The 8 Learning Events Model and its principles

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To help teachers and trainers to conceive and / or describe teaching sequences and training strategies, we have developed a theoretical reference model that has three components: (1) A series of Learning Events (LE), seeking to describe and conceive the multiplicity of learning/teaching experiences and their underpinning psychological theories ; (2) a series of Principles helping in designing and evaluating learning environments, and their underpinning educational theories ; (3) a series of more specific descriptors, or metadata, that provide detailed information about the Learning Events, enabling to judge their intrinsic qualities, their underpinning theories (from media properties to group work rules) and their degree of appropriateness to specific learners and situations. The present document is a short description of the two first components: LE and Principles.

A. Definitions

A **Learning/Teaching Event** is the joined description of paradigms (i.e. simplified description) of a learner's activity and a tutor (or teacher or coach)'s activity, these actions being complementary and interdependent, in a learning situation. The learning event describes the activity of the learner (receives, practices, creates, etc), the teaching event describing the activity of the teacher (transmits, guides, conforts, etc.). The LE model is content-free as could be demonstrated, in more than 100 courses covering very different subjects.

A training (or learning) **strategy** is a combination of Learning Events. There are an infinite number of training strategies, but just 8 basic components. Like a few number of atoms (about one hundred) permit the constitution of millions of different molecules, that can be grouped in large families (like organic and non-organic chemistry, etc.). There is no need to use all the events in the formation of a training strategy. Unlike 'strategy' or 'method', a learning event can refer to both intentional and non-intentional learning situations.

The quality of any model depends, among other factors, on its power to reduce complexity, without lapsing into a simplistic approach. By confining itself to a restricted number of learning events (currently 8, but this number is not magical), the model keeps within the limits of human cognitive capacities[1]. This ensures that the teacher can keep it constantly in mind (for example as a check-list which stimulates his self-assessment reflexes), which is vital for actually having an effect on his practice.

The model is also in line with Eleanor Rosch (1979)'s theory showing that humans deploy a vocabulary at an intermediate level of conceptualisation in everyday conversation. For example, the concept of 'dog' is far more commonly used that those of 'mammal', 'vertebrate' or 'carnivore' (higher conceptual level) or those of 'greyhound', 'spaniel' or "fox terrier" (lower level). The preference for the intermediate level can be explained by the frequency of the situations in which a distinction needs to

[1] on this point, see the famous article by George A. Miller, "The magical number seven, plus or minus two : some limits on our capacity for processing information"

be made. Thus, there are many situations in which one needs to distinguish dogs from cats, without the specific species being important. On the other hand, there are few situations in which it is crucial to distinguish between mammals and oviparous animals. Applying this reasoning to education, the eight learning events model may be said to be located at the intermediate level. If teachers start talking about their profession, their conversation will usually take place at this level, between extreme generality and extreme complexity.

