

Service Learning 2.0

A Concept for New Ways of Learning and Teaching

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Service Learning, Education, Learning Theories, Empiric Learning, Seminar Evaluation

This paper reflects about new practical oriented methods of learning and teaching in the context of higher education, framed as “core² concept”. This concept does not deliver extensive answers; it seeks to inspire and provide first ideas of evaluating concrete tools in education. With a mindset of continuity and an openly addressed attitude of work in progress the paper is best understood as not only being about learning but being a learning process itself. It entails a working definition of learning along with an overview about behaviourism, cognitivism and neuroscientific learning theories. The core² concept will be introduced as a framework for integrative learning that is composed of cognitive recursive education as one dimension and constructivistic reflective experiences as a second one. To fill these dimensions with practical measures, a selection of seminar tools is provided. They come together with ratings suitable for the core² matrix. Two practical seminars of the University of Bayreuth serve as examples for an analysis and evaluation through the core² matrix.

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1. Prelude “Rethinking Education”

The so called elite universities like the Ivy League but also European institutions face a serious problem: they cannot live up to the expectations put into them. Their graduates globally cover top management positions to a large extent but as leaders in the financial and economic crisis they miserably failed. They could not prevent it and the learning within the crises is marginal, for example when one looks at the current bank behaviour. In Switzerland over 50% of the Top 500 enterprises (with Nestlé and world famous banks among them) are lead by graduates of the ETH Zurich and the St. Gallen University (cf. Dyllick/Torgler 2007) and in France the concentration of Grande Ecoles graduates is even higher (cf. Meier-Rust 2007: 67). The academic education all these institutes provide is excellent with rankings among the world’s best universities in 2009.¹ Yet how comes that all of these elite thinkers do not turn out as elite doers?

Maybe they simply could not do better with what they have learned. When the economic elite collectively fails, there is probably more behind it than to blame individuals. They have learned at the best places they could but maybe what they have learned was not the best. While the contents advanced, the learning did not. Most universities teach in ancient, at best anachronistic manners, like up-front lectures that still dominate the scene. There is nothing wrong with it; it is just not right enough anymore. Not only learning, but questioning the learning, thus learning to learn could be a step into the right direction.

“It is beyond time that higher education institutions recognize the untenable position of holding onto past practices that are incongruent with the needs and demands of a knowledge society. Higher education leaders have the challenge to position their institutes for the twenty-first century” (Garrison/Vaughan 2008: ix).

The claim is that we need new and better learning methods that enable the next generation of leaders to perform and serve in the global business world. The tasks of our society will become more complex, more demanding and less foreseeable than ever before. The challenge is therefore not bigger than we think; it will be bigger than we actually can think. Rethinking our thinking is not the solution but a mere, yet necessary beginning for us to deal with current and upcoming

¹ For more details see the latest rankings for 2009 at <http://www.topuniversities.com>.

situations. And to do that, learning to learn is a good start. It is our heritage as human beings to be able to question ourselves and to question the ways we ask questions (or why we do not) and the answers we are given (or why we do not get them). One question is why academic knowledge does not provide practical capabilities to the extension needed. It seems that in the supposedly highest forms of education, in universities and academies, this question falls way to short compared to questions of budget, personnel, facilities, reputation and bureaucracy. The practical relevance of a curriculum has to prove in the real world. However, there is still a lot of improvement if we look at the educative output when it comes to acting and making the big decisions of our times.

2. Theories of Learning “The Mind and the Brain”

2.1 Definition of Learning

“Although even specialists have difficulty defining the term learning precisely, most would agree that it is a process of change that occurs as a result of an individual’s experience” (Mazur 1998: 1). This rather vague description can be specified by the definition of learning “as an experiential process of resulting in a permanent change in behavior that cannot be explained by temporary states” (Klein 1996: 2). The notion of behaviour is helpful as that was exactly the point of criticism in the introduction. Not the thinking itself caused the problems but the actions and choices that were made. These changes in behaviour are constituted by the acquisition of knowledge (facts, basic strategies like multiplying, heuristics), concepts (abstraction, systems), skills (capabilities, interaction) and attitudes (mindset, culture, belief-system). Putting the parts together, my own working definition is:

Learning is a sustainable change in behaviour through the individual’s experiential acquisition of knowledge, concepts, skills and attitudes.

2.2 Behaviourism

“Practice makes perfect” (Pritchard 2009: 5) could be the informal introduction. The first who used the term “Behaviourism” is said to be John B. Watson, an American psychologist, who did so in 1913. His aim was to strengthen the scientific reputation of psychology – which in general was not too high these days – by relying only on strictly measurable and observable facts (cf. Watson 1984: 39).

“A definition: Behaviourism is a theory of learning focussing on observable behaviours and discounting any mental activity. Learning is defined simply as the acquisition of new behaviour” (Pritchard 2009: 6).

There are two closely related but distinct concepts in behaviourism. The first is called classical conditioning and is based on the findings of Ivan Pavlov (cf. Walker 1996: 18). In his experiments he fed dogs right after he rung a bell, noticing that after several repetitions the dogs started to salivate after the ring of the bell even when he did not present any food. This observation led him to a basic stimulus – response (S-R) condition of learnt or conditioned behaviour (bell ring – salivation) in contrary to unconditioned behaviour (food – salivation). Four key mechanisms describe the functioning of classical conditioning. Acquisition is the initial learning of a conditioned response. Extinction describes the disappearance of the conditioned response if for example the bell is rung repeatedly without providing food afterwards. Generalisation takes place when a conditioned response is shown after a stimulus that is quite similar but not the same as the original one, like a different bell or a gong. The opposite is discrimination, describing the lack of response to a similar stimulus that could be a whistle or a shout.

The second concept of learning is operant conditioning², going back to Burrhus Frederick Skinner (cf. Martinez 2010: 13). He enlarged the stimulus – response scheme by a third term: contingent reinforcement, which Skinner called reinforcer. That is “any stimulus event that strengthens a response” (Walker 1996: 85). The stimulus – response – reinforcement (S-R-R) scheme functions so that for example a dog is told “roll over!” then it rolls and is rewarded afterwards. This positive

2 Preceding operant conditioning, there is instrumental conditioning, which is closely connected yet distinct in certain minor aspects. It strongly relies on the research of Edward Lee Thorndike. The differentiation is not important for the scope of this paper. For further details see Walker 1996: 48 and Thorndike/Gates 1930.

reinforcement does not have to be food but can be any appropriate reward like approval or simply attention (cf. Pritchard 2009: 8). Based on the same principle there is negative reinforcement that strengthens the response if an aversive stimulus, like a shock or loud noise, is withdrawn. By pairing a response with an unpleasant consequence one talks of positive punishment, as there is negative punishment like taking away privileges. A third key notion in operant conditioning is shaping. The idea is that an animal or person can be taught certain behaviour through gradual approximation, even if the desired behaviour was never performed before. That way rats can be trained to perform complex tasks like pressing an overhead lever. First it is rewarded for an upward movement of the head, then of the body, and then for finally for pressing the lever.

