

Twenty Two Theories

Colophon

Title	Twenty Two Theories
Author	APS International Ltd.
Photos	Bart Versteeg, Dorothee van Kammen
Lay-out	APS, PSC
Print	Giethoorn-Ten Brink, Meppel, The Netherlands
Price	€ 10,--
Order nr.	625.010
ISBN	90 6607 369 1

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Introduction

APS, National Center for School Improvement, and its international branch both focus on learning. Not only learning of students is our concern, but also that of teachers, school leaders and board members.

In our work with schools of course we use the enormous potential that is available in our cooperation with practitioners in The Netherlands and in other countries as well. More often than not in close cooperation with these professionals we analyse problems, design solutions and implement new practices. Analysis, design and implementation are in our view highly interactive processes. But also we make use of the wealth of knowledge that is available nowadays in books, journals and of course on the internet. We are not picky here, we just want to make accessible what is needed in the schools we work with.

This selection of 22 theories, strategies and tools for learning and education were collected and summarized by two senior staff of APS, Hans Pouw and Sebo Ebbens, with the assistance of APS experts whose names are to be found inside this publication. These experts have a vast experience applying the stuff they write about, and therefore were invited to contribute.

The Dutch version was published on the APS website and on DVD in December 2004, to mark the 35th anniversary of APS. Both on the website and the DVD the basic information was accompanied by video taped interviews. APS International thought it an excellent idea to make this information accessible both on our website www.apsinternational.nl and in hard copy for a worldwide audience. There was no money to dub all the videos, and that is why we restricted ourselves to a translation of the core text. We really hope that it will inspire you to look for and eventually find your own favourite ways of learning and teaching.

Each chapter has the same lay out:

- Summary.
- Definition: a brief description of the theory.
- How can it be applied: examples of applications in schools.
- Relevance: reflection on educational practice.
- Sources: reference to Dutch or international sources.

And each chapter ends with the names of APS contacts who will be more than happy to advise you if you want more information.

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1 In this book we sometimes have to refer to a student as “he”. We apologize for this inconvenience, since we know that the majority of students in the world is a “she”.

Adaptive Learning

Summary

Adaptive learning is learning that meets students' three fundamental requirements for relationship, competence and autonomy. "Relationship" is understood as a student's feeling of being accepted; the fundamental requirement of "competence" means that students are able to discover that they can do the tasks they have been set; and "autonomy" means that consideration is given to the student's own choices. Where consideration is given to these three requirements in educational situations, students will approach their tasks with motivation.



Mr. Rinse Dijkstra



Mrs. Ellen Zonneveld

Definition

Adaptive learning is learning that meets students' three fundamental requirements for relationship, competence and autonomy. "Relationship" is understood as a student's feeling of being accepted, having a sense of belonging, feeling welcome, and feeling secure. The fundamental requirement of "competence" means that students are able to discover that they can do the tasks they have been set, and that they discover that they can accomplish more and more. The fundamental requirement of "autonomy" means that they know that they are able to control (at least in part) their learning behaviour. Together, these three basic requirements define the basis of adaptive learning. For teachers using the adaptive approach, it means adopting an approach that is attuned to these basic requirements. This applies both to didactic and organisational matters, as well as to pedagogical performance. This gives rise to a form of learning where the students are motivated to actively

approach their tasks, and from which they benefit in the best possible way. There are a variety of practical variations of adaptive learning, both at schools at universities and education support institutions. Adaptive learning has become popular in the Netherlands through the works of Stevens (since 1994).

How can it be applied?

Each of the three basic requirements must be concretised in practical learnings. For example, consideration for relationship means that teachers must convey to students that they are open to what they want; they take time to interact with the students, that they show interest in the background of students, that they live up to their agreements with students, and treat confidential information discreetly. Consideration for competence, for example, means that teachers actively give all students turns, give space for differences in their style of work and study, that they show signs of high expectations which conform with the capacity and talent of students; that they ask questions which encourage reflection. Consideration for autonomy, for example, means teachers honouring the initiative of students; that they value the ideas of students in setting tasks (how and what); that they allow students to help determine how classes are run; and that they entrust various organisational matters to students.

At APS the latter aspect is given prominence in the 'A Choice for Adaptiveness' (in Dutch: 'Kies Adaptief') project. The project couples the three basic requirements to student involvement. The assumption is that if students really want to learn, they must be actively involved in shaping the three basic requirements:

- The student-student and student-teacher relationship is strengthened when a student has influence on the way in which he/she deals with him/her.
- Teaching becomes more meaningful for a student if the student can influence what is taught and how it is taught, thereby increasing his/her sense of competence.
- If students know they are affected by important subjects in their learning and living environment, their autonomy is enhanced, and hence their self-confidence.

In the *Kies Adaptief Project* the three basic requirements are linked in with three major components of the teacher's pedagogical and didactic approach, i.e., interaction, learning and classroom management. This results in a three-by-three matrix, which show

nine characteristic behaviours of teachers. These nine features need to be incorporated into education. They look like this:

	Relation	Competence	Autonomy
Interaction	Personal approach to students	Helping students to reflect	Giving students space, honouring initiative
Learning	Giving lessons that are safe for students	Making active learning central to tasks	Allowing students to help to choose the task and/or to design it
Classroom management	Creating time for meeting students	Adapting time and making space for students	Planning with students what to do and how to do it

This matrix and the explanation shows that the "competence" component in particular draws a great deal on the more constructivist concepts of learning (active learning, activating learning, etc). The matrix also makes it clear how interdependent the three basic requirements are. A student cannot manage without one of the three.

Relevance to educational practice

The concept of adaptive learning, with the formulation of the three basic requirements, is a simple and accessible concept. This does not mean that it is easy to design, but it is clear and unambiguous as regards its purpose. Through its elaboration in the matrix and using the many examples in the literature (see "sources"), adaptive learning has been well operationalised for teachers in the classroom. It allows teachers to reflect on what they are doing, see where to focus their considerations, and check how they can express adaptive learning, or elements of it, in their practice.

Sources

Adaptive education was introduced in The Netherlands by Prof. Luc Stevens in 1994. He based it on the ideas of the motivational

psychologist Deci. One of his background articles is: Deci and Chandler, *The Importance of Motivation for the Future of the LE-Field*. Journal of Learning Disabilities. Stevens' books include: Stevens, L. (1994). *Het vakmanschap van de leraar. Proeve van een bijdrage aan een pedagogische onderwijstheorie* in: *Onderwijsproblemen*, Utrecht University/ISOR; Stevens, L. (1997). *Over denken en doen*, WSNS; Stevens, L. (2002). *Zin in Leren*. Apeldoorn: Garant.

In addition, Rinze Dijkstra of the APS has written three booklets elaborating the matrix for each of the three basic requirements: *Erbij horen en meetellen*, on the "relationship" requirement; *Laat dat maar aan mij over*, on the basic requirement of competence, and *Ieder op zijn eigen wijs*, on the basic requirement of autonomy. These books are summarized (in Dutch) at www.aps.nl/adaptief/publicaties.html. For further information use a search engine like Google (<http://www.google.nl>), entering "adaptive learning" or "adaptive instruction". This will direct you to a great number of websites.

APS Contact

Mr. Rinse Dijkstra, Mrs. Ellen Zonneveld

Brain-Compatible Learning

Summary

Huge volumes of studies into the brain have brought to light elements that can stimulate learning in students. These elements have already been incorporated into many new theories of teaching. They have been substantiated and supported in brain-compatible learning. In this brief summary we will give a few examples of such elements.



Mr. Otto de Loor

Definition

Our brains have an unusual construction with unknown potential, of which we probably use only a very small part. Our brains are additionally a flexible organ, that constantly evolves under the influence of outside stimulation. The growth of the dendrites, in particular, proceeds all our lives under the influence of such stimulation. Dendrites are the "connectors" in our brains, and new connections are constantly being made. There are examples of people with particular types of brain trauma who have been able (albeit only to some extent), to re-learn abilities they had lost, although this is not always the case. It also appears that the brain loses its elasticity when it lacks stimulation. The main conclusion that arises is "use it or lose it". The teaching of students is a rewarding area for the introduction of the new views that studies of the brain have revealed. For example, if a brain study shows that for students the constant establishment of new connections is something natural, it challenges us to make teaching as challenging as possible (powerful learning environments). This also belies the concept that the IQ of students is something fixed. It challenges us to stimulate students who perform less well in class to use their brains better. The results of studies into the brain have brought up many conclusions that suggest making teaching more brain-compatible, and hence more efficient and pleasant.

Caine and Caine (1997) drew twelve principles that play a role in

the relationship between teaching and studies of the brain. These are summarised below:

1. **The brain is a complex adaptive system.**
2. **The brain is a social brain.**
3. **The search for meaning is innate.**
4. **The search for meaning occurs through patterning and making connections.**
5. **Emotions are critical to patterning, and colour meaning.**
6. **Every brain simultaneously perceives and creates parts and wholes.**
7. **Learning involves both focused attention and general attention.**
8. **Learning always involves conscious and unconscious processes.**
9. **We have at least two ways of organizing memory.**
10. **Learning is developmental, and brains are constantly developing**
11. **Complex learning is enhanced by challenge and inhibited by threat.**
12. **Everyone's brain is unique in the way it organizes information.**

How can it be applied?

- One consequence of being active means that a student does not react just to the teacher or peers, but also to other stimulation. For example, student attention appears to wander if he is not emotionally motivated to pay attention to, for instance, a teacher's narrative within approximately 18 seconds. Anything that is potentially dangerous, edible or sexually interesting, takes priority over learning. This means that the teacher's role must be one that challenges the student to take part.
- It also emerges from studies of the brain that in addition to challenge to learn, there has to be an underlying sense of safety. The indications are that safety takes priority over learning. The brain has a direct and unconscious link between the perception and survival. Threats switch off conscious thought. In other words, if the student is faced with the choice of learning or surviving, he will choose survival. This is the case, for example, with teasing and constant negative feedback. For teaching it

means that there needs to be a climate of safety with a teacher whose overriding aim is to accentuate the positive aspects of a student.

- Every second, approximately our senses are bombarded with approximately 40,000 bits of information. If all this data has to be passed on to the short-term and long-term memory, we would be unable to keep up with it. For this reason, a lot of the information is filtered out "at the gate". The emotional part of the memory seems to play an important role in this. It means that in teaching a student, exciting events are assimilated quicker than boring information. Emotions seem to play an especially important role in learning. This has to be respected.
- If new information is stored somewhere in the brain, the student is often unable to retrieve it later on. When the new information is connected to existing knowledge (prior knowledge), it appears that he/she has the information more readily available. The information is then stored properly. The same applies, for example, to rules in class. Making rules without giving students the chance to connect it with their own system of values and norms leads in the best case to mindless obedience.
- Every person sorts new information himself. In this respect, the brain should be regarded as a cabinet with a large number of suspension files. When students store new information in totally separate files (which happens when fragmented knowledge is offered), it leads to a lack of view and oversight. In a test, or some time later, it is difficult for the student to retrieve the information. The accessibility of the memory increases if information is stored in more than one place. In this case, networks are established. The more view a student gains into a particular subjects, the better he/she is able to have an oversight of the various sources of information. This is a reason to present teaching material from as many different angles as possible (e.g. see "multiple intelligence"), or to teach the material by means of a complex learning task.

Relevance to educational practice

Brain-compatible teaching is highly relevant to educational practice, not so much from the aspect of bringing new views, as in respect of supporting existing approaches to teaching, as most of them are already known. Teachers know that students need to be active and challenged without safety being at stake.

Sources

There is now a great deal available on brain-compatible learning. We found Jensen, E. (1998) *Teaching with the Brain in Mind*. Alexandria: ASCD; Laan, M. van der (2002) *Hersengeheimen*. Amsterdam. Wolfe, P (2001), *Brain Matters*. Alexandria: ASCD; Caine and Caine (1997) *Brain Compatible Classrooms*. It is also possible to do a search for "brain, learning" using a search engine such as Google. This brings up many interesting websites. See also: <http://www.brains.org> on brain based education. This led us to <http://www.designshare.com/Research/BrainBasedLearnng8.htm> about the twelve principles mentioned earlier.