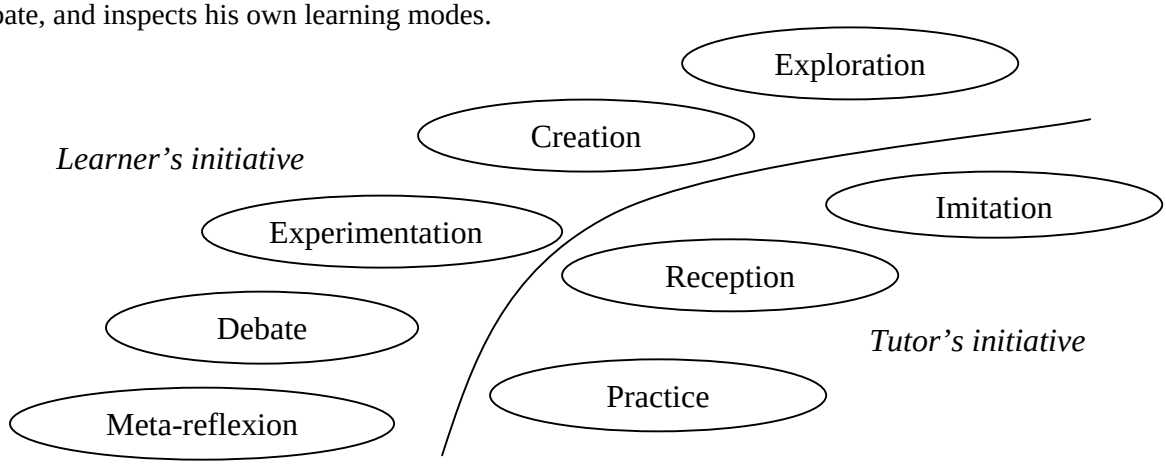
B. Principles

Principle 1: **The purpose of the model** is to helps in two different ways :
As a descriptive aid: the model can be used to analyse an existing training strategy/teaching sequence. Teachers, students, course designers, educational researchers and developers will find resources in it for the easy identification of the elements in complex scenarios[2];
As a prescriptive aid: the model provides the framework for the creation of a new training strategy/teaching sequence or for enhancing an existing one;

Principle 2. A Learning Event (LE) is identifiable in time and space. **It is observable** and recordable, quantitatively (duration, intensity) or qualitatively (a description that includes the minimal conditions for confirming the occurrence of the LE).

Principle 3: **The Degree of granularity of the description** of a (real or anticipated) situation depends on the purpose of the description. Often, only the dominant learning event (in terms of duration, of anticipated impact or of subjective difficulty) is considered or reported, whereas, for example, an activity based on experimentation might contain an element of exploration. In the same way, an element of reception may well be found in debate. Likewise, a form of drill could be imagined in the practice of metacognition. In some situations, two learning events are really equilibrated. For instance, watching a TV programme usually combines modelling (the pictures, whether moving or not, the noise, i.e. whatever you perceive) and transmission (the verbal commentary, whether it is oral - voice - off or otherwise - or in the form of subtitles).

Principle 4: The degree of the learner's initiative is an important characteristic of the LEs.
The events "reception", "imitation" and "drilling" (practice) are often (though not necessarily) based on "allo-initiative" or "allo-control" (of the process, content, activities, timing, etc.), from "allo", meaning others (here the teacher) as opposed to "auto". The other events fall more within the category of "auto-initiatives", in the sense that the learner chooses the content he wants to explore, formulates the hypotheses he wants to verify, designs and carries out a project, decides on his interventions in the debate, and inspects his own learning modes.



[2] See Poumay 2005 for an application of the model to the development of an online quality grid aiming at describing online courses and judging on their pedagogical quality.

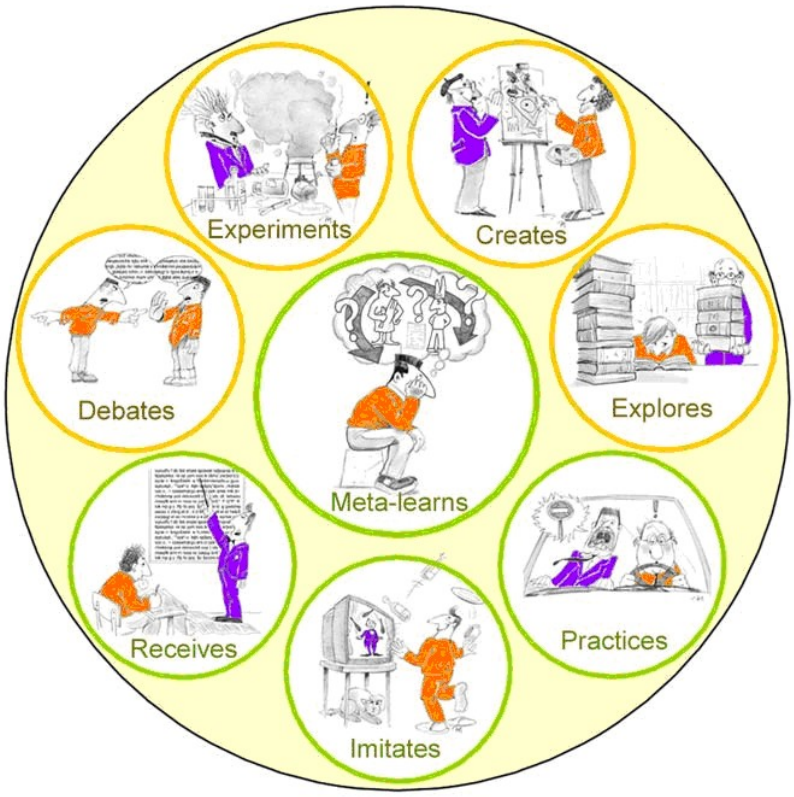
Principle 5 : Paired contrasts can be made amongst some Learning events. For instance,
a) IMITATION of an external model contrasts with CREATION of a new and personal model (NB : this may be collective). However, it could also be argued that creativity is partly based on models.
b) RECEPTION (of data structured by the transmitter) contrasts with primacy of structuring by the learner in EXPLORATION.
c) DRILL (& Practice) contrasts with the learner's freedom in elaborating of hypotheses in EXPERIMENTATION.
d) DEBATE in which one's "identity in other people's eyes" is at stake, contrasts with META-REFLECTION that focuses on one's "self-identity".