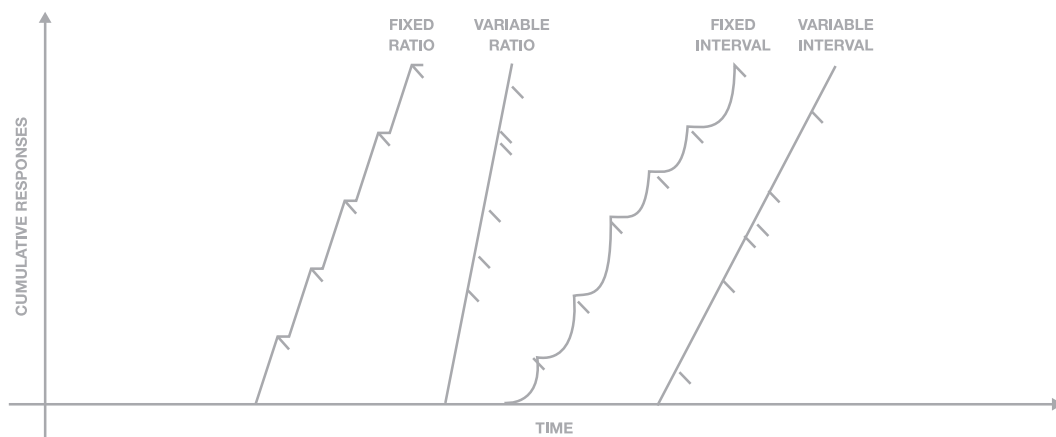


FIGURE 1 – REINFORCEMENT SCHEDULES (SOURCE: AFTER WILLIAMS 1973)

Another important aspect to operant conditioning aligned by extensive research (cf. Ferster/Skinner 1957) is the timing when reinforcements take place, so called reinforcement schedules. Continuous reinforcements are those granted after every response (cf. Pear 2001: 64). They are effective while initially learning behaviour but do not lead to a high cumulative score. Partial reinforcements are subdivided into four types:

Fixed ratio schedules provide reinforcements after a specific number of responses (e.g. every fifth time). Variable ratio schedules grant rewards on an averaged number of responses (e.g. after 10, then after 2, after 5 times etc.). Fixed interval schedules reinforce after a specific number of

responses but not before a fixed time span has passed (e.g. everyday after all homework is done, the child may watch TV but not before six o'clock). The same holds true for variable interval schedules with the difference that the minimum time span between the reinforcements differs and is only averaged (e.g. monthly bonus payments that are only issued if the overall results of the company are good). We should keep in mind here that the variable ratio schedule does not only lead to the highest culmination of responses; it is also the best way to avoid extinction.

2.3 Cognitive Learning

“An increasing interest in mental processes fuelled the rise of cognitive psychology during the middle of the twentieth century and attention shifted from observable behaviour to thinking, reasoning and problem solving [...]” (Ireson 2008 : 12).

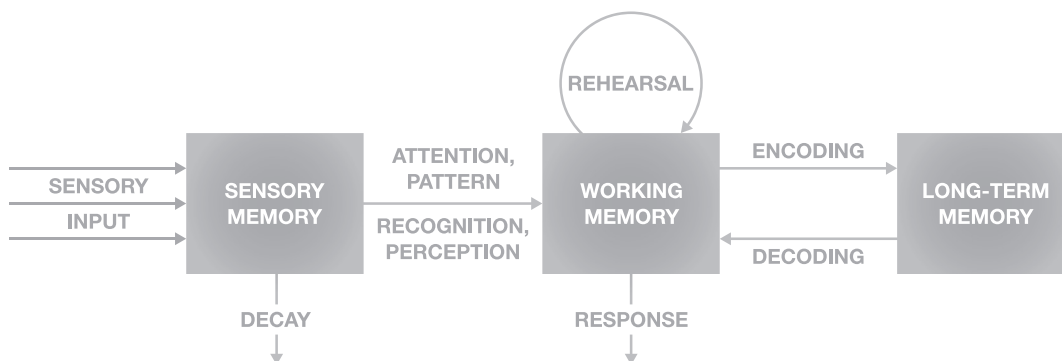


FIGURE 2 – INFORMATION PROCESSING MODEL (SOURCE: LEAHEY/HARRIS 1997: 104)

Instantly this broader understanding of learning expanded the theoretic base enormously. The key aspects I will focus on are Information Processing Model, Gestalt Psychology, constructivism, social constructivism and metacognition. The Information Processing Model can be well captured as computer metaphor though it was not described in such a way when it first came up (cf. Atkinson/ Shiffrin 1968). “A primary source of mental representation is perception” (Johnson-Laird 1990: 470). The process begins when a stimulus “impinges on one or more senses” (Schunk 2009: 133). The sensory register transforms the stimuli into information “so we can make sense of them” (Woolfolk/

Hughes/Walkup 2008: 297) and transfers it to the working memory, also called short-term memory (cf. Good/Brophy 1990: 214). This transfer is not mechanistic. Depending on the attention actively paid to selected stimuli and the pattern recognition that draws back on the long-term memory, the overall perception is not a mere “reception of stimuli; rather it is influenced by our mental state, past experience, knowledge, motivations and many other factors” (Slavin 1994: 188).

The phenomenon widely known as “the whole is greater than the sum of its parts” was researched from a cognitive perspective by Kurt Koffka, Wolfgang Köhler and Max Wertheimer, founding Gestalt Psychology in the early 1920s (cf. Lefrancois 1995: 171). Gestalt, a German word, can be translated as “meaningful whole” (Martinez 2010: 52). The important point here is that the mind needs meaning in order to perceive, even if it therefore has to fill in information that is not in the initial stimuli.³ That way the individual’s mind actively makes sense of the world by mentally constructing it, which is one of the main assumptions of constructivism.

One of the most influential constructivists was Jean Piaget, being “one of the first psychologists to recognize in his theorizing that humans are born as active, exploratory, information-processing organisms” (Good/Brophy 1990: 53). Best known for his stage-developmental theory (cf. Piaget 1928) the basic conception was that all knowledge and skills have to be constructed by the learner with his constructions being true for himself but not necessarily for others (cf. Schunk 2009: 236-37). The smallest brick for this construction, “Piaget’s basic unit of cognition, speech, and behavior, is the scheme” (Good/Brophy 1990: 54). It can be understood as a mental representation of a part of the world, itself being a skill or knowledge. Combined, these schemes form our understanding of the world.

“It is estimated that any adult would have hundreds of thousands of schemas in memory, which would be interrelated in an extremely large and complex number of different ways” (cf. Pritchard 2009: 23).

The organisation of schemes occurs through their interaction with our working memory. Schemes are recalled and put into use if they seem to fit to a current situation (a process called assimilation). For

3 A classical example in Gestalt Psychology is the phi phenomenon: Two parallel lines are presented alternating. If the proximity and the timing are correct one does not perceive two blinking lines but one single line moving up and down. This effect is also apparent when watching a movie (moving pictures). The mind adds the missing pictures, suggesting a flowing motion out of single pictures.

example if we wanted to move forward by foot, we probably draw back on our “walking scheme”. If discrepancies between our actual experience and the schemes in use occur, like on frozen grounds, the schemes are altered, enlarged, connected or new ones are created and finally everything will be stored in the long term memory (all these possibilities are called accommodation). The need to do so is captured in the term adaptation, which is the “central drive of humans to adapt to the world as they experience it” (Borich/Tombari 1997: 41).