APS contact

Mr. Otto de Loor

Coaching

Summary

Mentoring of teachers and students means trying to bring out the best in people. This usually takes place in a more or less challenging encounter. This is not empty talk. Good coaching is an educational experience for both parties, the coach and the coachee.



Mr. Ferry Haage

Definition

The essence of coaching is to get people to do their best. And what a person does best is, of course, an individual matter. Another feature of coaching is to engage what the person can do, and not what the person cannot do. There should be a clear relationship between the "best" and what the person currently is. A third feature is the need for a challenge. Following a particular path needs to "stretch" both the coach and the coachee. Then you get a gradual development, or a leap in development.



Mr. Johan Hamstra

But empathy is important in bringing out the strong side of the person. In particular it is detrimental to emphasise what somebody cannot do.

People often have a wide range of competences. Experience teaches us that they can usually utilise these in a particular context, rather than in a different or a broader context. For this reason there are problems or disappointments. The person has reasons rendering them incapable of transferring their skills to a new context or new demands. There are impediments and blank spots. They could be emotions, such as "I can't do it in this context, the challenge is too great, ...", there may be cognition ("I'd like to, but I don't know how in this context, I think that expectations of me are too high, ..."). These obstacles prevent a person from daring to

"fully in it". In these situations, a coach in the first instance looks for only the strong sides of the person, and, together with the coachee, tries to see how the existing competences can be implemented in a specific context. At that stage the important thing is for the coachee and coach together to transfer existing competences to a new context. And this involves the question of what is hindering and has hindered the person in doing so. In the second instance, it is possible to search for new competences that can be developed. Or for a leap in development.

And finally: the coach is the most important "instrument" in bringing the best out of the coachee. The coach listens, reflects, confronts, and keeps probing. For this reason it is important for the coach to know himself. Coaching is not a technical skill with just one good method of questioning. It involves having a presence, friendship (with oneself and the coachee), openness (to oneself and the coachee) and offering oneself entirely to help the other to develop. It might be said that for this reason coaching is an individual path. A coach needs him/herself to be regularly coached in order to help others to develop.

How can it be applied?

Coaching in education is beset by the misunderstanding that it is something entirely new, and that it is a difficult area. There is also a misunderstanding that a good coach is also a good teacher. Everyday practice teaches us that many teachers coach their students. This happens when they seek out what their students already know, and how their skills can be implemented in a specific context where things are going slightly less well, and look for the obstacles preventing a student from excelling him/herself. When a teacher coaches a student, this is usually done in the context of a coaching session. This is an encounter between teacher and student. The result aimed for is for the student to find out how to function better. It is a flexible encounter between two individuals rather than a lecture. Coaching does not mean only standing by the student's side. It also means standing in front of the student, as the teacher has to perceive the student's verbal and non-verbal expressions, and to challenge him/her to show his/her best, and to reflect what he/she perceives. One of the most important characteristics of a coaching session is that the teacher poses questions and listens carefully to the answers. But there is more to it than a technically correct application of communication skills. A good coach should be able to:

- Make a good start with the student. Because the start of a conversation should bring out the material to be used during the rest of the session. It can be done with questions like: What am I good at? What direction do I want to go in? Where are my dislikes? What do I want to pursue? What should I avoid?
- Accept silences during the session and "read between the lines".
- Use a variety of forms of intervention. For example, if the coachee gives a particular answer, the coach should be able to set him/her on another track by implementing various facets; if a coachee talks factually, the coach should be able to probe for experiences or creative techniques. If a coachee talks emotionally, the coach can probe for more emotional considerations (reward the two halves of the brain).
- Feel what the coachee is saying, and thereby become aware what the other person feels, rather than is.
- Perceive the coachee as a whole. This requires knowledge on the part of the coach, for example, how to implement core reflections, how to deal with core qualities, and how to deal with different styles.
- Conclude the session in such a way that the student is able to progress further.

In our view what counts for the student also counts for the teacher himself. Teachers need to have a good self-awareness. This also means that they themselves will learn a bit more every time, and that a session never repeats itself. Every session and every person helps to bring out different facets. That means that the coach himself is developing as a coach. Coaching is a continuous state.

Relevance to educational practice

There are two important arguments in favour of coaching students in educational practice. One of the most important ones is that in a coaching session teacher and student truly encounter one another. Because encounters are never identical, this creates a situation where both the teacher and the student learn. And this sends enjoyment and inspiration in both directions.

A second argument is that in the encounter, something happens both for the teacher and with the student. A good coaching session leaves something new behind: a new view, an obstacle, a higher sense of awareness, an alternative. In the session, both sides learn a lot. And that leads to an education to which the students are constantly contributing.

Sources

There are a number of good books about coaching. Books we regularly refer to ourselves, and which we would like to name are examples: *25 tips voor coaching*, *Regie van zelfsturing* and *De kunst van het vragen stellen*. These books were published by the Associatie voor Coaching at Aarle Rixtel. Their website is <http://www.associatievoorcoaching.com>. Another interesting website is <http://www.training.pagina.nl>. For further information use a search engine such as Google (<http://www.google.nl>), entering "coach" or "coaching". This will direct you to a great number of websites, however many about sports coaching.

APS contacts

Mr. Ferry Haage, Mr. Johan Hamstra

Competence-Based Learning

Summary

By competence we understand the ability of a student to deal within a specific context with a combination of knowledge, skills and attitudes. Competence-based learning is learning to be able to do that. Research has learnt that the acquisition of fragmentary knowledge and skills produces little transfer to concrete situations. The introduction of competence-based learning should do that: most competences need to be developed particularly where attitudes play an important role. These are not learnt all at once. They demand lines of learning and development, and coaching.



Mr. Hans Kok



Mrs. Hanna de Koning

Definition

The concept of competence-based learning came into education in recent years. By competence we understand the ability to deal in a specific context with a combination of knowledge, skills and attitudes. Within this definition competences are always linked to acting in specific, usually realistic, contexts. By linking the definition to actions, knowledge acquires a new function. It now becomes full of significance. The same applies to skills and attitudes (also sometimes called 'personal qualities'). A competent student knows his facts, knows what he must do, can do it and does it with some conviction. There is a direct



Mrs. Dimph Rubbens

causative link between competence and success in the specific situation. In this view competence is a combination of knowledge, ability, and willingness. The reason for paying attention to competences is that because of their practical orientation the need for more complex skills with the appropriate knowledge and attitudes becomes more central where education was (or is) accustomed to teach students more fragmented knowledge or skills. This custom generally leads to little transfer to practical situations. The expectation is that competences will do this, because of their realistic and more complete content.



Mrs. Teja van der Meer

How can it be applied?

In establishing competences three qualities are important:

- **Typical vocational situations or typical usage situations need to be used as a basis.**
- **The situations need to be everyday ones. They should occur regularly and be immediately recognizable.**
- **In establishing a competence deviant behaviour must be considered: what is to be done if it things turn out differently or are awkward?**

Example:

The competence 'to give a lecture, to explain' involves, briefly, adequate knowledge of the subject area, and knowledge of how to build up an argument with a beginning, a middle and an end; the ability to construct a clear argument; wanting to be an inspiring speaker and being so.

Many teachers will recognize this competence as something that is important and distinctive, in any case at the beginning of a series of lessons or modules, and something that occurs regularly. The third criterion presupposes that a teacher is only (really) competent (is an expert) when he also knows how to keep a group of students

absorbed at the end of the day, on a hot Friday afternoon – just as a horse trainer is competent if he also knows what he must do, and acts accordingly, when a horse starts to rear near a group of children.

Most competences are not learnt directly, but develop more or less fast or slowly. This depends on the complexity of the competence, together with such underlying factors as intelligence, personality, motivation and interest. For the development of competences it is possible to make use of lines of learning and development. Lines of learning and development describe how the competence looks when, for example, a beginner, an advanced student or an expert displays it.

Beginner	Advanced student	Expert
Characteristics beginner	Characteristics advanced student	Characteristics expert

'Portraits' can be drawn in each of these places in the lines of learning and development.

Example: Students Learning Collectively:

- A beginner learning collectively takes up a position dependent on the group, takes few initiatives and often chooses, for instance, to carry out shared tasks without consultation.
- An advanced student learning collectively goes along with the group, does what is demanded (even if it is not of particular interest for him) and regularly takes on tasks and roles.
- An expert collective learner is open to others, involves everybody in it, carries out shared tasks after consultation, and makes use of and stimulates other people's qualities.

The development of this student can be plotted as the line of learning and development from self-interest to the interests of the team.

For the development of competences it is essential that students regularly have the opportunity of using their competences in the complex situations for which the competence was designed and in which the students are supported (coached). The assessment of the final result of competence-based learning also demands assessment in that complex situation. Internal or external experts can have a role to play in this assessment.

Relevance to educational practice

The relevance for practical teaching is great, particularly when the practical value is central, and this is increasingly the case. The reason is the need for a greater transfer of what has been learnt, and the desire that the school prepares the students for 'life-long learning'. This could then apply in four areas, i.e. that of professional competences, learning competences, career competences and citizenship competences. In this way the student is prepared for a career (professional and career competences), to take part in further education (learning and career competences) and to function as a member of society (citizenship competences). All forms of education can play a role in the development of competences.

Sources

Competence based learning is a hot item, which also leads to a lot of confusion. This is expressed in over forty different definitions of competences. See for example Mulder (2000), *Competentieontwikkeling in bedrijf en onderwijs*, his inaugural speech. It is also expressed when you enter 'competence' in Google. This generates a wide range of internet sites, including the starting page www.competentiemanagement.pagina.nl. This starting page alone shows how many people join in with this type of concept. Two booklets about competences in education: Kralingen, R. van (2003). *Competentiegerichte kennisontwikkeling*. Soest: Nelissen and Meer, T. van der & Visschedijk, T. (2003). *Leren op groen kompas, competentiegericht leren in het groene onderwijs*. Utrecht: APS.

APS contacts

Mr. Hans Kok, Mrs. Hanna de Koning, Mrs. Dimph Rubbens, Mrs. Teja van der Meer

Contemplative Learning

Summary

Contemplative learning is an intensive form of learning. The basic idea of contemplative learning is that human nature is seen as fundamentally alert: as sympathetic and intelligent towards oneself, and as sympathetic and intelligent to the world. We are no longer always capable of recognizing this alertness. Opening, or reopening this alertness we call contemplative learning.



Mrs. Lian Staal

Definition

Contemplative learning is an intensive form of learning. The idea of contemplative learning is that human nature is seen as fundamentally good and alert: as sympathetic towards and intelligent about ourselves, and as sympathetic towards and intelligent about others, the world. The origin of this thinking is to be found in a variety of spiritual traditions. Most traditions are in agreement that as we grow up we forget that we possess this alertness. This creates a feeling of estrangement, often coupled with uneasiness. However, from time to time we experience a glimmer of the fundamental alertness again. By watching out for those moments and cultivating them, we open (or reopen) our links with our fundamental alertness and at the same time, with the world around us. This opening or reopening, linking us with the world, is what we call contemplative learning. Below we divide contemplative learning into three forms of learning: 'listening', 'contemplation', and 'meditation'. To illustrate:



Mr. Sebo Ebbens

- 1 Listening is the process of taking in information, concepts, ideas. It includes reading and studying.**

The learner is actively involved in it and tries to 'hear' the information. There is a sincere attempt to be open to what is offered;

- 2 Contemplation takes place when the learner looks into the information offered and reflects on the personal relationship between the subject and himself: what does this information mean to me? What reactions does it evoke? This requires some degree of effort;
- 3 Meditation creates the link between the learner and the subject matter of listening and contemplation. The information is internalized in the person. Thinking about the information stops. At that moment the learner can display the knowledge as a

Together these three forms of learning develop 'direct experience-based knowledge', knowledge acquired by the learner and which connects the learner with the world. Such development of knowledge is coupled with knowledge about who we are. Therefore in contemplative learning a personal voyage of discovery by the learners is always involved. That applies to their teachers, too. To achieve contemplative learning in a class, they, too, must go through part of this voyage of discovery. The starting point for the three forms of learning is that they are all three necessary to achieve contemplative learning. It is not possible to ignore one of them.