Principle 6 The diversity of experiences is an important issue of the model, as well as the variety of the communication channels, on the basis of research results in the domain of educational psychology (Paivio, Miller, Gardner, etc.), showing that the deployment of multiple channels reinforces learning. The model underlines the value of ensuring a sound equilibrium between learning modes in order to maximise the quality of the RESULTS of learning. In her definition of a quality course, Poumay (2003, p234) also insists on this necessary range of methods.

Principle 7 . Mathetic polyvalence is an important issue of the model
In an information/ knowledge/ learning society, it is in the interests of the learner to become familiar with a whole range of learning approaches. This experience of diversity prepares him to take advantage of any learning opportunity this society may offer. Thus it becomes a cross-disciplinary concern of education, regardless of subject, to ensure that learners are confronted with a variety of methods, resources and constraints, including some that are completely new to him or have rarely been practised by him. The model underlines the value of ensuring a sound equilibrium between LEs to empower the learners with the PROCESSES of learning. .

Principle 8. The ethical dimension of the LEM is represented in its relationship with autonomy and responsibility. This concern to ensure diversity of learning experiences also extends to 'learning styles'. When one is aware of the heterogeneity of modes of access to knowledge, one is more likely to get through to and motivate a wide spectrum of learners.

Graphical representation (from the students' perspective) **of the 8LEs model**



C. The 8 learning Events

1. Imitation / Modeling.

Definition: Humans learn a lot from **observation, impregnation (and, afterwards, imitation)**, either voluntarily or without really trying, outside any system of instruction, simply by absorption, as a result of being immersed in the problem, by living in a context, and sometimes without even realising it – making this a form of latent learning. The process of observation can happen without the use of any communication code, so before language.

The teacher's or trainer's role is to provide the model(s), that has not to be the teacher himself. For instance, basketball coaches show their trainees video-recording of other players who are the models.

Domains of learning: We can be impregnated by (and imitate) movements, emission of noises, words and melodies, accents, vocabulary, postures, etc.

Learning places: Imitation and modelling can happen everywhere: in the street, in public areas, at home, via television, even from still pictures on posters or cartoons. Cinemas, theatres, stages, exhibition halls, museums, show rooms are places designed to facilitate observation.

At school, imitation happens consciously when the teacher suggests models such as types of handwriting, the "correct" way to sit at his desk, the spelling of a word written on the board, the drawing of lines or pictures similarly to a figurative model. Unconscious imitation (and modelling) happens by imitation of speech accent, of kind or violent behaviour, of pitch of voice, of use of words.

Associated words for imitation are copy, reproduction, and, for modelling: showing an image, performing an action, drawing a picture.

The main theory explaining the learning mechanism by imitation is Bandura's Social Learning Theory, also called vicarious learning when it refers to behaviour since the learner observes what happens to others, what are the consequences of their actions.

2. Reception / Transmission

Definition: Humans learn a lot from **intentional communication**, from the reception of messages (via the press, radio, books, television, lectures, etc.) intended to give us information. This communication is encoded in a language (English, French, etc.) that the recipient must share with the transmitter, contrarily to imitation by observation, where no code is needed.