Founded on the same basic understanding of cognitive development like Piaget, Lev Vygotsky, yet had a different idea of how these adaptations are fostered the best: “Not exploration and discovery but, instead, guided participation” (O’Donnell/Reeve/Smith 2007: 49). Vygotsky stresses the importance of language, dialogue, social interaction, and exchange of thoughts for learning and development. His most important model is the zone of proximal development (ZPD).⁴ It can be defined as the theoretic space that is above a single person’s understanding yet still accessible with another person’s help and thus providing the biggest potential of learning. If this assistance is provided on purpose by a knowledgeable person it is called scaffolding, a term lent from the cognitivist Jerome Bruner. The idea of scaffolding is probably one of the most acknowledged principles in teaching nowadays: To provide individually challenging tasks that are manageable with appropriate support. The reference of individual learning strongly embedded in a social context is what qualifies Vygotsky’s theory as social constructivistic. All these mentioned cognitive concepts involve another concept called metacognition if they are actively thought from an individual standpoint.

“Metacognition refers to one’s knowledge concerning one’s own cognitive processes or anything related to them, e.g., the learning-relevant properties of information or data. For example I am engaging in metacognition if I notice that I have more trouble learning A than B” (Flavell 1976: 232).

The cognition about cognition or thinking about thinking is considered very important to advance in learning but it is not developed automatically (cf. Borich/Tombari 1997: 145). Metacognition is the general concept of being aware of cognitive processing and adequate strategies. At the same time it is the actual individual capability to do so. The latter comes up through monitoring one’s own mental activities (“Do I understand this?”) and controlling or evaluating (“Can I explain this?”)

4 For more details see Vygotsky 1986.

them afterwards. Monitoring and evaluation of learning clearly benefit from a social surrounding to get feedback on one's learning outcomes and then be able to relate them to one's metacognitive thoughts.

2.4 Neural Learning

When it comes to neural, neuroscientific or brain-based learning, one astonishing fact is that the results are not astonishing at all but highly congruent to the aforementioned theories of learning. Nearly all of the formerly proposed concepts and models have biological equivalents. However, they are based on different explanations of which I will introduce the structure of the brain, relative lateralisation, brain plasticity and memory storage. Despite the phenomenological redundancies with existing theories, the relatively new neuroscience contributes very valuable discoveries, also providing completely other parts of the puzzle.

An area with most profound knowledge, the structure of the brain, pushes one tendency of learning theories way further: the individuation of learning. Whereas behaviouristic models were absolutely general, the cognitivists began to see the individual contextuality and the implication for learning conditions. Neuroscience makes another claim: Nor do we all learn in the same way, neither within us there is a homogenous learner. Anatomically that is due to a basic three part structure, also called "triune brain" (MacLean: 1989) that reflects our evolutionary development. The first part is the brain stem, also called reptilian brain. Its main job is simply to keep us alive. Breath and heartbeat are regulated here for example. It is also responsible for basic instinctive responses like fight or flight. Learning in this brain region only takes place through evolution or through its interdependency with higher level functions. Instincts can intentionally be overruled by rational thinking yet more common is the other way that in situations of threat or chaos the reptilian brain completely takes over. The mid-brain, also known as mammalian brain or limbic system controls our emotions and higher vital functions such as eating, sleeping, sexuality or our immune system but also attention and consciousness (cf. Ormrod 2004: 14). Whenever emotions are involved in our learning, the mid-brain is active which is important as "it is thought to be the location of the long-term memory" (Pritchard 2009: 91). The cerebral cortex or neo-mammalian brain is what distinguishes us from animals. Here problem-solving, the aforementioned pattern recognition and the endowment with meaning take place. These highly sophisticated functions do only engage though when the other brain parts allow them to.

The cortex has another characteristic often referred to as relative lateralisation (cf. Jensen 2008: 19). It consists of two clearly separated halves: the left and the right hemisphere. They are only joined by a bundle of neurons called corpus callosum that ensures permanent communication. Given a certain amount of flexibility and redundancy, both hemispheres are quite distinct concerning the kind of information they process and the way they do it. The left hemisphere is analytic, sequential and logic in manner of functioning, and is in charge of language, calculation and abstraction. The right hemisphere is synthetic, parallel and spatial, thus dealing more with visualisation, recognition and creative processes. These facts hold true for about 80% of human beings (cf. Ormrod 2004: 17). For successful learning most of the times both hemispheres are involved, ensuring a detailed yet whole picture of the content.

On a cellular level, it is the brain's immense plasticity that enables us to learn. An estimated 100 billion neurons, each with the capability to connect to thousands of others, constitutes a uniquely complex network. Basically learning takes place by building and reinforcing connections between neurons (blooming) and the selective extinction of existing ones (pruning) (cf. Martinez 2010: 261). The interesting part is that through this plasticity the brain is able to adapt to any external influences within certain limitations. It can compensate severe losses of brain functions after a while, like people that retrieve their ability to speak after a stroke or it can overcompensate facing special demands like an over averaged neural finger sensory of a violinist.

With a well-understood macro structure of the brain and its observable cellular micro foundations, the meso level of memory storage and activation is still very far from being clear. Despite there are many different types of memories (e.g. explicit or implicit, semantic or episodic, procedural or reflexive) none of them can be specifically located in the brain. The famous search for the engram, a term coined by Richard Sermon "to refer to the trace in the brain storing a particular memory" (Leahey/Harris 1997: 304) also known as localisationist view, did not come to an end so far.

"It is important to think process, rather than location, when discussing the memory system. The current understanding is that multiple memory locations and systems are responsible for our learning and recall. [...] The idea is that you cannot separate memory and retrieval – memory is determined by what kind of retrieval process is activated" (Jensen 2008: 155).

The striking feature of this memory system is that unlike a computer hard disk, our memories are not fixed but altered every time they are processed through exactly this process. Analogue to the observer problem in physics, where we cannot watch particles without changing them, we cannot remember anything without altering our memories of it. This processual view also gives a good explanation why remembering and learning is so state dependent. “The reciprocity of this relationship between emotion and cognition is gaining increasing neuroanatomical support” (Klinger 1996: 175). Our emotional disposition (coming from the mid-brain) is so essential to our memory system that certain “drawers” simply will not open, i.e. certain memory circuits are not fully functional if we are not in the proper mood. The result is that we cannot remember although we know it is there.

3. Concept Core² “Integrative Learning”

3.1 Introducing the Core² Matrix

There is a huge variety of and within theories of learning, though I only touched the surfaces of the most common ones. The variations become more numerous when it comes to the realm of their practical implications for teaching and learning. How a classroom, a seminar group, a professor, materials and exams, a whole curriculum should be designed or chosen in accordance to what principles, based on what theories is a question whose right answer is hard to find. Looking at the educational outcomes, like the economic elite from the introduction, the given answers are not wrong – they are simply not right enough.