How can it be applied?

Because the learner's contemplative learning is always coupled with a personal path, students must be given the opportunity of following that path. In his book, *The Courage to Teach*, Palmer has described six 'paradoxical tensions' which educational learning situations must satisfy to enable learners to follow that path (see the list of sources below). These paradoxical tensions have to be created by the teachers. Learners will have to participate in them, particularly because it is their path which is involved. An educational learning situation should:

- 1 **Be both limited and open (unlimited space produces chaos; a limited space without openness is rigid and gives students no opportunity to explore their own path). In the balance students should acquire sufficient limits and enough space to**

- explore their own path;
- 2 Be both welcoming and 'charged' ('Open' means that it is possible to get lost in the unknown. The area should therefore be welcoming and safe and offer sufficient shelter; the space should of course be charged to prevent it becoming too easy, or students falling asleep. Otherwise the voyage comes to an end). In the balance there is enough welcome and enough 'risk' for the pupil;
 - 3 Give both the individual and the group a voice (Pupils/students must be able to let their voice be heard with all that this involves. They learn from it. In the group that voice can be reinforced, challenged or contested). In the balance there is for the student sufficient challenge from the group and recognition of his individuality;
 - 4 Honour both the 'little stories' of the pupils/students and the 'big stories' of the subject discipline/tradition ('Stories' should not stay abstract. They must also include space for the realities of the lives of the pupils/students. The teacher's 'big stories' should provide the framework for this). In the balance the student can have his say and he can hear the teacher's 'big story';
 - 5 Both support being alone and surround individuals with the qualities of the learning community (At many times students are on their own. This applies to moments of introspection or in exercising meditation. A community helps in this by emotional support, listening, dialogue, asking questions...). In the balance there is room both for being alone and for sufficient support by others;
 - 6 Welcome both silence and speech (Introspection demands silence, making contact with yourself demands silence. And that is also a component of the exercise of meditation. Here, by 'speech' communication in general is meant, so in addition to the use of words, also role-playing, making contact, expressing yourself in words and gesture, etc.). In the balance there is sufficient silence and sufficient opportunity to express yourself.

The six paradoxical tensions in outline:

Limited	Open
Welcoming	Charged, challenging
Individual voice	Group voice
'Little stories'	'Big stories'
Being alone	A learning community
Silence	Speech

Relevance to educational practice

The most important contribution of contemplative learning to the practice of teaching is that it is a form of learning in which the student is central as a whole person – in the possession of his fundamental alertness. The aim is to support learners in their personal voyage, which makes them link up with their own selves and with the world instead of being estranged from themselves and from the world. The introduction of this form of learning will make heavy demands on teachers and on the educational system. In recent years APS has had some experience of this. A number of elements have been developed which can help teachers to give shape to contemplative learning in the practice of teaching.

Sources

Many sources are available for contemplative learning. These can be found in the various spiritual traditions. A very useful overview can be found in Welwood, J. (Ed.) (1992). *Ordinary Magic, Everyday Life as Spiritual Path*. Boston: Shambhala. The sources we used are Palmer, P.J. (1998). *The Courage to Teach*. San Francisco: Jossey-Bass Inc; en Rockwell, I. (2002). *The Five Wisdom Energies, a Buddhist Way of Understanding Personalities, Emotions, and Relationships*. Boston: Shambhala. Both Palmer and Rockwell have their own website: www.teacherformation.org and www.fivewisdomsinstitute.com. And then there is the Naropa University in the USA. Its curriculum is based on contemplative learning, see www.naropa.edu. For further information use a search engine like Google (<http://www.google.nl>), entering "contemplative leaning", 'contemplative education'. This will direct you to a great number of websites

APS contacts

Mrs. Lian Staal, Mr. Sebo Ebbens

Cooperative Learning

Summary

In education many assumptions about the acquisition of knowledge by students are oriented on the learning process of individual students. The assumption behind cooperative learning is that students' learning becomes more effective if they regularly consult with each other and use each other's expertise. A great deal of research has confirmed this. Collaboration between students does not just happen. It depends partly on conditions produced by the teacher in the learning environment. For instance, the atmosphere must be a safe one. The students must need each other in doing an assignment without being able to hide behind anyone (hitching a lift). That makes demands on the teacher.



Mr. Ad van Oort

Definition

Many assumptions about the acquisition of knowledge by students are oriented on learning by individual students. The assumption behind cooperative learning and a socially interactive learning environment is that learning can be more effective if the teacher creates regular opportunities for the students to consult with each other and to use each other's expertise. Even within constructivism, where the emphasis is on the active learner, it is made clear that active learning can gain effectiveness when attention is paid to cooperation between students. For instance, De Jong's doctoral research, in the early 1990s, shows that the socially interactive learning environment proves one of the most effective for students. One of the most plausible reasons for this is that the learning process strongly improves if you are forced to express your thoughts in words and get reactions from them. Some studies show that saying things aloud, compared to working in silence, strongly favours the former. On the basis of this knowledge the teacher creates a learning environment in which the students are regularly in discussion with each other or with the teacher, in all

kinds of cooperative learning. This can be done in the classroom by the creation of structures of cooperative learning between students (and there are plenty to choose from). Among them are forms of teaching by role reversal (in which the student temporarily acts as teacher for the other students). Consideration can also be given to forms of educational discussion between teacher and students or between students among themselves, or to forms of coaching. In these the teacher becomes an active partner to the students, who offers his cooperation (and demands cooperation in return). Vygotsky's approach also has all the characteristics of a socially interactive learning environment.

How can it be applied?

From a great variety of research it appears that cooperative working between students does not just happen. It needs to be encouraged. Nor does a good educational discussion simply just happen. It needs to be built up.

- 1 First of all it seems that the atmosphere in the class must be safe. Without this safe atmosphere it is not possible for any interaction with each other to take place freely. If, for example, someone is bullied, it is impossible for that person to learn anything (at the most 'unlearning' may then occur).
- 2 Each form of cooperative learning between students must satisfy five key conditions:
 - Positive interdependence: the task is so formulated that students need each other for a good result;
 - Individual responsibility: each member of the group is responsible for their own input into the group and for the whole group result and can therefore be called to account for both aspects;
 - Direct interaction: the content of the task invites interaction and the way it is set up encourages this interaction;
 - Social skill: the skills necessary for cooperation are explicitly learnt and assessed;
 - Attention for the group process: a cooperative task is regularly followed by a post-mortem discussion about the content and the process.

Particularly the first three key conditions are crucial in the early stages. Why should students begin to learn cooperatively if they mean nothing to each other? These concepts and associated forms

of cooperative working are discussed in a book (in Dutch) by Sebo Ebbens and Simon Ettekoven, *Samenwerkend leren, praktijkboek*.

3. Another piece of research suggests that there are two ways of encouraging cooperative learning, dependent upon the teacher's aim. The first is the firm structuring of the various forms of cooperative learning. This appears to be very effective in encouraging the 'lower orders of learning'. The other is to stimulate a great deal of interaction in the group. This appears to be very effective (in task-directed behaviour) in encouraging 'higher orders of learning'. For other forms of cooperation (such as educational discussions, or role-reversal) the same key conditions apply. From other research (by Salomons and Perkins) it appears that cooperative learning can take shape in four different ways.
 1. *The first approach* is that the group can encourage the learning of individual students. The learning process of the individual is central and fellow students help in this. This can be called a cognitive approach.
 2. *The second approach* considers the individual and his fellow students as a single learning system. The student is now a member of a group. This approach starts from the fact that people are social animals and that thought develops strongly in the presence of others: cognition and motivation cannot be separated from their social context. In this approach knowledge is construed together. This can be called a situational, participative-oriented approach.
 3. *The third approach* is one in which not only cognitive learning takes place during the cooperation, but at the same time also 'cultural' knowledge, and the apparatus of that culture is passed on. This happens more implicitly when students tell each other that something is 'not done'. The learner then learns more. But at the same time this has an influence on the learner's perspective, the way in which the apparatus represents the world. This approach is an example of Vygotsky's theory. It is a combination of the cognitive and the situational approach.
 4. *The fourth approach* presupposes that societal groups can also learn. We think of families, but also of classes, or of learning organizations. This approach starts from the fact that we can learn from the knowledge that is distributed among individuals with a common core. This is an organizational learning approach.

Relevance to educational practice

The views above are relevant to practical teaching. The main reason is that a great deal of different research shows that cooperative learning is very effective; often more effective than learning by oneself. Virtually all the research studies proved that in situations in which cooperative learning is central, the average cooperative learner performed (appreciably) better than the student in a competitive or individual setting. Moreover, students proved to show more higher order learning, more often developed new ideas and solutions; there appeared to be a greater transfer to new situations of what was learnt and students appeared to be more socially skilled. In addition it is the case that life and work in a community is by definition cooperative, even if that is not always visible or even sought after. It appears from research into requirements in job applications that the assessment whether someone can work with other people can be decisive in employing that person (Of course, in addition to other skills which are necessary for the job involved).

Sources

Cooperative learning has a wide range of sources. An overview of research results and important literature is described in the second reflection of the booklet *Samenwerkend leren* written by Sebo Ebbens and Simon Ettehoven (Publisher: Wolters Noordhoff, 2005). Several thinkers about cooperative learning have their own website. Elisabeth Cohen: www.stanford.edu/group/pci. A more general website about cooperative learning is that of the International Association for Study of Cooperation in Education: www.iasce.net. See the part 'resources' in particular, for a reference to a broad range of websites. For further information use a search engine like Google (<http://www.google.nl>), entering "cooperative learning" or "cooperative students". This will direct you to a great number of websites.

APS contact

Mr. Ad van Oort

Core Reflection

Summary

Core reflection involves thinking about what is really important to you. In terms of the layers of a personality it is about opinions, identity and spirituality. For the purpose of guiding a process of core reflection, F. Korthagen and A. Vasalos developed a method called the *spiral model for core reflection*. This method supports teachers and school leaders who want to focus on the core qualities of students and teachers.



Mr. Fred Korthagen

Definition

Core reflection is about thinking about what you want to achieve as a teacher or a student and what is standing in your way when you are solving a problem. We distinguish core reflection from reflection in general. Reflection in general involves thinking about behaviour, skills and opinions about yourself and others in a problem situation. Core reflection involves deeper contemplation of yourself; what do you want to create and how are you restricting yourself.

