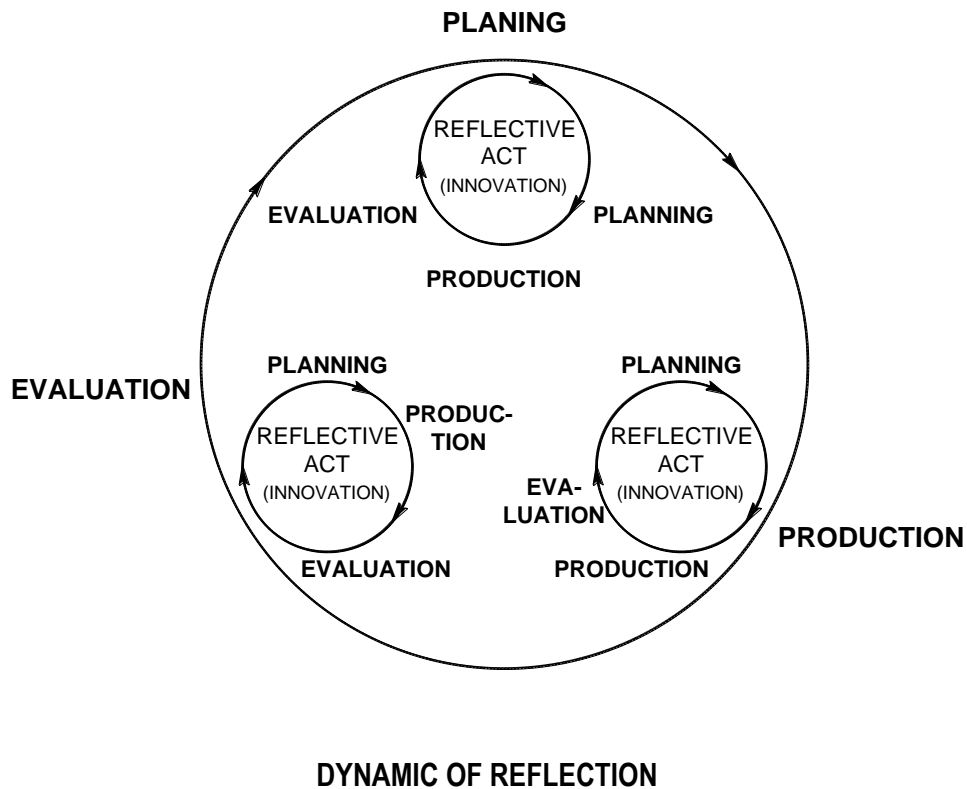
Essentially, the teacher's principal functions remain, planning, production and evaluation; however, they take on a different characteristic, if he is capable to introduce a reflective act.

PLANNING	PRODUCTION	EVALUATION
√ targeted objectives, knowledge and competencies	√ prepared authentic activities	√ formative
√ favoured educational strategies	√ group management	√ summative
√ learning context	√ individual support and guidance	√ flexible
√ learners' characteristics		√ varied √ teacher's judgement

Deming (1988) proposes a method to continually improve the work process called the Deming wheel. It is possible to adapt it to different work and daily life situations and in particular to teaching. The following diagram illustrates this process.



The teacher introduces a process of reflection as well as innovation in the planning, production and evaluation of his teaching. That continuous improvement process can also be applied distinctly to each of the three teaching stages. The following diagram illustrates its dynamic.



It is desirable to structure this reflexion both on and in the practice, Schön (1994), Payette (1993), from small reflexion groups. The ATLAS COMMUNITIES (2002) proposes an interesting model designed to help the teachers in such an approach. Based on the students needs, the Whole-Faculty Study Groups model asks the following question: « What are students learning and achieving as a result of what teachers are learning and doing in study group? », Murphy (2001).