The basic theories of learning were not depicted to discern right and wrong assumptions but to give a broad fundament of learning opportunities. Conditioned, cognitive and brain-based learning, they all contribute to what I will call integrative learning in this chapter. Integrative learning is not an elaborated new theory as such. It is a first draft of a framework, called concept core² that is based on my own experiences both as a student and as a lecturer.

The target is to create a field of learning so that the learning outcome is truly rich and integrative, combining academic education and practical experiences. The two framing dimensions are constructivistic reflective experience (alpha core) and cognitive recursive education (beta core). The third dimension, with rounded shapes, is that of what, how and why. The roman digits mark

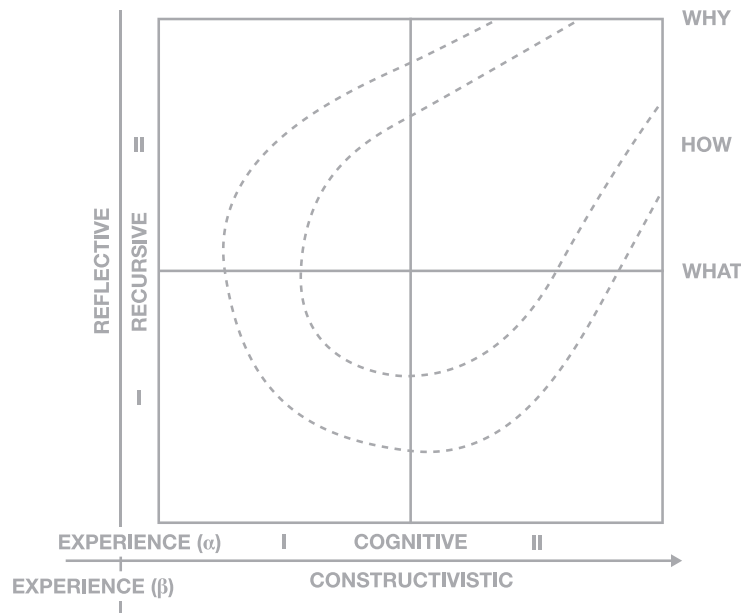


FIGURE 3 – THE CORE² MATRIX (SOURCE: OWN FIGURE)

mediocre (I) and strong (II) characteristics. The idea is to use the resulting core² matrix as qualitative evaluation to ensure integrative learning with education and experience as two complementary aspects. When carefully chosen by the seminar leader, experiences can promote educational growth, allowing further reaching experiences and thus moving on an upward spiral of learning. The planned or used measures and tools can be plotted on the matrix to see if the field is covered or if considerable areas are missing.

“A primary responsibility of educators is that they not only be aware of the general principle of the shaping of actual experience by enviroing conditions, but that they also recognize in the concrete what surroundings are conducive to having experiences that lead to growth. Above all, they should know how to utilize the surroundings, physical and social, that exist so as to extract from them all that they have to contribute to building experiences that are worth while” (Dewey 1998: 35).

Constructivistic Reflective Experience

The first term refers to the general understanding that individuals construct their own perception of any sensation or experience they encounter, as described in section 2.3. I do not go into the discussion of the existence of an objectively existing “real” or “outer” world. Yet I clearly refuse objectivity in a learning environment. It is the student who ultimately creates his personal meaning and understanding from what he experiences, despite whatever the teacher’s intention was. To make these constructivistic relativities discussable, I stressed the need for reflection while or after experiencing. As seminars usually consist of more than one participant, it is important to keep everyone within a certain range of common understanding and this can be done through self and communicative reflection. The practical notion of self-reflection is a crucial point when it comes to shaping behaviour and acquiring capabilities.

“[...] experiential learning activities play a vital role in any training effort in which attitude and behavior change are sought. No better case in point can be found than in the area of interpersonal skill development” (Silberman 2007: 277).

Another aspect embodied in constructivistic and reflective is the notion of a durable, sustainable way to engage students with experiences. The experiences made should be treated in a constructivistic and reflective manner afterwards but before that they should be selected for exactly these reasons.

“Hence the central problem of an education based on experience is to select the kind of present experiences that live fruitfully and creatively in subsequent experiences” (Dewey 1998: 15-16).

Cognitive Recursive Education

I chose cognition as determining education paradigm to distinguish the classical content based education from the more practical and processual intention of integrative learning. Seeing education from the cognitive point of view in this case means strongly approving the social contextuality and metacognitive sides of learning. Referring to the need for exercise, cognitive flexibility is a good metaphor for metacognition:

“Cognitive flexibility can be defined as a person’s ability to adjust his or her problem solving as task demands are modified. Flexibility refers to the selection and/or modification of available problem solving techniques, methods, or strategies as a function of changes of the task or situation” (Krems 1995: 202).

The training aspect is also captured by Pritchard saying that “cognition is the ability of the brain to think, to process and store information, and to solve problems” (Pritchard 2009: 26). An ability needs enablement to live up to its full potential; it is not a mere genetic constitution. As for the term recursive, I wanted to stress the non-linearity of learning. Everything we learn has an influence on our future learning and on our judgements on the past. It is important to think of learning more in terms of a recursive-chaotic system than of a determined one-way road.

“Cognitive presence is a recursive process that encompasses states of puzzlement, information exchange, connection of ideas, creation of concepts, and testing of the viability of solutions. This is no suggest, however, that the actual practice of inquiry is linear or immutable. [...] Leaps of insight and intuition reflect what appears to be radical phase shifts such as a student moving from exploration spontaneously to a solution” (Garrison/Vaughan 2008: 22).

Integrated Learning with What, How and Why

Based on the cognitive findings and the bare necessity of the introductory claim, the idea of integrative learning is that of an end-to-end approach. Classic education as we experience it today (and where employers often complain about) is too narrowly focussed on the what. Scientific disciplines have well managed analysing the what, breaking it into smaller pieces of what and analysing these as well. The resulting expert knowledge is of great value within a matching reference system. I. e. an accountant does a good when it comes to finances.

However, the transferability of his knowledge is questionable. That would be addressing the how, a meta-skill just like metacognition, which is still not very well incorporated in university programmes. And the least worked field is that of meaning, reason and sense: the area of why. I do not mean nobody ever talks about these subjects. It is just that they are not embodied enough in teaching and learning, which might be one explanation for the senseless derailments of the

economic elite. I personally think that with a globally responsible feeling of why to do certain things and why to refrain from others, the crisis we are facing these days would not have gone so far. That is the reason for the distinction between what, how and why. Simply to be aware of all of them and to carefully be able to adjust a seminar design to the integrative needs.

3.2 Means and Ends

Following Kant to treat all humans not only as means but always as ends themselves, the same should hold true for all methods, aspects and tools I will present in the following section. None of them is ever appropriate if the measure only bears external but no internal value as such. An example could be a final presentation nobody wants to see with the only motivation to have some tangible output or to let students co-create an agenda as participative engagement while recognising that more instead of less guidance would have been appropriate at that time. In general, all selected measures are highly sensitive to space and time.