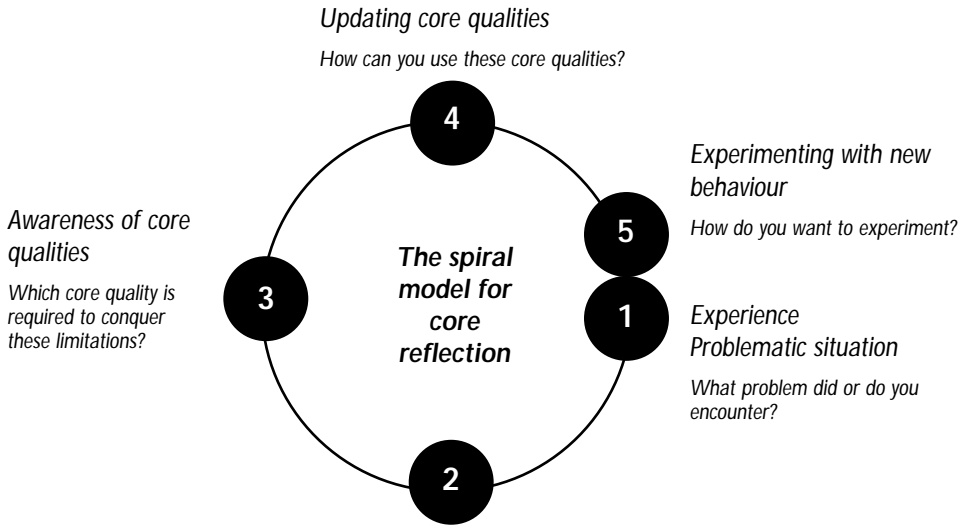
Typical of core reflection:

- Focus on questions such as: what do I believe in, what would I like to believe in, how do I see myself, how would I want to be, what moves me, what is really important to me? Questions relating to a person's identity and spirituality;
- Future-orientedness. You are not only oriented towards solving a problem, but also towards the consequences for the future;
- Focus on ideals, dreams, on what you would like;
- Aiming for disidentification. Letting go of inhibiting convictions. Being able to choose freely whether or not to hold on to a self-created restricting thought;
- Searching for core qualities in order to use them in the situation. Core qualities may be e.g. clarity, care, determination, goal-orientedness, openness, creativity, ...;
- Alternating attention between thinking, feeling, wanting and

- doing here and now;
- Result-orientedness. The outcome of the core reflection process is that you also act upon your thoughts.

How can it be applied?

Guiding someone with the method of core reflection can be visualised as in the figure below:



- a. *Awareness of target situation:*
What did you want to achieve or create?
- b. *Awareness of limitations:*
(behaviour, feelings, ideas, convictions)
How did you restrict yourself from achieving it?

The spiral model to assist core reflection processes provides a systematic support for conversation that many people in the education system are already managing well intuitively. But reaching the level where the model for core reflection is no longer a limiting factor in the guidance (awkward at first time use of the model) requires training. The most difficult things for teachers and school leaders are:

- naming core qualities instead of spotting deficiencies;
- balanced mentioning of wanting, feeling, thinking and doing. More particularly where it involves talking naturally about feelings;
- including the here and now in the conversation.
- being open to the other.

Relevance to educational practice

Reflection is a key concept for students, teachers and school leaders nowadays. Schools are given more and more responsibility nowadays to organise the education themselves. Schools design scenarios for their future. In schools where this implies that education is more oriented towards the competencies of students, guidance of core reflection will be a necessary skill for teachers. The same applies to designing the organisation in terms of the competencies and skills of teachers. This also requires the school management to guide teachers via core reflection. In this opinion core reflection is a requirement for school development.

Sources

A very easy to read article is: *Niveaus in reflectie: naar maatwerk in begeleiding*, written by Fred Korthagen and Angelo Vasalos. *Velon tijdschrift voor lerarenopleiders*, jrg 23(1) 2002. This article outlines all important concepts of core reflection. More considerations and backgrounds can be found in the book *Linking Practice and Theory. The Pedagogy of Realistic Teacher Education*. Fred A.J. Korthagen (2001). Mahwah, V.S.: Erlbaum.

The books *Leren van Lesgeven*, Ko Melief (2002 Soest, Nelissen) and *Docenten leren reflecteren*, Fred Korthagen (2002, Soest, Nelissen) discuss reflection rather than core reflection.

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Mr. Fred Korthagen



Development-Oriented Education

Summary

In development-oriented education the wide development of the student's personality is at the forefront. Within this aim there is a search for those learning processes which will stimulate students in their development. The concept of the 'Zone of Proximal Development' (ZPD) plays an important role in this. Development-oriented education can be considered as a kind of third way between two movements which are to be found in education. It links student-oriented pedagogy with didactic method to stimulate development. Student orientation runs the risk that teachers wait too long and that nothing results. Orientation on method runs the risk that students are made subsidiary to the method.



Mrs. Ellen Zonneveld

Definition

The concept of development-oriented education is based on the neo-Vygotskian theories. An important concept in Vygotsky's developmental theory – and so for developmental education – is the Zone of Proximal Development (ZPD). This is defined as the difference between what a student can achieve independently (the actual level of development) and what the student can achieve with the support of an adult or a fellow student. So the ZPD is a socio-cultural activity in which the student can and wants to participate meaningfully, but which he cannot as yet achieve independently. In practice it will mean carrying out a task with someone else (usually with an adult, sometimes with an expert student) in which the adult thinks aloud in advance and supplies the most important elements. Hence both the student and the adult contribute to the activity. The adult has to tune in to the actual knowledge and needs of the student and look for the leading activity. The most important characteristics of a developmental approach can roughly be summarized as follows:

- Development-oriented education is aimed at a wide personality development which always brings with it specific knowledge and skills. What is special here is that the adult in his contact with the student not only passes on specific knowledge and skills directly, but also that the student's development is strongly coloured by the context, the culture in which concepts are learnt. So in learning knowledge and skills, components of the culture and of the history of the culture are also always passed on by the actions of the adult. This, too, supplies elements for wide personal development.
- To be able to contribute to these developmental and learning processes, real, meaningful activities and contents are necessary. Development perspectives make clear in which direction the activities are developing, and which developmental and learning processes are being stimulated by it.
- The contribution of the teacher determines how far the supply of subject-related activity contributes to the desired development of the students. Teachers compromise between the motives, meanings and capabilities of students on the one hand and the aims they think important on the other. Therefore they must themselves design their contribution, tailored to the group of students. But even more than that, they make every effort to help the students more, to add experiences and opportunities for action, to invite and stimulate development and learning deliberately. Gallimore and Tharpe call this 'assisted performance'.
- Didactic organization plays a role in this. In guided choices leaders and teachers help their students to take initiatives and make plans for their activities. Particularly small-group activities make it possible for them to play, talk, think and work together with them.
- Reflection and observation are inextricably linked with teachers' actions. They are always trying to find out what students themselves want and are capable, or nearly capable, of doing. That is what their contribution is based on. They can then find out whether that contribution and their assistance really helps; whether students benefit from it.
- This means that development-oriented education forms a kind of third way. One which links student-oriented pedagogy to a methodology didactic which stimulates development. An orientation on students runs the risk that teachers wait too long and that nothing results. Orientation on method carries the risk that students are made subsidiary to the method. In APS much attention is paid to development-oriented education

for elementary stages. But the basic assumptions above are obviously equally valid for other age groups.

How it can be applied

From the description above it is clear that development-oriented education is a complex approach. Teachers must meet a large number of requirements at one and the same time. They must design a meaningful and challenging task and by doing so call on the potential qualities of the student; establish the leading activity for each student by seeking out each student's ZPD (which can be difficult in a large class); during their support of, dialogue about, or participation in the activities they must listen and observe well to make sure whether the challenge is still there for the student; work or learn with students in groups (small if possible); keep an eye on the whole class and put students to work where necessary; reflect with the student (or students) on what has been achieved; bring variety into the activities; and discuss with the school team the development of the students, setting an agenda for transfer. The essence of this approach is the interaction with the students in the teacher's participation in students' joint activities (assisted performance). All these activities are very demanding on the teacher. But if these activities can be got off the ground it will make the teacher's task more fascinating and more inspiring.

Relevance to educational practice

The concept of development-oriented education is extremely relevant because it is a 'comprehensive' theory. The approach is both pedagogic (wide personality development), and didactic (a planned methodology in the class), and satisfies educational psychology (the student is an active learner who shapes his own learning), as well as being directed at the acquisition of knowledge and skills (by seeking out the ZPD). In addition it supports a vision of the transfer of cultures. In APS there is a long history of developmental education (in the persons of Frea Jansen and Henk Vink) and particularly for the elementary stage of primary education a great deal of material has been developed and knowledge is available.

Sources

An important source is the book written by Tharp, R. and Gallimore, R. (1988): *Rousing Minds to Life: Teaching, Learning, and Schooling in Social Context*, Cambridge University Press. They describe how this theory can be used in class. Another source is the book written by Moll (Ed., 1990): *Vgotsky and Education, Instructional Implications and Applications of Sociohistorical Psychology*, Cambridge University Press. A lot of information and references to work material can be found on the website of APS: www.aps.nl and the Academie van Ontwikkelingsgericht Onderwijs: www.ogo-academie.nl. Both sites (in Dutch) mention sources and the second site also refers to other sites, among other sites of schools that work with the concept (see the links). A short description can also be found on www.funderstanding.com/vygotsky.cfm. For further information use a search engine like Google (<http://www.google.nl>), entering 'development-oriented education', or 'zone proximal development'. This will direct you to a great number of websites.

APS contact

Mrs. Ellen Zonneveld

Effective Learning

Summary

We can talk of effective learning when students find themselves in a clearly structured learning situation. The structure comes from the teacher and this makes it a teacher-controlled approach. Effective learning appears to be particularly effective in the acquisition of basic knowledge and basic skills and can be applied at the beginning of a programme of lessons to all students, and later in a programme of lessons to students who do not seem to be catching on to a particular subject yet.



Mrs. Evelien Janssens

Definition

Effective learning is the learning process by students which takes place within the instruction strategy of direct instruction, or effective education, or effective instruction, or... There are many names for it. We prefer direct instruction. Direct instruction is a teacher-controlled way of working. This way of working has as its most important characteristics a clear structure of the subject matter, clearly structured lessons, and direct feedback to the students. This instruction strategy may at first seem a little 'technocratic', or rather 'cold'. Direct instruction resulted in the 1970s and 1980s from making an analysis of effective teachers ('teachers matter'). The results of this analysis were explained in terms of behaviourism and cognitive psychology, theories that were at that time popular in education.

The essence of behaviourist thinking, as applied to education, is that desired behaviour of students is encouraged and reinforced by both positive and negative stimuli. For instance, a student will work hard for a test (desirable behaviour) if he has the prospect of good marks (positive reinforcement). He will be quiet in lessons (desirable behaviour) to avoid punishment (negative reinforcement). Behaviourists think that education is a matter of providing students

with the right incentives, the right stimuli. The starting point in behaviourism is that the stimulus, the reinforcement, directly follows the response: direct feedback. This can be positive (a pat on the shoulder, a smile) or negative (the threat of punishment, detention). Positive feedback, of course, seems appreciably more effective than negative.

The essence of cognitive psychology is that it has developed models of how people receive and store information and how the structure of memory lets them relate new information to what is already known, and the way in which information goes from the short-term to the long-term memory.

Direct instruction resulting in effective learning is based on a combination of these two theories. This means it has the following two characteristics:

- **It is powerful in the acquisition of basic knowledge and skills at an individual speed, in particular when the teacher's time is limited;**
- **Teachers work with clear aims, a clear structure of subject matter, and direct feedback.**

How can it be applied?

Direct instruction is, as has been said, a teacher-controlled method of teaching. This means that a teacher takes the full responsibility for the (effective) learning of the students. They do that by being clear in what they want to achieve. (*In this lesson we will... and at the end of the lesson you will know... and you will be able to...*); by explicitly saying in a clear instruction what they expect of the students (*First I explain what ... is. Then you will have the opportunity to work for ten minutes in pairs on ..., when you have done that you will know ...; I will then go through that once again for the class and then we will finish off by ...*); by giving the students a chance of a more or less guided exercise (*First you do it the way I have shown you, then you may choose if you want to do it this way or that way.*); by walking round while they are working, to observe and provide feedback, whether asked for or not, to the students about their progress (*That's good, I still miss ...; that is very good, what you are doing there; that is not going quite right; I will come and sit/stand by you to show you how it can be put right*). And by making sure there is a friendly atmosphere and plenty of positive feedback.

It will be obvious that this way of working demands good

preparation, with a well-thought-out lesson plan at the level appropriate for the students.