The use of such a reflexive approach is a useful learning strategy for the teacher, as it is directly related to his professional practice. However, it is not exclusive and would benefit by being combined with many other forms of learning entries. The organization and planning of these learning entries have been developed by Gravel (2002b) with the personalized learning plan and its evaluation by Stefanakis (2002) with the portfolio. It must be noted that this type of tools/approach takes on a flexible and progressive character and can be used in many situations (work, school, leisure, etc.). In the area of education, the school system renewal projects in United States during the 1990's « outcome based education », were criticised, in particular in relation with this lack of instruments or tools/approach in accordance with the proposed philosophy.

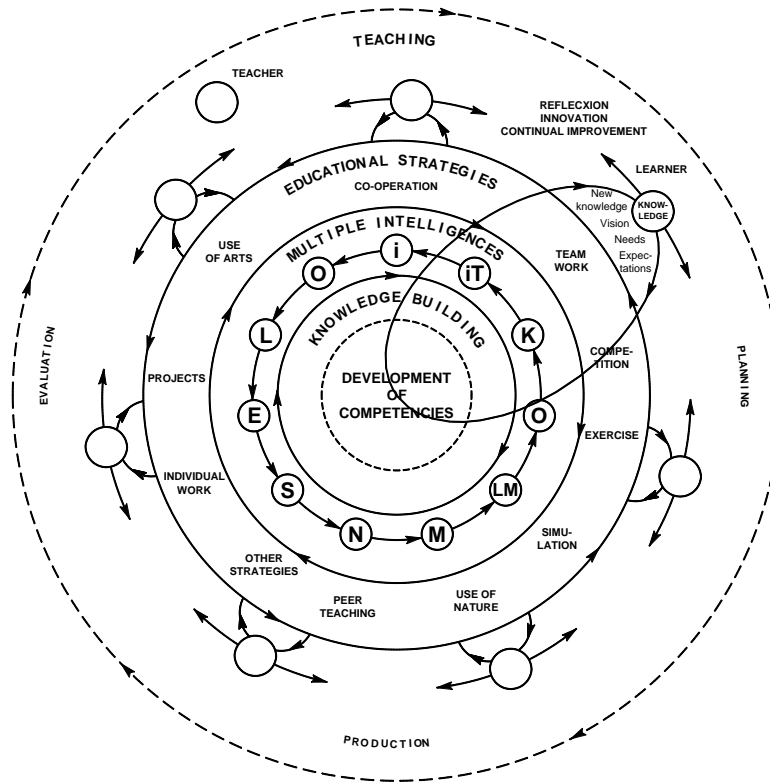
CLASSROOM ORGANIZATION

The application of such a model suggests a more flexible classroom organization thus being more adaptable to the targeted knowledge and to the desired learning context. The traditional context of classroom organization wherein the desks are arranged in rows and where only one person can express himself, and only when the teacher authorizes him to do so, is in many cases a context which we can qualify as poor. It is advisable to use the furniture (desks, etc.), the space and the walls to create geometrically inspired arrangements which enhances learning.

The circular form, as it helps interactions, is an interesting avenue. It is possible and even desirable to combine this organization of the classroom with workshops (arts, music, science, nature), individual work places (reading, writing, software), etc. In this kind of classroom organization, the student becomes the centre of interest without affecting the importance of the teacher's role.

A SYSTEMIC MODEL OF LEARNING

The inclusion of the teaching system to other systems already discussed completes the systemic model. This model, inspired by the traditional Chinese dinner, is a presentation of various, differentiated and interdependent elements which make up a whole.



SYSTEMIC MODEL OF LEARNING IN A SCHOOL ENVIRONMENT

The following points can help to better understand the proposed system.

- √ The circular form is used, as it represents the fluidity and the ease of establishing interactions between learners and various proposed sub-systems.
- √ The learner is not in the centre of the system, as he always has the choice to engage himself or not in the learning. However, the model shows the learner taking charge of his learning and of the development of his competencies.
- √ The arrows illustrate the movement and the osmosis between the sub-systems, and the relationships between the learners and between the learners and the teacher. There are many more relationships than actually shown in the illustration..
- √ The proposed model is open and non-exclusive. It can be adapted and combined to other realities linked to learning.