What seems adequate in one moment does not have to be so in other circumstances. Due to this fact, the ratings I made in the following are to understand as rough estimations made from a personal standpoint. They are not only discussable but need to be discussed and developed. Also I “emphasize the importance of seeing the design principles as system rather than a checklist of independent features (Goldman et al. 1999: 617), though I did not go into dynamic interdependencies between single measures that might occur. This is a beginning and not the end.

In brackets behind every tool stands a rough estimation of the level it is aiming at. Below the tool constructivistic/reflective and cognitive/recursive aspects are rated 1 or 2, referring to the roman digits I and II. What/how/why are rated 0, 1 or 2. The 0 denotes a weak connection of the tool to that level and 2 signifies a strong one.

3.3 Core α Tools

Discussion (what)

The tool of discussion is probably most commonly known and used nowadays. From an experiential point of view, supported by brain-based theory of memory storage, this element is so important because it is a very active part of learning. Discussions only take place in the very moment they are lead. Like memories that only exist when they are remembered. When nobody actively talks, then there is no discussion. The same holds true for the reflective aspect. If the contributions made are not reflecting on each other, supporting, discarding, altering or thinking through multiple instances of an argument, then still some people might be talking but that is not a discussion. Everyone has his blind spots and four eyes see more than two, as two minds can think more than one. The common construction of a thought, resulting from individual constructivistic thinking can be a strong learning experience while proceeding with the content.

Constructivistic: 2 Reflective: 1 What: 2 How: 1 Why: 0

Participative Outlines (what)

For people it makes a big difference if they drive or if they are driven. Sitting on the driver's seat consumes more attention but can also be more fun. When it comes to navigation, people might find it very difficult to remember the way if they have never driven it by themselves. The claim is that involving students in planning and execution of the seminar puts them behind the wheel. A change of perspective from consuming education to creating experiences is essential for a practical seminar. Without this engagement, without the feeling that this is their seminar, all experiences the students make will have a considerably lower impact on them and their learning. The specific identification with the seminar outlines, the alignment of a common goal represented in participative elements enables them to fully identify with everything that will happen on the inside. Also it can be of great help to truly improve existing practical seminar structures on the fly or afterwards.

Constructivistic: 1 Reflective: 2 What: 1 How: 1 Why: 1

Rituals (what)

Though behaviourism can be to a certain extent contradictory to a constructivist reflective learning approach, its simplicity bears its own powers. Especially when it comes to rather non-verbal subjects like atmosphere, attention or dedication, behaviouristic measures can have their benefits. A good way of positive conditioning is the installation of rituals. People with sleeping disorders for example are told to follow specific routines every time before they go to bed to make a strong bond between this ritual and the mind and body getting to rest. All necessary flexibility and spontaneity given, rituals can help to faster dive in a wanted learning atmosphere. Symbolising a trusted mental starting point it is often a good mutual take-off, especially with exiting or exhausting points on the agenda. These rituals can be as small as a fixed time or place for regular meetings, summaries before or after courses, sequences within the course, conventions of communication or anything else that is course-specific.

Constructivistic: 1 Reflective: 1 What: 1 How: 1 Why: 0

Cooperative Work (how)

Working together on certain task is not limited to students working in groups or teams. It can also include the seminar leader as well. The experiential gold nugget lies in the actual involvement in social learning and achieving processes. If one thinks something through by oneself, there might well be a distinct penny dropping event or the sensation of a long learning period. In group constellations the experience is much more immanent. We experience learning and progress immediately as we are nearly always confronted with different views of problems and possible solutions. That is constructivism on a silver plate. To accept it, to address it and to work with it can result in huge learnings. This is especially the case, when the founding paradigm is cooperation not competition. Positively engaged seminar leaders can contribute to this attitude participating in group efforts, even when it is only a consultative role they take or a mediating position between the groups.

Constructivistic: 2 Reflective: 1 What: 0 How: 2 Why: 1

Feedback Culture (how)

Being much in line with behaviouristic variable ratio schedules, installing and supporting a vivid feedback culture is essential to any high performing team process. Actively learning from and through each other is only possible through a vital exchange of personal ideas, opinions and knowledge. It is the social glue that lets the group grow larger than the sum of its participants. The impact of feedback is not constrained to its actual content. The sensation of giving and receiving feedback plays a major role too. Valuable feedback is always socially embedded and an interactive space-time event. An anonymous dateless letter telling me that I am stupid might not even touch me at all since it lacks any social relevance. The force of feedback as an experience makes it very important for seminar leaders to keep a close eye on this as the tone makes the music. Especially when the feedback culture is new and fragile a lot of frustration and mistrust can result from intended or unintended misuse of feedback. Everyone constructs his own reality and what was meant as a verbal pat on the back from one side, can turn out as highly invading on the other side of the table.

Constructivistic: 2 Reflective: 2 What: 1 How: 1 Why: 1

Task Based Work (why)

The idea behind a task or output oriented seminar is simple: when the result is worth striving for, it immediately provides a meaning for the seminar. Despite its mark, a final test itself is of no interest for anyone. No one will probably ever read it again. It is educative deadwood. To create and work on something whose actual manifestation means something in itself, an interesting paper, a well-designed presentation, an article, a movie, a book, a meeting, is highly inspiring and guiding. It also bears another quality of experience because there is actually something to experience. A test is written and gone with a small digit as only result. Yet anything that contains an intrinsic value like the aforementioned examples brings so much more extrinsic value and motivation since it appears worth to bring it into being.

Constructivistic: 1 Reflective: 1 What: 1 How: 1 Why: 2

3.4 Core β Tools

Methods not Contents (what)

In line with basic cognitive thinking, it is not such much the content that counts but the methods and capabilities. The paradigm shift is from “what do you know?” to “what can you do?” as final question of achievements after a seminar. Learning to learn is a clearly metacognitive skill that needs to be trained, not to be known. Providing tools for the students so that they themselves can improve their learning like creativity techniques, effective group work design or encouraging critical thinking is inevitable for an integrated learning success. That does not mean that a seminar course should bear every substance. The claim is more that by not providing content directly but enabling the students, this vacuum will be filled by content of themselves. From the cognitive point of view, the genesis of own ideas, plus the ability to work them out, to rethink them and to put them into test in discussion and maybe to finalise them is just a more holistic learning process than receiving content uploads.