Relevance to educational practice

There are plenty of research results available about direct instruction. Nearly every research shows that consistent application of direct instruction leads to improved learning results for virtually all students, particularly when basic knowledge and basic skills are involved. The explanation may be that direct instruction offers so much clarity and structure to students that it is clear to them what is demanded of them (clarity) and what they should do to achieve that result effectively (structure). This clarity and this structure comes from the teacher. In fact we put particular emphasis on a better result for 'virtually all students'. The drawback of direct instruction is that the great emphasis on structure has an adverse influence on the learning results of some students. This is particularly the case with those students who are capable of structuring their own learning. For these students this approach hinders their learning if it is used for a long time. Direct instruction is particularly effective with beginners, with learners who still know little of the subject matter of the lesson in question. The consequence of this can be that direct instruction is always applied at the start of a block of lessons. That is the time at which almost all the students still know very little. This method of working always seems to be effective for weak students, learners who are unable to structure their own learning. In these situations it is possible, after a more general instruction for the whole class, to refine the instruction further for these groups of students (with more structure). It also appears from research that giving structure to a lesson make many students feel more secure. Research into fear of failure shows that structured lessons strongly reduce the negative fear of failure. So you could say that the structure helps to create a good learning atmosphere.

Sources

Many sources are available about direct instruction. A more classical source is a booklet such as *Improved Instruction* written by Madelon Hunter (1976, El Segundo: TIP publications). This approach is an entirely behaviourist approach. An other source is the book *Effectief leren*, a basic book written by Ebbens and Ettehoven (2004,

Groningen: Wolters Noordhoff). The first two chapters in particular are about designing effective learning in class. The other chapters describe how teachers can use this to stimulate more activating learning in their students. See for an overview of direct instruction: Rosenshine (1985, 'Direct Instruction'. In: *International Encyclopedia of Education*. Eds Torsten Husen and T. Neville Poslethwaite. Oxford: Pergamon Press, Vol 3, pp 1395-1400) or Creemers (1992, *Effectieve instructie, een empirische bijdrage aan de verbetering van het onderwijs in de klas*, 's-Gravenhage: SVO). For further information use a search engine like Google (<http://www.google.nl>), entering 'effective learning', or 'effective instruction' or 'direct instruction'. This will direct you to a great number of websites.

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Mrs. Evelien Janssens

Emotional Intelligence

Summary

Emotional intelligence is the ability of students to deal adequately with their own emotions. This ability proves to be essential for success in work and personal relationships. It requires that students are at least aware of their own emotions, or that they learn to acquire such awareness. Next they must learn to control inhibiting emotions. On the other hand, they must learn to make use of emotions that help them to function better. For that reason, teachers should include the development of emotional intelligence in their learning plan. For the same reason, teachers should also stimulate it in their personal functioning.



Mr. Kees Blase

Definition

The concept of emotional intelligence comes from Daniel Goleman and is described in his book *Emotional Intelligence*. He asserts that a high IQ (intelligence quotient) alone is no guarantee for success or happiness. He describes the importance of the emotional component in whatever we undertake and pleads for feeling and thinking to go hand in hand. He asserts that the emotional intelligence quotient (EQ) is of great importance, and in some respects even of critical importance, for success on the job, at school, in relationships and even for our physical well-being. Emotional intelligence manifests itself in:

- Self-knowledge and the regulation of personal emotions: acknowledgement of your feelings and using those to make wise decisions. Or dealing with your emotional life without being dominated by it. Or persisting despite setbacks and using your feelings to reach your goals.
- Empathy: having affinity with others and manifesting that. Or observing the feelings of others before they tell you what they experience innermost.
- Dealing with others (collaboration): in contacts with others

applying your feelings in a skilful and balanced manner. Or putting the unspoken feelings of a group in words.

- Or, as Goleman puts it in his book: "Being angry at the right person, to the right extent, at the right time, for the right reason, and in the right way."

Goleman states that emotional intelligence can be developed. Brain research confirms that expectation. There turn out to be direct relations between emotions and the operation of specific areas in our brain. That provides a fresh look at the learning goals to be formulated by a school and the expectations with regard to students (and teachers). This means that the learning goals must no longer only be about whether students are smart enough and know enough, but also about they can properly deal with themselves and others.

How can it be applied?

Emotional intelligence can be developed. A key element in this is the ability to recognize one's personal emotions. Goleman calls this "self-awareness", a form of attention that enables people to observe their own emotions in a reasonably objective way without becoming personally involved. As this match becomes more successful, students are also more capable of acting accordingly in a decisive way. This means, on the one hand, that they must learn to curb interfering emotions. That is possible by being aware of such emotions, or by trying to see whatever led to the emotion in a different light (seeing the anger of the other person as concern). Or by measures to divert the attention (counting to ten, going for a run). On the other hand, it means they must learn to use the positive side of their emotions also. That way emotions can be charged up to extraordinary performances, such as persistent training to become good in something. Such emotional self-control (in other words, suppressing impulsiveness and being able to defer direct reward) is essential according to Goleman in order to achieve something in life.

Teachers can use these insights in dealing with students. To start with, they can regularly speak with students about the role of emotions in their learning process or in school in general. In addition they can:

- be clear about what they expect of students, both with regard to cognitive goals as with those related to emotional

intelligence. Students cannot be expected to meet vague objectives;

- support students in things they are not yet able to, and in such support taking the emotions of the students into account. Being unable to do something or no longer being able to do it is an emotionally laden subject. Also to be considered is that changing a habit is not something that comes easy to a student (or teacher). It requires consistent support;
- giving students regular and specific feedback, so that they know what they can improve or develop, including regarding their emotional intelligence. In that way students get a grip on their own learning and own development;
- being attentive in the feedback to students, especially in assessments. That is an emotionally laden subject for students. So be emotionally intelligent yourself, too;
- making clear to students that they are on the right way. Expressing recognition of a change is highly motivating: "Very good. Not long ago this was still too difficult for you, and now you can do it. And look at the effect it has." Lack of recognition causes the student to be uncertain;
- setting the right example. Teachers who show that they are emotionally intelligent and who make clear how it works for them serve as an example to their students. A teacher who "knows everything" and radiates a "do-as-I-say mentality" achieves the opposite.

In more general terms they can also:

- make clear to students the relevance of a particular approach in light of the application of that knowledge or skill in their daily life or later profession. This can motivate them;
- enable students to impact the design of their own learning process. Allowing them to impact the way in which they reach the goal (alone or together) can do this. Or through the shape of the goal (presentation, paper, video, etc.). With more control over their own learning process, they learn more effectively.

Relevance to educational practice

The relevance for the educational practice is substantial. As Goleman puts it, without emotional intelligence it is practically impossible to be successful in school or to have a good relationship with yourself and your fellow students. The same applies for later in society. But even when strictly cognitive examination goals are

involved, emotional intelligence proves to be important. For example, to persist when everything seems to turn against you, to motivate yourself, to turn your anger about a poor performance into more study. It also looks as if the emotional intelligence of the teacher has an impact on the learning results. That is because it makes for so much more understanding of what students encounter in terms of emotions during their learning process. Such understanding motivates tremendously.

Sources

The main source is the afore mentioned book by Goleman (published by Contact, 1996). Another source is Damasio: *Het gelijk van Spinoza, vreugde en verdriet en het voelende brein*. For further information use a search engine like Google (<http://www.google.nl>), entering "emotional intelligence' or 'emotional intelligence'. A very useful site is the starting page about emotional intelligence: www.eq.pagina.nl. It becomes very clear how popular the concept of emotional intelligence has become over the past few years.

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Mr. Kees Blase

Five Dimensions of Marzano

Summary

In his instruction strategy Marzano distinguishes five dimensions of learning: a positive attitude to one's own learning, the acquisition and integration of new knowledge, the refinement and adjustment of acquired knowledge, the creative application of this knowledge, and the development/learning of productive learning habits. Marzano developed his instruction strategy on the basis of a great variety of research results.



Mr. Henk Lindeman

Definition

In his instruction strategy Marzano describes five dimensions of learning or thinking. He has developed this strategy on the basis of a large amount of research into learning and considers the five dimensions to be the essential elements for active and authentic learning by students. The five dimensions are: the development of a positive attitude and view of one's own learning (dimension 1), learning/thinking as necessary for the acquisition and integration of new knowledge (dimension 2), learning/thinking as necessary for extending and refining knowledge of skills (dimension 3), learning/thinking as necessary for the meaningful use of knowledge (dimension 4) and productive learning and thinking habits (dimension 5). The five dimensions are closely dependent on each other: dimension 2 precedes dimension 3; dimensions 2 and 3 precede dimension 4; dimensions 1 and 5 embrace dimensions 2 to 4 inclusively.

The dimensions can (briefly) be described as follows:

Dimension 1:

A positive attitude and view about (one's own) learning.

In this dimension those aspects are central which are conditions for students' learning. We think of feeling safe in class, feeling accepted

by fellow students and having faith in one's own abilities.

Dimension 2:

The acquisition and integration of new knowledge.

In this dimension are the acquisition of two forms of knowledge: declarative knowledge and procedural knowledge. Declarative knowledge is information which students must know: words, rules, principles, etc. Procedural knowledge is knowledge about what students must do: actions. That is, for example, knowledge about doing long division, reading a map or using grammatical rules. Marzano describes how each form of knowledge demands a different didactic.

Dimension 3:

The widening and refinement of knowledge of skills.

In this dimension some eight skills are put forward by which students can widen and refine their knowledge. These are the skills of comparing, classifying, inducing, deducing, error analysis, building support, building abstractions, and analysing perspectives. When students actively employ these skills on the knowledge learnt in the second dimension, they refine this knowledge and extend it.

Dimension 4:

The meaningful use of knowledge. This dimension concerns the development of knowledge which is applied in realistic contexts. Marzano distinguishes five kinds of meaningful learning tasks: decision-making tasks, research, experimental research, problem-solving and invention/design.

Dimension 5:

Productive learning and thinking habits.

Learning is particularly effective when students are able to form their own learning behaviour. In this dimension Marzano describes how students can do this. Here he pays attention to self-regulating thinking/learning, to critical thinking/learning and to creative thinking/learning.

How can it be applied?

The five dimensions form a framework which can be used to organize a curriculum, an instruction or an assessment. Each of the five dimensions offers the teacher a large number of elements for this. The five dimensions are, for example, employed by teachers to

answer the questions which go with each dimension. In dimension 2 this could be: 'What are the subjects I want the students to learn', or 'What skills do I want the students to learn?' In dimension 3 it could be: 'What knowledge do I want to refine, and what activities by the students shall I employ to do this?' In dimension 4: 'What are the important subjects in which meaningful use would be worthwhile and how will I structure this task?' When these questions have been answered it is possible to answer the questions in dimensions 1 and 5. In dimension 1 this could be: 'What can I do to develop a more positive attitude to learning among the students?' And in dimension 5: 'What productive learning or thinking habits should be emphasized?' It will be clear that the emphasis in this series of questions can lie on, for instance, dimension 2, when the focus is on mastery of knowledge. Or it can lie more on dimension 4. Then the focus is on meaningful use of knowledge, on research. Marzano argues for attention to be paid to all dimensions, and not leaving out any one of them. In doing so he argues for an alternation of both teacher-controlled activities (presentations) and more learning-oriented activities (workshops). He also argues for a higher order of learning.

Relevance to educational practice

Marzano's theory of the five dimensions has three strong aspects. The first is that his instruction strategy is based on a great variety of research. The second strong aspect is that he has developed a fully detailed instruction strategy in which the most important known (from research) learning activities of students are incorporated. The third is that in addition to a general description he has also developed a training module for teachers, and a module for teacher-training lecturers, with a large number of examples and calculations. The modules are particularly good for teachers 'to work through'. All in all his approach offers a great deal of variety in its examples, elaboration, ideas and recommendations. This is material to have standing by, ready to be drawn on. It must be said that we consider the strength of Marzano to be in dimensions 1, 2 and 4 which contain some very good material. We consider dimension 3 more indifferent in its choice of skills (that is because Marzano originally focused only on mental skills) and we find his thinking in dimension 5 out of date. The more recent views on metacognition and transfer and/or brain compatible learning have appreciably more to offer.