The reality of learning is both simple and complex: simple because it operates within the scope of a "logic of living" and within human relationships; complex because the organization of learning consists of a series of differentiated elements being in interaction with one another.

The elements discussed in this text are part of a whole which can qualify as being of the first level, that of the immediate environment of the learner. The second level elements, the school or learning community could be developed in a subsequent article in which factors such as the shared vision, the decisions close to the action, the organizational climate and also improvement and continuous evaluation mechanisms of school could be discussed.

BIBLIOGRAPHICAL REFERENCES

AMERICAN PSYCHOLOGICAL ASSOCIATION, MID CONTINENT REGIONAL EDUCATION LABORATORY. (1993). « *Learner-centered Psychological Principles* ». WASHINGTON : American Psychological Association.

ARMSTRONG, T. (2002) « *Multiplés intelligences in the Classroom* ». Beijing : International Conférence on Pushing Forward the National Education and Improving Student's Quality, pp. 21-28.

ATLAS COMMUNITIES (2002). « *Whole Faculty Study Groups* ». Educational Development Center Inc. www.edc.org/atlas/

DEMING, W.E. (1988). « *Hors de la crise* ». Paris : Économica (traduction de *Out of the Crisis*, par J.M. Gogue).

DRUCKER, P. (1999). « *L'avenir du management* ». Paris : Éditions du Village mondial, 199 pages.

GLASSER, W. (1984). « *Control Theory* » New York, NY : Harper-Collins.

GRAVEL, M. (2002a). « *Formation continue et évolution des compétences professionnelles du directeur d'établissement : L'évaluation d'une approche et de ses effets* ». Thèse de doctorat inédite. Université du Québec à Chicoutimi. 252 pages.

GRAVEL, M. (2002b). « *Apprentissage, intelligences multiples et développement des compétences : une approche personnalisée* ». Beijing : International Conférence on Pushing Forward the National Education and Improving Student's Quality, pp. 34-46.

GRAVEL, M. et Al. (2001). « *Évaluation institutionnelle* ». Montréal : Guérin éditeur, 89 pages.

HERZBERG, F. (1968). « *Une fois de plus : comment motiver les employés* » Harvard Business Review, janvier, février, p. 1-11.

LOCKE, E. A. (1968) « Toward a Theory of Task Motivation and Incentives », *Organizational Behavior and Human Performance*, vol. 3, pp. 157-180.

MEI RU-LI, (2002). « *Multiple Intelligence theory and China's Basic Education Reform* ». Beijing : International Conférence on Pushing Forward the National Education and Improving Student's Quality, pp. 14-20.

MINISTÈRE DE L'ÉDUCATION DU QUÉBEC (2001). « *Programme de formation de l'école québécoise. Éducation préscolaire, enseignement primaire* ». Québec : ministère de l'Éducation.

PAYETTE, P. (1993). « *L'efficacité des gestionnaires et des organismes* ». Sainte-Foy : Presses de l'Université du Québec, 310 pages.

PIAGET, J. (1967). « *La psychologie de l'intelligence* ». Paris : Armand Collin, 192 pages.

SCHÖN, D.A. (1994). « *Le praticien réflexif* ». Québec : Les Éditions Logiques, 418 pages.

SENGE, P. (1991). « *La cinquième discipline. L'art et la manière des organisations qui apprennent* ». Paris : First, (traduction de A. Gauthier), 462 pages.

SPADY, W. G. (1994). « *Outcome Based Education. Critical Issues and Answers* ». Arlington, Virginia : American Association of School Administrators, 207 pages.

STEFANAKIS, E. (2002). « *Introducing Multiple Intelligences and Portfolio : As a window into the Learner's mind* ». Beijing : International Conférence on Pushing Forward the National Education and Improving Student's Quality, pp. 3-14.

VIAU, R. (1994). « *La motivation en contexte scolaire* ». Montréal : Éditions du Renouveau pédagogique inc., 221 pages.

VROOM, V.H. (1964), « *Work and Motivation* », New York, John Wiley and Sons.