Cognitive: 2 Recursive: 1 What: 2 How: 1 Why: 0

Sharing (what)

One to three hours sharings in the plenum are an important way of commonly thinking of subjects, progresses or challenges. The basis is that everyone gets to talk about his thoughts on the subject. The recursive aspect is that during a sharing, ideas are listened to and then individually returned or advanced through all other people that share. The difference to a reflective discussion is the more indirect circuitry of exchange. If ten people share their experiences of a certain event, the single person might learn as much from the others point of views as by solely deliberating the own one. Depending on the quality of selbstauskunft the cognitive effort can be quite big but does not necessarily have to. Also a sharing can help to (re-)establish the common vision of the participants,

Cognitive: 1 Recursive: 2 What: 1 How: 1 Why: 1

Assessment and Selection (how)

To achieve a maximum learning outcome the initial selection of participants is crucial. It is important to start with a sufficiently strong group of people within the seminar that already have distinct cognitive capabilities. Especially when it comes to team or group work, every team should be able to rely on at least one person to complement the cognitive way of thinking. The reason is simply that without a critical mass of cognitive abilities like social constructivist thinking or metacognition, development draws too much energy from the outside and has less chance to result in positive group dynamics. If the seminar enrolls over more than one turn the consecutive selections of students can also be made by senior participants. This can improve group cohesion and deepen the understanding of the own selection if the general assumptions like this paragraph and resulting specific choices are openly communicated.

Cognitive: 1 Recursive: 1 What: 0 How: 1 Why: 1

Small Groups and Individual Guidance (how)

The idea of explicitly dedicating seminar time to support small groups and individual students, like open office or consulting hours, is closely connected to Vygotsky's ZPD in two ways. First, it gives the opportunity to fine tune the challenges put up in the seminar and to help manoeuvring through them. If necessary the seminar frame can be adjusted and/or the help provided intensified or reduced (scaffolding). This also helps to maintain a good overview of the overall seminar progress from the seminar leaders' side. Second, all of these interactions will take place in a social environment, through dialogues and thus will nurture a vivid exchange of thoughts. Also this setting might be more suitable to individually establish positive emotional connotations than rather anonymous question-answer audits.

Cognitive: 1 Recursive: 2 What: 1 How: 2 Why: 0

Enablement not Examination (why)

More than a practical advice, this claim addresses rather the mindset of the seminar leaders and participants. It is quite common to structure a course or a lecture so that there is a certain amount of stuff to be taught and learned, which will be subject to a final exam to ensure and evaluate the learning effort. While appropriate for some areas, this method can be quite counterproductive in practical seminars. From “do you know?” (knowledge) to “can you do?” (capability) is already a big gap. It becomes even bigger when asking “do you do?” (action). Though integrating the first point, it is the last two points a practical course should focus on. The whole practical approach is to enable people for better doing not to examine better knowledge. Yet to give a mark based on actual deeds (“how often did he help the group?” or “how clear-sighted was his big picture?”) is a tough call. If marks have to be given in a seminar at all, it might be a good idea to separate the examination process from the regular course, like written exercises, to not endanger – as paradoxically as it sounds – the learning success. The danger is clearly there since exams are typically fear-associated, which was shown by neuroscience can lock the brain from further learning opportunities. Doing involves more risks than thinking since it is less reversible. Thus providing a fear (and censors) free learning environment is essential for substantial enablement.

Cognitive: 2 Recursive: 1 What: 0 How: 1 Why: 2

Meaningful Tasks and Whole Minded Learning (why)

From the cognitive standpoint, when it comes to learning everything we learn has a meaning. It is the way our mind works. So meaningful tasks is somewhat a tautology. What is meant here is based on but transcending cognitive theory. Not only the learning mind, but every human strives for meaning. This is one of our most powerful motivations: to make sense of, to find or create sense in the world. Allowing students to develop and to contribute to something they consider meaningful is supporting their learning in every aspect of them being human. This can be taken one step further if seminar leaders try also to provide the possibility to let students throw in everything they have – speaking of mental abilities – to engage in meaningful tasks. For more than 2,000 years science was focussing on the analytical and detailed side of thinking with a strong left-brain-dominance. But now “we are moving from an economy and a society built on the logical, linear, computerlike

capabilities of the Information Age to an economy and a society built on the inventive, empathic, big-picture capabilities”, as Daniel Pink (2006: 2) puts it. Synthetic and creative thoughts are a fertile complement to regular academic thinking. Both hemispheres together form a whole mind and a whole human being. Fostering a holistic and meaningful attitude of learning, integrating everything that humans as learners are, might result in a quantum leap of learning quality.

Cognitive: 2 Recursive: 2 What: 1 How: 1 Why: 2

4. Practical Seminars “The Two Examples”

4.1 Nokia Praxisseminar

What: The Nokia Praxisseminar (practical seminar) was established in the “Philosophy & Economics”⁵ studies at the University of Bayreuth in the summer term 2008. The idea for the cooperation had an absolvent from Bayreuth who works at Nokia. Together with the Vice President of the aftersales service division, they approached those responsible of “Philosophy & Economics” in autumn 2007.

The first term started with a presentation of the Nokia strategy by Nokia executives. Then the students should find socio-economic subjects relevant for the next 10 to 20 years that can be worked with from a distinct “Philosophy & Economics” perspective. The result was six subjects with each subject forming a group of two to four students responsible for it. The leading questions were: “Who are we and what do we want to do?” The second term was to refine the subjects and to present them in front of 1492.// to improve the fitting of the subjects towards Nokia’s needs. A second presentation at the end of the term with presence of Nokia and 1492.// took place to approve the re-sharpened subjects. In the third term the groups wrote papers on their subjects, culminating in a final publication.

Who: The seminar was supervised internally by Prof. Dr. Dr. Alexander Brink, a leading expert in academic business ethics and corporate governance, M.A. David Rohrmann with focus on applied business ethics and Dipl. Kfm. Gunnar Oldehaver, who had a thematic priority on economics and competition but left after two terms. Externally they were supported by the 1492.//

⁵ For more details see pe.uni-bayreuth.de.



FIGURE 4 – CIRCLE OF ENGAGEMENT (SOURCE: OWN FIGURE)

GmbH,⁶ a consultancy specialised on organisational evolution that was strongly engaged in the whole system change of Nokia (cf. Hengl/Menz/Wiek 2008). The course started with about 20 students. In the following terms the students themselves were actively integrated in fostering new participants for the seminar by proposing and selecting them.

How: The students passed most of the working time within their groups, fully decentralised without any supervision by the seminar leaders. They neither did have to work at the University nor at specific times. Parallel to that there were distinct plenary meetings to update all the groups on specific issues, to align further planning or simply to exchange working progresses between the groups. In addition to that, consultation-hours were offered by the seminar leaders to individually support the groups.

Why: The goal of the seminar is to get students engaged in real business problems and questions of a major global player. Far from solving case studies, the students first had to find proper questions and then to develop answers for them. The practical context was always in the centre of all considerations, reflected in an extremely flexible time management on the students' side and an over proportional effort from the seminar leaders in comparison with other courses. The students needed to develop global organisational thinking and combine it with decent academic analysis. Another reason for the seminar is to establish a circle of engagement⁷, i.e. winning Nokia as a long-term supporter for Philosophy & Economics. A reliable bond would mean access to tailor-made university research capacities for Nokia and a strong financial partner, with excellent practical knowledge and rare project or job opportunities for Philosophy & Economics.