Sources

Many sources are available about Marzano. First of all there is his well-known book *A Different Kind of Classroom, Teaching with Dimensions of Learning* (ASCD, 1992). There is also a workbook for teachers: *Dimensions of Learning, Trainers Manual*. Both describe a complete refresher course for teachers and are available by participation in his courses only. In a later phase he wrote a lot of books, such as *Classroom Instruction that Works* (2001) and *Transforming Classroom Grading* (2000), both published by the ASCD. See also Marzano's website, which contains much background information and all his books and (most recent) articles: www.pathfinderusa.com/index2.htm. Parts of his books can be downloaded from this site.

APS contact

Mr. Henk Lindeman

Language Learning

Summary

Learning a language is a necessity for the human race. We can do nothing without language. The extent to which we master language to its full extent largely determines success in our personal and professional life. Everyone learns their first language to a certain extent 'automatically'. When this involves linguistic skills needed at school (talking about abstract concepts, reading, writing, comprehension), the acquisition of language is no longer automatic. In this sense language learning is not only the domain of the teacher of English (or the individual student's native language), but part of the repertoire of every teacher in every subject.



Mr. Bert de Vos



Mrs. Geppie Bootsma

Definition

Language learning means developing the students' language skills. These are the skills of listening, talking, reading, writing and appreciating language as a cultural good. In the traditional practice of continued education, teaching the language is essentially the task of the language teacher, who often gives teacher-controlled method-based lessons, and gives the students assignments and shared exercises based on that. In this traditional situation there is little connection between the language used by the students in their personal life, that which they use in learning other subjects, and that which they learn in English as a subject. Moreover, students (and teachers) do not always know precisely what they are actually learning, and what they need it for, and the results are mainly measured in terms of the 'hard' components of grammar and spelling.

According to the assumptions on language learning, all teachers

have a task in enlarging the language skills of all students. Two theories are used in this: that of a content-based approach and that of language-oriented subject teaching.

Behind the content-based approach is the thought that students will learn a language better and with more motivation if the language tasks are linked to a context-rich content. The likelihood that students will experience language tasks as meaningful is greater if they are linked to the 'real' world, if the tasks are realistic.

In language-oriented subject teaching this idea is worked out further. It starts from the concept that language-oriented teaching helps to achieve the aims of any subject whatsoever. Therefore language learning gets attention in every subject. This then cuts both ways: the aims of the subject are achieved and the language skills of the students are enlarged. This is done in three ways, by context, interaction and language support.

Context involves the creation of a meaningful learning situation with the associated intrinsic motivation, in which the teachers also demonstrate which language skills are important and which link up with the student's existing knowledge.

Interaction involves the interaction between teacher and students and between the students among themselves. By means of interaction the meaning of the language is communicated to the students.

Language support is concerned with, for example, the systematic acquisition of a vocabulary, the acquisition of reading strategies or making use of a framework of writing and spelling which induces interaction. Working with lists of criteria drawn up by students on the behaviour of beginners or experts is a likely example of directed language support.

How can it be applied?

Language learning requires the teacher to take a different look at teaching. It is directly linked to the constructivist way of thinking (see the background article: pragmatic constructivism). What is demanded of teachers is that they design tasks rich in context which encourage the use of language – both oral and written, both active and passive. As well as the objectives of the subject, the teacher also sets language objectives and organizes his teaching in such a way that it includes context, interaction and language support. In this model language teachers take on a new role. From being the teacher of students they become more of a language coach for the school.

The teacher designs ways of teaching in which subject teachers can focus on training in language activities. In conjunction with students, he makes explicit what they have learnt in terms of language and what will be needed for further progress. He supports students during the subject lesson and together with the subject teachers designs teaching in which language has a prominent place. In schools which work according to the principles of 'learning naturally', it is possible in this way, and by the use of portfolio and coaching activities, to help to record the language skills of students and to enlarge them.

This approach demands of the schools that they develop a common vision of the development of language and the growth of a form of teaching (and organization) in which the acquisition of language is supported.

Relevance to educational practice

A good mastery of language is directly linked to successful teaching. This is clear from a great deal of research which shows that a good mastery of language helps in learning. A large vocabulary helps by giving an outlook on the world. The substantial fall-out in continuing education resulting from weaknesses in language, means that secondary education schools will have to reassess the place of language acquisition and their method of approach. This is also necessary because particularly pre-vocational secondary educators are struggling against demotivation in the area of language teaching and achieving little progress among their students. In this sense it is positive that the new insights into constructivist learning fully support the ideas of a language-rich education.

Sources

A wide range of sources is available for language learning, such as: Maaiké Hajer, Theun Meestringa. *Handboek taalgericht vakonderwijs*. Coutinho, 2004. Platform taalgericht vakonderwijs, bronnenboek. Information is also available on the Internet, for example on www.taalgerichtvakonderwijs.nl, with references to literature.

APS contacts

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Learning 1 and Learning 2

Summary

In everyday practice it seems to be useful to distinguish two forms of learning: Learning 1 and Learning 2. The reason is that in everyday practice the two forms of learning often overlap and often lead to misunderstandings between students and teachers. Teachers say, for example, that students cannot think for themselves, whereas students say teachers will not let them think for themselves. In learning 1 the attention is focused on mastering the subject matter. Learning 2 refers to learning in which the student himself is actively building up his own knowledge. Both forms of learning are legitimate and require a different kind of student and teacher activity.



Mrs. Evelien Janssens



Mr. Sebo Ebbens

Definition

Many teachers think that the transition from a traditional approach, in which the teacher takes most of the initiative, to a situation in which students can shape their learning process themselves, is a gradual transition. It turns out not to be so. Therefore we have distinguished two forms of learning. We call these forms Learning 1 and Learning 2. In Learning 1 the learning of students is focused on mastering the subject matter. It involves the learning activities of remembering (practising, learning by heart,...), understanding (expressing in one's own words, explaining,...) and integrating (comparing, seeing relations,...). It also involves teaching (reproductive) skills. In Learning 2 the student is actively building up his own knowledge and focuses on using that knowledge in a flexible manner: students have to be able to use the knowledge when the teacher is not around. Learning 2 involves the learning activities of integrating (interrelating, analysing,...) and applying

(designing, concluding,...). Learning 1 involves instruction strategies such as direct instruction, effective instruction, effective education,... Learning 2 entails instruction strategies such as meaningful learning, natural learning (APS), authentic learning, problem-oriented learning, skill-oriented learning. Both cases involve actively learning students. In overview:

Types of learning activities pertaining to Learning 1

Type 1. Remembering is aimed at recollecting, remembering the offered information.

Type 2. Understanding is aimed at expressing in one's own words what the teacher (and/or the book) 'said'.

Type 3. Integrating is aimed at connecting new knowledge to existing knowledge and activating foreknowledge.

Using reproductive skills is aimed at reproducing the skill in a more or less familiar situation.

Types of learning activities pertaining to Learning 2

Type 4. Integrating is aimed at connecting new knowledge to existing knowledge and activating foreknowledge.

Type 5. Applying is aimed at applying new knowledge in a new, unknown situation.

The diagram shows that the learning activity 'integrating' forms a bridge between both forms of learning. In everyday practice integrating often means a lot of interaction between teachers and students and between students. This may involve forms of cooperative learning and forms of Socratic dialogue. Such learning may be well-structured with low levels of freedom (Learning 1); or well structured (framed) with significantly higher levels of freedom (Learning 2).

How can it be applied?

Both forms of learning require a different activity from students and teachers. The first form of learning requires a clear structure

provided by the teacher. The teacher takes in a central position in steering the student activities and giving direct feedback. The second form of learning requires a clear framework from the teacher and giving meaning to the framework and the corresponding assignment. The teacher is therefore assigned the role of providing the framework, giving meaning to that framework and coaching students to find their own way in that framework. In case of Learning 1 the teacher has the (final) responsibility, in Learning 2 the students are also responsible for shaping the process and designing the end product. In overview:

features of Learning 1	features of Learning 2
<ul style="list-style-type: none"> ● the student's learning is strongly structured. The outlines are well defined. It is the teacher's responsibility; ● direct feedback seems important for mastery; ● the objectives are the same for all students; ● learning is 'finished' when all objectives have been met; ● a pass is usually the reward for the student's effort; ● the acquired knowledge can usually only be used in the context in which it was taught. 	<ul style="list-style-type: none"> ● the student is the expert who is supported by the teacher to achieve the objectives. The teacher provides the frameworks and prepares the student to carry out the assignment e.g. by paying attention to the required skills and the required motivation. The student has to find his own way within these frames; ● the assignments have to be meaningful for the student. If not, he will not start the assignment. Not only marks are a reward, but paying attention to the required skills, the motivation and the self-confidence of the student is also important; ● the results of the learning process are different for different students; ● learning often raises new questions. These can be used as the beginning of a new cycle; ● acquired knowledge can usually be used flexibly (transfer).

From the overview we can see that the teacher-student relation is different for Learning 1 and for Learning 2. In Learning 1 the initiative will mainly lie with the teacher, in Learning 2 the student is supposed to take the initiative, within a certain framework. This means per definition more autonomy for students to shape their own learning process. This implies a more coaching role for the teacher, rather than a steering role.

Because students are actively learning both in Learning 1 and Learning 2, both cases require a vision on the student's autonomy. Such vision does not always exist.

Relevance to educational practice

The relevance of the distinction between Learning 1 and Learning 2 is that teachers are aware of the function of their specific teaching-learning situation in the students' learning process: is it about mastery? Or is it about being able to use knowledge flexibly? Or something in between? When we ask ourselves those questions it may become clear why offering autonomy to students sometimes fails. Teachers often want students to be autonomous, but only in the way they prescribe.

This 'paradox of autonomy' can cause a lot of discouragement and confusion. With the distinction between Learning 1 and Learning 2 the teacher can be even more specific: do we aim for mastery? If so, provide a lot of structure. Do we aim for flexible use of knowledge? If so, pay more attention to meaning and autonomy.

The second relevance of this distinction for education is that the teacher is not made to choose between either of the forms. Both forms have their own merits. Both forms are indispensable in the education system. Both forms of learning have their own strengths and weaknesses. Education is about mastery and about flexible use of knowledge. One teacher, section, school may choose to include more of the one form and less of the other. Therefore the distinction provides lots of development perspectives for teachers. Changes can take place gradually.

Sources

The theory of Learning 1 and Learning 2 originates in the theories of Simons and Boekaerts from their handbook *Leren en instructie* (1992). They differentiate between understanding, integrating and application. On this basis and based on the experience gained post-

graduate courses for teachers the distinction between Learning 1 and Learning 2 was made. The vision on Learning 1 and Learning 2 is further detailed in the booklet *Actief Leren* by Sebo Ebbens and Simon Ettekoven (published by Wolters Noordhoff). In the second reflection of this booklet reference is made to many other theories that directly relate to the distinction between Learning 1 and Learning 2. Reference is made to, for example, the distinction made by Monique Boekarts between 'Knowledge as Purpose' and 'Knowledge as Tool'. In the USA a lot of attention is paid to lower order thinking and higher order thinking. For further information use a search engine like Google (<http://www.google.nl>), entering "lower order thinking' and 'higher order thinking'. Or for Learning 1 'mastery learning', for Learning 2 'constructivist learning theories'. This will direct you to a great number of websites. See also the websites referred to in relation to effective learning.

APS contacts

Mrs. Evelien Janssens, Mr. Sebo Ebbens



Learning and Designing

Summary

Learning and designing consists of a diagram, a tool for teachers to develop learning pathways for students/pupils. The learning pathways are represented in three columns: information, subjective concept and practice; and in ten (learning) activities, captured in verbs. A strong learning pathway oscillates between these three components and uses ten (learning) activities in the process.