The teacher's or trainer's role is to provide the message (or the data) to be transmitted, either by selecting documents or by writing them himself or by oral communication, direct or recorded.

Domains of learning: A large number of domains can be learned by reception of verbal messages, with noticeable exceptions such as the mastery of skills (that have to be practiced), the adoption of values and appetencies (that have to be adopted), the memory of sensory motor, relational or emotional feelings (that have to be experienced).

Learning places: books and newspapers are read at home, in libraries, in trains and airplanes. Radio, television, telephone, e-mails, Internet make messages accessible almost from anywhere.

At school, written messages are transmitted (and received) via textbooks, dictionaries, encyclopaedia either on paper format or on screen (from CD Roms or from the web). Oral messages are emitted by the teachers, by peers, by radio or television, live or via recordings.

Associated words for transmission are verbal (or symbolic) communication, linguistic messages, words, texts (from books to subtitles on a screen).

The main theory explaining the learning mechanism by transmission via verbal codes is Ausubel's meaningful Verbal Learning Theory, where this author stresses the importance, for understanding the message, of what the learner knew before the communication.

3. Exercising / Guidance

Definition: In fields where it is important to "proceduralise", to automate, to create routines, humans learn by acting, practicing. Essays and errors are necessary not only to discover the sequences of actions but also to interpret feedback (stimuli) produced by these actions, that help correct it if needed.

A good coach is someone who pushes the learner to act, helps him interpret the consequences of these actions, maintains motivation, and in short guides and corrects, during interactions which have been scheduled ... basically by the coach himself. The difference between this "event of learning" and imitation or reception is that in those ones, action is not necessary.

Domains of learning: Sensory motor skills such as walking, writing, drawing, dancing, biking, swimming, driving a car, playing a music instrument, eating with forks or using any tool request practicing, exercising.

Learning places: sport halls or fields, dancing ballrooms, workshops, swimming pools, etc.are conceived to favour learning by practice.

In school, exercise booklets, drill and practice sequences, quizzes testing, application tasks, are examples of learning by exercising.

Associated words are coached systematic training, trials and errors with external correction,.

The main theories explaining learning by exercising are Thorndike's law of effect and Skinner's contingencies of reinforcement.

4. Exploration / Documenting

Definition: in fields where a large degree of freedom of choice is beneficial, humans learn by exploration, i.e. by a personal search among data, either randomly, or to answer their questions. The difference with the imitation or reception or the exercising ways or learning is the personal character of exploration and the pre-existing will or expectation to find something or an answer to a personal query. In a free exploration, a consultation**,** it is the learner who has the initiative, who asks the questions, but without changing the object of his exploration (without writing in library books, without modifying the content of the videocassette), without creating knowledge which pre-existed its discovery during exploration.

The role of the teacher or trainer is to make sure that the student will encounter data, so indicate him good sources, or constituting those sources himself, in brief documenting, providing access.

Domains of learning are history or geography or arts or culture in general or personal relations. For instance, a personal visit to a city has its charms and advantages, which are not the same as those of a guided tour). Interviewing a person is not the same as hearing a speech from the same person.

Learning places: Libraries, museums, web sites, TV channels (amongst which the explorer may "zap") are special places for this way of learning, provided the learner has the initiative. For instance, a museum can be "told and shown" by a guide, and this is transmission and modelling instead of exploration, that implies that the visitor decides which piece of art he watches, how much time, at which degree of details, from which angle of vision, etc.

At school, manipulating dictionaries, encyclopaedia, libraries, but also observing fields, interviewing persons (provided the questions era the learner's ones) are examples of learning by exploration.

Associated words: searching, browsing, navigating, curiosity, knowledge appetence, questioning.

The main theories explaining the mechanism of learning by exploration are those that refer to conceptual maps, i.e. links within a network of interconnected concepts. The best known theoricians of this are Norman, Quillian, Collins and Loftus (irradiation of activity in a conceptual network), Nowack and Gowin. Freud has coined the wording "scopic pulsion" for visual curiosity. Knowledge hunger has been described by the Spanish poet Antonio Machado saying "*Nuestras horas son minutes cuando esperamos saber, y siglos cuando sabemos lo que se puede aprender*." ("Our hours are minutes when we want to know and centuries when we know what we wanted to know.").