4.2 Novalux

What: The Novalux seminar was established at the University of Bayreuth in the summer term 2009. Novalux is latin and means "new light". The initiator was Martin Sambauer, CEO of Das Integral,⁸ an agency for critical staging and integrative communication. His idea, resulting from a former work project, was a greenfield development of a social and ecological responsible brand. He chose "Philosophy & Economics" as creative, academic fulfilment partner due to the broad interdisciplinary capabilities and its diverse network. The seminar was then complemented by a

6 For more details see <http://www.1492.at>.

7 For more details see the Circle of Engagement figure in the appendix.

8 For more details see www.dasintegral.eu.

second university, the Media-Design Hochschule in Munich,⁹ which has profound knowledge in design and arts. The first term was about generally discussing the idea and the proposed approach. Sambauer provided a detailed plan¹⁰ of possible fields that small student groups could fill with content. At the end of several consecutive seminar terms stands the undertaking to really roll out the developed brand in a real market environment.

Who: The initiator and primary content provider was Martin Sambauer, an expert in the marketing and public relations sector. He was an advertisement campaign director for 20 years and then decided to throw his expertise into the more substantial and sustainable fields of moral communication and communicative clarification. The seminar started with 12 students. Responsible for coordination, structure and student supervision were the aforementioned Prof. Dr. Dr. Alexander Brink and M.A. David Rohrmann.

How: The seminar was framed by regular plenum sessions that took place every two or three weeks. There, presentations were held by the groups to update the others of the made progresses and to get feedback to sharpen the subjects. In between the meetings, the groups worked on their own and were only supported on demand. Finally, all upcoming results were to be expressed in a written form, supporting the Traces Concept. This means everything the students worked on within the seminar should be prepared so that the results, sources and side-branches of a subject (the Traces) can be easily accessed by future students.

Why: The motivation of the seminar is to embrace the opportunity of letting students co-create a brand from sketch to roll-out. The challenge is to not only think through different aspects but to keep in mind the actual consequences this might have on the market side, what the social and ecological effects could be and later how financial calculations have to be set up along with concrete organisational structures. The students will have to learn how to holistically consider all aspects of a Startup enterprise combined with academic analysis of ethics, sociology, economy and communications. On top they will experience the chance of working in interdisciplinary teams with the media-design students, and thus truly promoting cross-functional engagement.

9 For more details see <http://www.mediadesign.de>.

10 For more details see the Novalux seminar structure figure in the appendix.

4.3 Evaluation with Core²

α LPHA TOOLS	DISCUSSION	PARTICIPATIVE OUTLINES	RITUALS	COOPERATIVE WORK	FEEDBACK CULTURE	TASK BASED WORK
NOKIA	+	++	+	++	+	++
NOVALUX	++	0	0	+	0	++

β ETA TOOLS	METHODS NOT CONTENT	SHARING	ASSESSMENT AND SELECTION	SMALL GROUPS	ENABLEMENT NOT EXAMS	MEANINGFUL TASKS
NOKIA	+	0	+	++	+	+
NOVALUX	+	+	0	++	+	+

FIGURE 5 – QUANTITATIVE COMPARISON CHART OF TOOLS USAGE (SOURCE: OWN FIGURE)

Based on my estimations and perceptions, I rated the usage of tools within the seminars. Two pluses signify a strong usage, high functionality and a conscious decision from the seminar leaders' side. One plus stands for medium usage or mediocre realisation with less commitment from the seminar leaders. The null represents a minor to zero awareness or random usage of a tool.

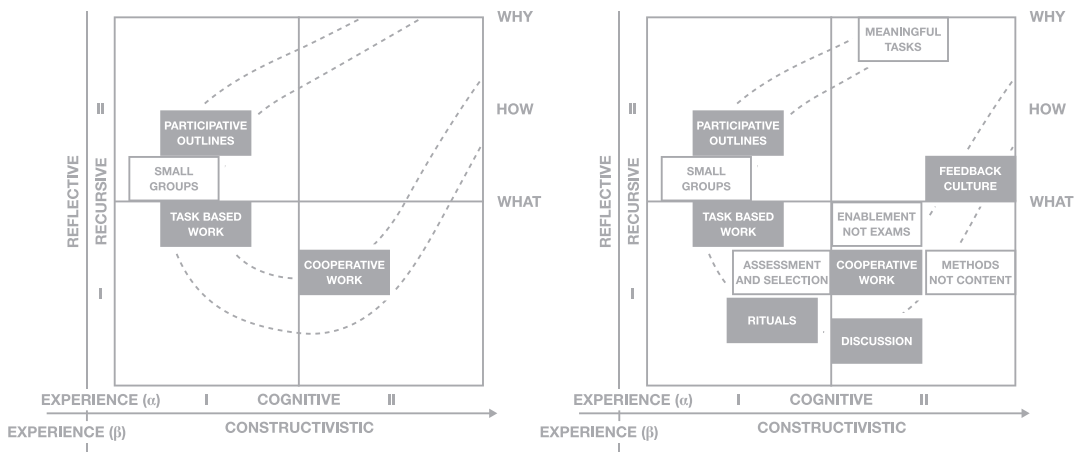


FIGURE 6 – TOOLS USED IN THE NOKIA SEMINAR (SOURCE: OWN FIGURE)

The next figures have the used tools plotted on the core² matrix to see which fields are already well covered and where the biggest needs are. The figures on the left side contain two-plus tools only, whereas on the right side all tools despite zero ratings are shown.

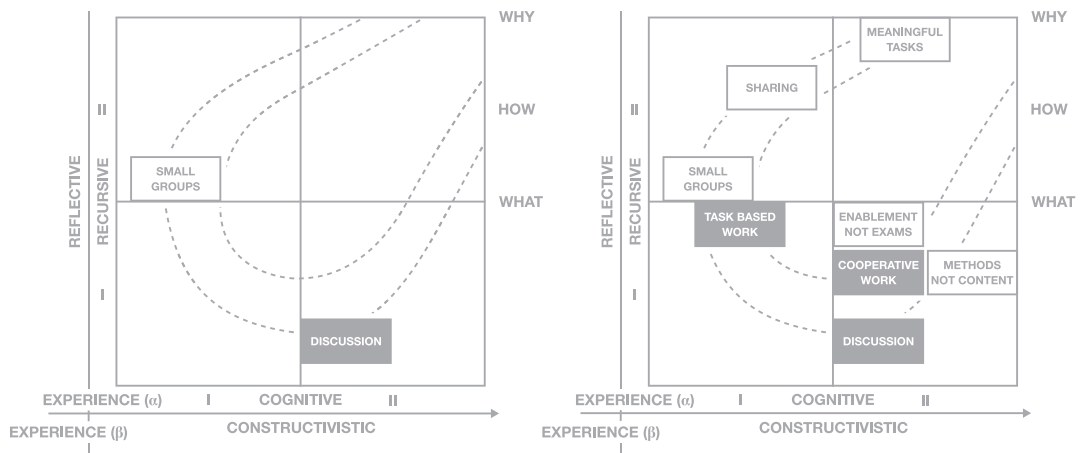


FIGURE 7 – TOOLS USED IN THE NOVALUX SEMINAR (SOURCE: OWN FIGURE)

The differences between the Nokia and Novalux seminar in kinds and amounts of tools are clearly visible. One reason is the higher term count of the Nokia seminar, providing higher expertise and experience in seminar guidance. But also content-wise there is a distinct difference. The first term of Novalux had a rather academic-educative approach (core β) while the Nokia seminar quickly build up output oriented aspirations and had more experiential happenings throughout the courses. Both seminars, however, still have lots of potential to improve but as they still continue, they hopefully will.