Mr. Cees de Munnik

Definition

APS has developed a tool for teacher training colleges by which training teachers could design meaningful learning pathways for their students. The learning pathway for students is designed in such a manner that it allows students to set up a link between their own subjective concept about education, the teaching profession, teaching practice on the one hand and the theory about teaching and education on the other hand. In that way what is learned acquires a meaning and the subjective concept of the student develops into a usable work concept for his own teaching practice. Afterwards the diagram is also a tool in the hands of the student to design learning pathways for pupils. The variant developed for this last application is the diagram 'Designing education'. The tool has evolved over the past years and proved to be applicable in a wide range of fields. Its value is proven in lots of sectors, such as in secondary education, university education and higher professional education and vocational education where youths and adults learn in and for a professional practice or where students learn in situations in which the use of information is important in everyday practice. It also was applied abroad, e.g. in Germany and Uganda

The diagram for the design of learning pathways, looks as follows:

Diagram:
'Learning and designing' in ten (learning) activities

<i>Information, subject material</i>	<i>Learner's subjective concept</i>	<i>Professional world, environment</i>
Observing	Opening Sharing	Experiencing
Processing		Assimilating
	Doing.....Making.....
.....Reflecting.....		
.....Integrating.....		

A short explanation of the diagram follows. The diagram consists of three columns: the information to be taught, the subject material; the learner's subjective concept, and the professional world, the learner's living environment. In order to design a learning pathway the teacher disposes of ten (learning) activities, with which to set out 'stops' on the learning pathway. He can actually play with the learning activities, make constructions: *observing* is about the activities the learner has to develop to receive information; *processing* includes activities aimed at understanding information, e.g. by asking questions about it; *opening* means activating what is in the learner's head (e.g. foreknowledge); *sharing* means exchanging with co-learners or teacher; *experiencing* means gaining experience in the professional world, living environment; *assimilating* means thinking about those experiences or linking experience to acquired knowledge; *doing* means consciously undertaking something in the professional or living environment; *making* means designing something for application in the professional or living environment; *reflecting* is spread over the three columns.

This means the learner needs to be able to reflect on the subject matter and on his own concept and on the professional world, living environment; and *integrating* means the learner turns what he has learned in the different activities into something of his own. One more thing. The subjective concept has different layers. It is not only about what the learner knows already, it is also about the attitudes, opinions, emotions, standards and values of that learner. By following systematic learning pathways oscillating between information, subjective concept and (professional) world the subjective concept develops into a usable work concept about and to be used in (professional) practice.

How can it be applied?

It is best that all three columns get a place in the learning pathway. It is never just about information, or just about the subjective concept or just about (professional) practice. It is about all three. Therefore learning pathways have stops at all three components of the diagram. Learning pathways can also start at any of the three. That also depends on the teacher's learning style and the specific goal of the lesson. Most learning pathways will start at observation, opening, experiencing, doing or making.

In a teacher's training learning pathways will often start with practice or experiences in practice (*experiencing*). In that case the practice is reflected on (*assimilating*) and links are established via new information, e.g. in the form of new concepts or practice theories (*opening, sharing, observing and processing*). Assignments such as trying something (*doing*) or designing something (*making*) can play an important role in establishing such links. Reflection assignments make sure the learner can establish a connection between practice, subjective concept and information (*reflecting*). Reflection assignments are usually important to assign meaning. A learning pathway usually ends with an integration assignment in which meaning is given by applying the acquired material in practice (*integrating*).

Relevance to educational practice

The relevance for teaching practice seems significant. There are roughly three reasons why this is so. The first reason (and that is how the diagram came about) is that via the subjective concept a link is made between the information and the practical situation,

the learner's environment. That is the strength of this diagram. In other words: when the integration of the acquired material is central, it is impossible to leave out the subjective concept. This diagram provides the ingredients to do this. The second reason is that the diagram indicates that a link has to be established between information and everyday practice. The third reason is that by means of this diagram teachers can become designers of meaningful learning pathways for learners instead of just transferors of information (if that is what they are in the first place). The diagram provides practical ingredients for these three arguments.

Sources

The main source is the book written by the designers of this schedule: Munnik, C. de and Vreugdehil, K. (2003), *Onderwijs Ontwerpen, Het didactische routeboek als werkboek voor de Pabo*. Groningen; Wolters Noordhoff. This book provides a broad outline of the schedule and it contains many examples. A smaller book, written by Cees Munnik, was also published: *Schema Leren en Ontwerpen*, published by APS. It can be ordered on the website: www.aps.nl. A lot of internal work material is available from the APS, some of them in German or English.

APS contact

Mr. Cees de Munnik

Learning as a Group

Summary

Groups can also learn. And that requires a different attitude towards learning from both students and teachers. In groups it is not just about the learning process of individual students, but also about how the group contributes to the group's learning process. In this manner of learning the teacher is partly a member of the group and partly the person in charge of the whole.



Mr. Sebo Ebbens

Definition

Groups can also learn. This applies for groups of professionals (teachers), or more in general for learning organisation. It also applies for groups of students, classes or part of a class. The characteristics of a learning group are different from those of cooperating individuals. Learning in a group takes place when the members of the group exchange and study the knowledge distributed among the individuals in the group on the basis of the collective need and a collective theme or a collective core. In professional learning groups that core is often the profession and the need to know more about that profession. This may be a content (content of the discipline), or a procedure (how to deal with something...). Sometimes it is more explicit (solving more specific problems), sometimes more implicit (discussing something). In a group of students a series of lessons may be about a topic the students need to know more about. In the approach of learning as a group the topic will be studied together. In that situation there is not much teaching going on (the teacher is part of the group; or there is no teacher), but lots of motivating and coaching. There are a few conditions to learning as a group:

- In the approach of learning as a group it appears to be very important that there is a wish to find out something together



Mrs. Lian Staal

(collective ambition): the meaning of the topic needs to be clear to all participants. This implies that every member of the community needs to have a relationship with the topic. Therefore it is not a topic the teacher can just 'drop'. It is not a topic only the teacher knows about. It should be a topic all the participants can relate to.

- Learning in group is not aimed at striving for objective truth. It is mainly aimed at providing meaning to a question together, or looking for a solution together. The answer is a 'truth' that is meaningful to the group. This may be a solution to some problem. It does not have to be the best solution. It could be knowledge about a topic. It does not need to be scientific knowledge about a topic.
- Learning as a group is only possible when the participants can relate to themselves and to the others. This is how learners can support each other. It requires separate attention for the group as a group and for the development of a learning culture in the group.

How can it be applied?

The role of the teacher is different in a community of learners than in a regular situation. The above demonstrates so. The teacher is the one who motivates students to start working on the topic (to give meaning to the topic), who gives students the time, who stimulates everyone's learning and who makes sure the learning community continues to learn (in dialogue) and who learns him/herself.

- One of the most important tasks for the teacher is that he should be capable of assigning meaning to a topic for the students, that he is capable of bringing it to life, so that they can relate to it. Therefore the teacher needs to be involved in the topic and be capable of creating some 'drama' to make the topic meaningful to students.
- In order to start working with a topic in this manner, the teacher should give students enough time and space to connect to the topic, to assign meaning to the topic. Learning in this way requires time. Giving meaning does not just happen in the third period on Monday. It happens when the students are ready. That means that the teacher should be able to make them see which topics they want to focus on and which topics they do not, i.e. what they will have to forget about.
- And that is one of the most important skilled interventions of the teacher, i.e. maintaining the dialogue with all students. The dialogue should cover all corners of the room, all students, all

the knowledge of the students and provide link to all the knowledge available in books in the classroom.

- A teacher who works like this with a group of students will learn a lot himself. That is one of the features of learning in a group. The exploration applies to all participants.

These five skilled interventions are important to create a learning group.

Relevance to educational practice

The relevance for teaching practice is significant. Learning as a group usually achieves different goals than the goals often aimed for in traditional education. The main feature is that there is a high level of personal involvement and therefore intense student participation in this way of working. It focuses on the student as a whole person. Therefore, this way of working entails, besides learning content or skills, almost always a personal 'journey' of the students. The teacher is assigned a completely different role. He is the one who learns like the students do, even though he is playing a different role in the background. See above. In any case, there is a lot of equality (which does not mean everyone is equal).

Sources

Many of the above-mentioned views originate from the organisational literature and transferred to the class situation. We initially used the views expressed in the book Weggeman, M (2000). *Kennismanagement: de praktijk*. Siedam: Scriptum. At a later stage we used two American sources, namely Palmer, P. (1998). *The Courage to teach. Exploring the Inner Landscape of a Teacher's Life*. San Francisco: Jossey-Bass Inc. (Palmer also has his own website: www.teacherformation.org. See 'related sources', then 'related readings' and subsequently the part about 'community, conflict and ways of knowing'). And Collay, M., Dunlap, D., Enloe, W. & Gagnon, G. (1998): *Learning Circles: Creating Conditions for Professional Development*. Thousand Oaks: Corwin Press Inc. For further information use a search engine like Google (<http://www.google.nl>), entering "collective learning" or "learning circles". This will direct you to a great number of websites.

APS contacts

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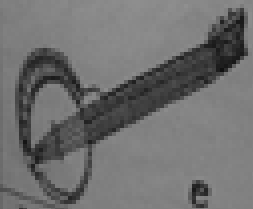
MUSICAL INSTRUMENTS



a



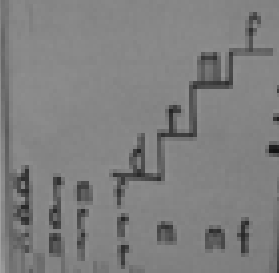
c



e

Name the instruments a, b, c, d, e and f.
Which family do they belong to?
How can a tuba be played?
What is a PTC?

THE FIRST FOUR NOTES ON THE MUSIC LADDER



What is the third note on the music ladder?

THE PIANO KEYBOARD

Do you know the names of the notes on the piano keyboard? Can you name the notes on the treble clef? Can you name the notes on the bass clef?

Do you know the names of the notes on the piano keyboard? Can you name the notes on the treble clef? Can you name the notes on the bass clef?

Do you know the names of the notes on the piano keyboard? Can you name the notes on the treble clef? Can you name the notes on the bass clef?

THE FIDDLE

Name the instrument and its family. How can it be played?

THE BODY PARTS

Name the instrument and its family. How can it be played?

Learning Style based Learning

Summary

People develop their own learning style during their life; i.e. a reasonably consistent approach to learning. The argument below explains that it is meaningful to take this into account in teaching-learning situations. In this respect we distinguish learning style aspects (a great number of them) and models of learning styles (we discuss three of them).



Mrs. Hanna de Koning

Definition

Learning involves different activities: the learning process needs to be organised and steered, knowledge has to be absorbed, processed and applied. People develop very different ways of doing this; everyone has his own *learning style*. Learning style based learning means that when learning you also pay attention to how you learn and how you could improve your learning.



Mr. Hans Pouw

A lot of research has been conducted into learning. Initially on dozens of aspects, later more in terms of models (e.g. the model of Kolb, Vermunt's model and Witteman's Interactive Learning Group System).

Learning style aspects are not about right or wrong. They are always about two poles of a continuity; both poles can be favourable, depending on the situation.

To name a few:

- field dependency versus field independency: either or not being able to find a given structure in subject material and problem solving. Field dependent students are sensitive to noise but can also come up with surprising possibilities;
- flexibility versus rigidity. Flexible people can adapt their style to the task. Rigid personalities set about any task with the same

- learning style;
- 'part' strategy versus 'whole' strategy. A part strategist takes a striking aspect from the information and needs new information to see whether it 'makes sense', a whole strategist wants to have the chance to translate information into all relevant features;
 - impulsive versus reflective. Taking a long or just little time to answer a question;
 - serialistic versus holistic: serialists go through the subject material step by step, they study the sections as separate components, have an eye for detail, repeat a lot and memorise. Holists establish relations between the different sections, try to get an overall idea of the material, assimilate the subject and search for practical forms of application;
 - spread attention versus concentration: two ways of looking at a task attentively. The first one is being open to information and steering outside the task and reacting to it adequately. The other one is not being directed to the environment, but only busy with the task.