5. Experimentation / Reactivity

Definition: In some domains, learning is mostly efficient if the learner can manipulate the environment – and, when necessary, can modify it. Experimentation processes mostly by exhausting and combining the possibilities the experimenter regards as meaningful, in order to test a personal hypotheses (otherwise it is simply drill by applying the other's ideas)

The role of the teacher or trainer is to provide an "experimentable" environment, i.e. a reactive one. When the question to answer, the problem to solve, is excessively hard for the learner (or the group of learners), the teacher can help, provide hints, clues that will decrease the difficulty of the task.

Domains of learning by experimentation are science, computer sciences, social relations, the use of engines or instruments, etc.

Learning places are science labs, workshop, computer simulations, exercise fields, almost the same as for exercising. Limits are becoming more flexible since some museums combine the possibility to explore (without touching the pieces of art or technique) and the possibility to manipulate, to "try" with.

At school, students experiment each time they make an action "to see what will happen" : to write a letter to an authority, to plant crops in pots, to give instructions to a computer program in order to achieve a given result, to modify parameters in a simulation software.

Associated words: Trials, verification of hypothesis, check, test, problem solving

The main theories explaining the mechanisms of learning by experimenting are as old as Claude Bernard's book (1865) "Introduction to experimental medicine". Piaget has shown that young children make frequent use of this approach, which is all too often regarded as simple repetition by adults. The learner's actions may be (or appear to be) always the same, but his hypotheses, by contrast, may be different each time! Polya and De Bono describe the reasons why it is important to train students in learning by this approach. They also suggest how to do that.

6. Creation / Confortation

Definition: Humans learn by **creating something new** (new to them, no to humanity), by constructing, by changing their environment, by **producing concrete works** (texts, musical compositions, objects, buildings, shows, films, etc.) ...often starting from a personal idea or an individual or collective project. Of course, the creation reincorporates already known elements. Thus, Beethoven whose creativity is beyond dispute, drew inspiration from Haydn.

The role of the teacher: Since engaging into creation is hard, the teacher acts as a facilitator, a moral and material scaffold, as patrons and sponsors have done for centuries with artists (Jules II for Michelangelo).

Domains of learning: writing essays, conceiving iconic illustrations,

Learning places: painting academies, riverside (for painting), piano room,

At school, shaping clay potteries, imagining theatre plots, crating an interview questionnaire, giving original names to phenomena or places, inventing routes for a travel, etc. are activities where the students learn by creation.

Associated words: divergent production, building new, originality.

The main theories that explain the mechanisms of learning by creation are Guilford's divergent production concept and Torrance's criteria for judging the amount of creativity.

7. Self-reflexion / Co-reflexion

Definition: Judgements, analysis and regulations operated by a person on his/her own cognitive processes or products in PRE, PER or POST performing situation, the performance being a test or a learning activity.

The teacher's or trainer's role is to help the learner, either in providing advices or data (such as metacognitive measures such as Confidence, Prudence and Nuance) or in helping the learner to interpret the situation, its causes and to conceive regulative actions.

Domains of learning: Each time a person has to estimate his/her chances of success of a course of action, before choosing it, or during performing it or after having done it and being told by an expert how good it was. It can be in the intellectual, relational or sensori-motor domains.

Learning Places: Anywhere, but the interruption of action helps the process, due to the limited capacity of our working memory: it is difficult to perform a task AND to have a metacognitive reflection on it in the same time, except when it is done in details (for instance for each question of a test) ; in this last case, the metacognitive process must happen directly, without delay. Metacognitive issues happen anywhere, anytime: "What are my chances of success if I engage this leaning activity? What is the quality f my production? Are my learning processes satisfactory? What should I change?