5. *Résumé “The Dawn of a New Understanding”*

Finally, I face more concerning questions than before that need to be answered in order to head forward. One is: Does the core² concept contribute to a better understanding of integrative learning? Not the amount of scientific material but the lack of its consistency makes the core² concept and the tool descriptions highly explorative. Of course, there is extensive literature on every single aspect, yet the observations made often refer to completely different frameworks and thus I decided to make my judgements based on my own experiences with only light literature backing. Another question: Is integrative learning as such really the better alternative to the classic education we face nowadays? And finally: Will any of the efforts made by universities and students lead to not only better thinking, but better doing? It is the change in behaviour that will make the real difference the way people will lead the world and live their lives. I personally think that it is all in our hands and those who managed to change should give an example and help or teach others how to live up to one's potential. There will always be crises. Mistakes will always be made. But if we are open for learning, chances are that we will not make any mistake more often than necessary. If we start to learn what is needed then we will only need to learn.

References

- Atkinson, R. C. / Shiffrin, R. M. (1968): Human Memory: A Proposed System and its Control Processes, in: Spence, K. W. / Spence, J. T. (eds.): *The Psychology of Learning and Motivation: Advances in Research and Theory*, Vol. 2, 89-195, Academic Press, New York.
- Borich, G. D. / Tombari, M. L. (1997): *Educational Psychology – A Contemporary Approach*, Longman, New York.
- Dewey, J. (1998): *Experience and Education*, Kappa Delta Pi, Indianapolis.
- Dyllick, T. / Torgler, D. (2007): Bildungshintergrund von Führungskräften und Platzierungsstärke von Universitäten in der Schweiz, in: *Die Unternehmung*, 61 Nr. 1, 69–94.
- Ferster, C. B. / Skinner, B. F. (1957): *Schedules of Reinforcements*, Appleton-Century-Crofts, New York.
- Flavell, J. (1976): Metacognitive Aspects of Problem-Solving, in: Resnick, L. B. (ed.): *The Nature of Intelligence*, Larence Erlbaum, Hillsdale.

- Garrison, D. R. / Vaughan, N. D. (2008): *Blended Learning in Higher Education – Framework, Principles and Guidelines*, Jossey-Bass, San Francisco.
- Goldman, R. et al. (1999): *Design Principles for Instruction in Content Domains: Lessons from Research on Expertise and Learning*, in: Durso, F. T. et. al. (eds.): *Handbook of Applied Cognition*, Wiley, Chichester.
- Good, Th. / Brophy, J. (1990): *Educational Psychology – A Realistic Approach*, Longman, New York, London.
- Hengl, M / Menz, O. / Wiek, J. (2008): *Kollektiv handeln lernen*, in: *Harvard Business Manager*, 44–50.
- Ireson, J. (2008): *Learners, Learning and Educational Activity*, London, Routledge, New York.
- Jensen, E. (2008): *Brain-Based Learning – The New Paradigm of Teaching*, Corwin Press, Thousand Oaks.
- Johnson-Laird, P. N. (1990): *Mental Models*, in: Posner, M. I. (ed.): *Foundations of Cognitive Science*, Cambridge, The MIT Press, London.
- Leahey, T. H. / Harris, R. J. (1997): *Learning and Cognition*, Upper Saddle River: Prentice Hall.
- Lefrancois, G. R. (1995): *Theories of Human Learning – Kro's Report*, Brooks/Cole Publishing Company, Pacific Groove.
- Klein, B. (1996): *Learning – Principles and Applications*, McGraw-Hill, New York.
- Klinger, E. (1996): *Emotional Influences on Cognitive Processing, With Implications for Theories of Both*, in: Gollwitzer, P. M. / Bargh, J. A. (eds): *The Psychology of Action*, The Guilford Press, New York, London.
- Krems, J. F. (1995): *Cognitive Flexibility and Complex Problem Solving*, in: Frensch, P. A. / Funke, J. (eds.): *Complex Problem Solving*, Lawrence Erlbaum Associates, Hillsdale.
- MacLean, P. (1989): *The Triune Brain in Evolution: Role in Palaeocerebral Functions*, University of Toronto Press, Toronto.
- Martinez, M. E. (2010): *Learning and Cognition – The Design of the Mind*, Merrill, Upper Saddle River, Columbus.
- Mazur, J. (1998): *Learning and Behavior*, Prentice Hall, Upper Saddle River.
- Meier-Rust, K. (2007): *Wo Schweizer Topmanager studiert haben*, *Neue Züricher Zeitung* am Sonntag, 4.2.2007, 67.
- O'Donnell, A. M. / Reeve, J. / Smith, J. K. (2007): *Educational Psychology – Reflection for Action*, Wiley, Hoboken.

- Ormrod, J. E. (2004): *Human Learning*, Pearson, Upper Saddle River.
- Pear, J. J. (2001): *The Science of Learning*, Psychology Press, Philadelphia.
- Piaget, J. (1928): *The Child's Conception of the World*, Routledge and Kegan Paul, London.
- Pink, D. (2006): *A Whole New Mind*, Riverhead Books, New York.
- Pritchard, A. (2009): *Ways of Learning – Learning Theories and Learning Styles in the Classroom*, Routledge, London, New York.
- Sambauer, M. (2009): *Novalux Seminarstruktur*, unpublished working paper.
- Schunk, D. H. (2009): *Learning Theories – An Educational Perspective*, Pearson Prentice Hall, Upper Saddle River.
- Silberman, M. (2007): *Experiential Learning in Interpersonal Skill Development*, in: Silberman, M. (ed.): *The Handbook of Experiential Learning*, Pfeiffer, San Francisco.
- Slavin, R. E. (1994): *Educational Psychology – Theory and Practice*, Allyn and Bacon, Boston.
- Thorndike, E. L. / Gates, A. I. (1930): *Elementary Principals of Education*, New York: MacMillan.
- Vygotsky, L. (1986): *Thought and Language*, The MIT Press, Cambridge.
- Walker, J. Th. (1996): *The Psychology of Learning – Principles and Processes*, Prentice Hall, Upper Saddle River.
- Watson, J. B. (1913): *Psychology as the Behaviorist Views It*, in: *Psychological Review* 20, 158–177.
- Watson, J. B. (1984): *Behaviorismus*, Fachbuchhandlung für Psychologie Verlagsabteilung, Frankfurt am Main.
- Williams, J. L. (1973): *Operant Learning: Procedures for Changing Behaviour*, Wadsworth Inc., Pacific Grove.
- Woolfolk, A. / Hughes, M. / Walkup, V. (2008): *Psychology in Education*, Pearson Education Limited, Edinburgh.