At school, there is a huge lack of metacognitive practices for several reasons. First, because the cognitive processes have been studied by scientific psychology only from a few decades. Second, because the available knowledge, now important qualitatively and quantitatively, has not yet been transferred in teacher competencies, the majority of teachers not having been trained in this domain. This contrasts with the official claims such as "we are in an information society" or as "we should promote autonomous learners" or as "long life learning", all those claims implying that the learners should have been trained in managing their own learning processes and results. In some settings,

interesting developments are implemented and the number of published experimental results are (too slowly) growing. An important acceleration of growth of metacognitive activities in schools should be favoured.

Associated words: self cognition, reflexivity, self awareness.

The main theories about reflexivity have been developed by Flavell, Brown, Leclercq, this latter one having proposed metacognitive procedures and indices (Confidence, Prudence, Nuance).

8. Debate / animation

Definition: Learning takes place during social interactions between pairs or between trainees and trainers provided there are conflicts of views (called socio-cognitive conflicts), challenging discussions forcing the opponents to justify their position…or to modify it.

The teacher's or trainer's role consists in "animating" the discussion, this expression covering a wide range of functions, from the less invasive (observation during the debate and debriefing after the debate) to the most invasive ones (such as selecting inputs, i.e. moderating, in a forum), passing by a series of intermediate roles (reframing, reorienting, regulating the debate, participating to it).

Domains of learning: Representations of complex concepts, relationships or areas of contents are often a mixture between spontaneous and official representation, with a high likelihood of misconceptions, and a low probability to have them detected by the learner himself in a short period of time. Discussions accelerate the awareness of contradictions and lacks in one's own mental representations and increase the efforts to reduce them.

Learning places: Real or virtual classes or subgroups are the natural partners for those exchanges, who can interact via asynchronous (forum) or synchronous (chat) techniques.

At school, debates can be (and are) organised not only on issues existing in society but also on the relevance of pieces of content to learn, on the appropriateness of their translation in words, in graphs, in figures, etc. on the usefulness of opportunities to deepen the learning of some contents, on the way they are produced, taught, assessed, shared, etc.

Associated words to debate : discussion, exchanges, socio-cognitive conflicts. Associated word for animating

The main theories: Social interactions have been demonstrated as catalysts in the construction of knowledge (Doise, 1981, Perret-Clermont, 1979), since socio-cognitive conflicts and cooperation promote the des-equilibration / re-equilibration process described by Piaget.

D. The third component of the model : The METADATA

The 8 LEs that have been described are conceived at a level of generality (or granularity) to be elements to "think with", either in a descriptive function or in a design phase. They can hardly be used alone to instrument a research program since other variables are to be taken into account. The following examples just illustrate the point since the present article does not develop this third component.

Globally, for each learning event, there should be at least details (metadata) informing on the type of media used, whether or not there will be an evaluation of the performance of the learner in the event, whether the event will be individual or collaborative and the approximate time it will take to the learner. We list hereafter a series of basic questions in relation with each event, those questions being not limitative.

1. Imitation / modelling: Moving or still icons? realistic or symbolic? If sound, speed, number of repetitions, appropriate to which kind of learners? etc.

2. Reception / Transmission: if written format, the readability (Flesh formulas), the kind of vocabulary (frequent, un-frequent, appropriate to which kind of learners?).

3. Exercising / Guidance: quantity and quality of clues, quantity, delay and nature of feedbacks, etc. appropriate to which kind of learners?

4. Exploration / Documenting: Accessibility of the data base, rarity of the information, nature of support (oral, iconic, graphical, verbal, …), appropriate to which kind of learners?

5. Experimentation / Reactivity: Availability of tools, stuff, recording facilities; dangerous or safe situation (degree of risks), etc., appropriate to which kind of learners?

6. Creation / Confortation: Availability of proximal models, degree of help, appropriate to which kind of learners?

7. Self-reflexion / Co-reflexion: Initiated by whom, in which context? in which terms? with which (conceptual) tools?

8. Debate / animatio : How many participants, of which level (s)? with which rules? With which purpose, animation, tracking, etc.?

It is obvious that variables as the ones we have cited here upper can largely influence learning and its resulting achievement. Therefore, they should not be forgotten in the description of the events if measurement or experimental design is at stake.

We would be grateful to readers who would provide us feedbacks on the model.

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