The different learning style aspects sometimes look quite similar. Therefore different researchers have searched for models with coherent learning style aspects, such as Kolb, Vermunt and Witteman.

Kolb developed a model for successful research. From dozens of well-known learning style aspects he chose two that appeared relevant:

- the dimension of learning from concrete experience versus learning from abstract concepts;
- the dimension of learning through active experience versus learning through reflective observation.

These two learning style aspects reveal four learner types: the discoverer, the thinker, the decider and the doer. Kolb developed a questionnaire to map people's learning styles (the Learning Style Inventory test).

Vermunt studied for years how students learn in higher education. He developed a model in which self-regulation by the student takes an important place. He defines four different learning styles: the undirected learning style, the reproduction-directed learning style, the meaning-directed learning style and the application-directed learning style.

Vermunt also developed a questionnaire to define a student's learning style.

Witteman distinguishes four learning styles: serialism (see above), holism (see above), versatilism (is flexibility, see above) and superficial learning (students take all steps when learning superficially and therefore do not remember the material long). Students who are different in those four learning styles are joined together in a group. This leads to cognitive conflicts in the learning group and this leads, if the teachers guides the group well, to a more active processing of the material.

How can it be applied?

As mentioned above small tests were developed for all learning style aspects. Completing such a test can be a tool when you are thinking about the learning style used by the student or the teacher in a certain situation. To help you decide afterwards whether it is efficient to work like that. Or, if that is not the case, to adjust the situation or change the learning style.

In Kolb's model a questionnaire is developed which shows what someone's preferred style is when researching. The message behind Kolb's learning styles is that in research a student has to deploy a number of activities in a row (concrete experience, reflective observation, abstract conceptualisation and active experimentation), and that research will only be effective if the student can use a combination of the corresponding four learning styles. Kolb's model gives students (and teachers) instructions for learning points in relation to the applied learning style.

In Vermunt's model a questionnaire is developed which shows whether the learning style of a student is adequate for the type of education he is attending. A questionnaire on the teaching behaviour of teachers was also developed. Comparing the results gives an insight in how the teacher's teaching style corresponds to the students' learning style in the classroom. The teacher can derive tips from this test to deal with the lesson.

Witteman's I.L.S. model is an integrated educational approach. Students with different learning styles working together in groups has consequences for the teacher and the school management. Teachers may be working according to the teacher-companion system.

Relevance to educational practice

The small tests for learning style aspects position students on a line between two poles of a single dimension. This is a fun way of thinking about students' learning style, even though the test situation is different from everyday practice in education. If a teacher and student are discussing the test results together, the test becomes even more meaningful.

Clear relations have been demonstrated between learning style aspects and school performance. Field-dependent students, for example, require a lot of structure in the lessons.

For the reader who wants to know which model suits which type of education, the overall answer is: Kolb's model for lower secondary school, Vermunt's and Witteman's models for the second phase and higher education.

When using learning style based learning we have to take some rules of thumb into account:

- There is no good or bad learning style. A learning style may be more or less suitable for a certain task;
- After diagnosing your learning style you always have to mould the learning situation to your will or adjust your manner of learning;
- Learning styles are changeable. But it is not a simple matter. If a learning style needs to be changed, years of systematic action is required;
- You should not base heavy decisions such as selection decisions on the results of learning style tests and learning style questionnaires. The results seem to be too unreliable to do so. They are suitable, however, for ad hoc decisions in the classroom;
- Learning about your own learning style as a student is a relevant long-term goal for the educational system.

Sources

The following books discuss the above-mentioned information:
 Vermunt, J. (1992). *Leerstijlen en sturen van leerprocessen in het hoger onderwijs. Naar een procesgestuurde instructie in zelfstandig leren.* Amsterdam/Lisse: Swets & Zeitlinger B.V.;
 Koning, H. de (1998) *Leren zelfstandig leren.* Published by Nijgh/Versluys, Baarn; .
 Vester, F. (April 1976) *Hoe wij denken leren en vergeten.* Uitgeverij Bosch en Keuning;

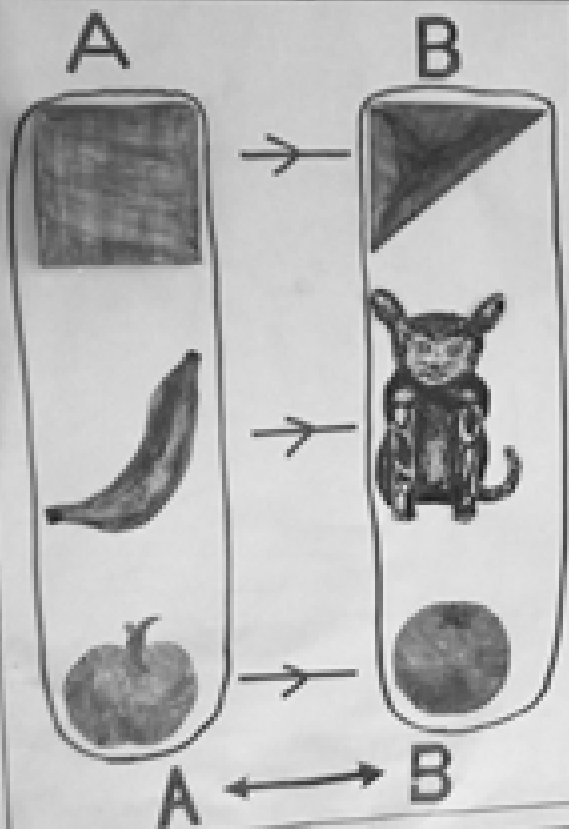
Witteman, H. and Kauffman, M. (1995). *ILS Informatie*. Uitgeverij De Fontein bv Den Bilt.

A lot of information can be found on the Internet. For further information use a search engine like Google (<http://www.google.nl>), entering "learning styles". This will direct you to a lot of information, including all kinds of tests.

APS contacts

Mrs. Hanna de Koning, Mr. Hans Pouw

EQUIVALENT SETS



METRIC TABLES

LENGTH

10 millimetres (mm)	=	1 centimetre (cm)
10 centimetres (cm)	=	1 decimetre (dm)
10 decimetres (dm)	=	1 metre (m)
10 metres (m)	=	1 deca metre (Dm)
10 deca metres (Dm)	=	1 hectometre (Hm)
10 hectometres (Hm)	=	1 kilometre (Km)

WEIGHT

10 milligrams (mg)	=	1 centigram (cg)
10 centigrams (cg)	=	1 decigram (dkg)
10 decigrams (dkg)	=	1 gram (g)
10 grams (g)	=	1 Decagram (Dg)
10 decagrams (Dg)	=	1 hectogram (Hg)
10 hectograms (Hg)	=	1 kilogram (Kg)

CAPACITY

10 millilitres (ml)	=	1 centilitre (cl)
10 centilitres (cl)	=	1 decilitre (dl)
10 decilitres (dl)	=	1 litre (l)
10 litres (l)	=	1 Decilitre (Dl)
10 decilitres (Dl)	=	1 hectilitre (Hl)
10 hectolitres (Hl)	=	1 kililitre (Kl)



Metacognition and Transfer

Summary

Transfer of what has been learned is a key feature of good education. When such transfer is said to have priority, it is important that students are aware of how they are learning and consider what the result of their learning means in a different context. Fogarty has written extensively about the development of this awareness. She calls this thinking about thinking or learning about learning "metacognition" or "metacognitive reflection".



Mrs. Evelien Janssens

Definition

Metacognition is another word for reflection about thinking, for thinking about thinking, or learning about learning. Metacognition takes place when a learner has a sense of awareness of and control over what is being learned at a particular moment and how the learning process takes place. That is the case, for example, when a student is able to correct an error (being aware that something is wrong). Or when re-reading a text because it was not clear the first time. Conscious application of metacognition is particularly important in transfer: in the application of knowledge to situations other than where it was originally learned. Transfer should be a major goal of education (and differs from simply learning, in which students often do more of the same in the same situation). Many theories assume that transfer is only possible when the student is aware both before, during and after the learning process about what is learned and how. Robin Fogarty, along with others (including Perkins and Barrell), has provided much insight into those theories and has translated them to practical situations. That is why we base ourselves mainly on her in describing metacognition. Fogarty



Mrs. Paulien de Klein

herself, by the way, speaks of metacognitive reflection and not about metacognition. She believes that her concept expresses better that it involves the teaching of strategies of thinking about thinking (and not, for example, conscious teaching of strategies of thinking: cognitive reflection). We can summarize her theory as follows:

- She distinguishes three forms of metacognitive reflection: reflection prior to action (planning), reflection during action (monitoring) and reflection after the fact (evaluation). Proper planning, monitoring and evaluation leads to awareness and control about personal thinking.
- She distinguishes four levels of metacognitive reflection:
 - tacit use: students apply strategies or skills without specific awareness or by trial and error;
 - aware use: students are conscious of how they apply strategies and where;
 - strategic use: students consciously apply strategies and skills in specific situations;
 - reflective use: students are constantly engaged, both before, during and after, in applying the best strategies and skills that are needed to solve a specific problem.

She assumes that tacit use will not lead to transfer, whereas the other three uses will do so, each to a greater extent. The more aware, the more likely that transfer will take place.

How can it be applied

Fogarty offers in her books a multitude of ingredients to enhance awareness about thinking. Here are two examples:

- In her book *Teach for Metacognitive Reflection* she identifies thirty forms of metacognitive reflection: ten forms for prior to thinking (planning), ten for during thinking (monitoring) and ten for subsequent thinking (evaluation). Each form has a visual design. That makes it easier to apply to students and for students to remember. Examples for prior to thinking are Thick Questions, the Sequence Chart, Known-Curious-Saved and the Seesaw. Example for during the thinking process are Building a Bridge, Four Questions, and the Journal. An example of subsequent thinking is the PMI.
- She has developed a handy table, as per below. The table provides an overview of transfer possibilities. It indicates the requirements of transfer (knowledge, skills, etc.), how it can

take place (nearby transfer with a number of techniques, or distant transfer with various techniques), and where the transfer should be applied (within a profession, to work, etc.). In her book *Teach for Transfer* she works out each of these possibilities. In the table she indicates how a teacher can consciously put these to use.

WHAT	HOW	WHERE
<ul style="list-style-type: none"> ● Knowledge ● Skills ● Concepts ● Attitude ● Principles ● ... ● ... 	<p>Embracing, nearby transfer</p> <ul style="list-style-type: none"> ● Clarifying expectations ● Modelling ● Linking ● Simulating ● Problem-based learning <p>Bridging, distant transfer</p> <ul style="list-style-type: none"> ● Anticipating applications ● Generalizing concepts ● Building bridges ● Using analogies ● Metacognitive reflection ● ... ● ... 	<ul style="list-style-type: none"> ● Within own profession ● Between subjects ● In work ● In learning ● ... ● ...

Relevance to educational practice

The relevance for classroom practice is substantial, as stated earlier. Conscious use of metacognitive reflection (metacognition) considerably improves the chance of transfer, especially when students know their strengths and weaknesses. Good education clearly focuses on transfer. Fogarty offers teachers an extraordinary treasure of practical tools to implement metacognition in the educational process. Within this, teachers must obviously make their own choices.

Sources

We referred to two sources: Fogarty, R. (1994). *Teach for Metacognitive Reflection*. Palatine: IRI/Sky Light Publishing, Inc. and Fogarty, R., Perkins, D & Barell, J. (1992). *How to teach for transfer*. Palatine: IRI/ Sky Light Publishing, Inc. The book *Actief leren* by Ebbens, S. & Ettekoven, S. (published by Wolters Noordhoff, 2001) includes some of its developers. Another book is Boekarts, M. & Simons, R. (1993). *Leren en Instructie, Psychologie van de leerling en het leerproces*. Assen: Dekker and Van dert Vegt. See Chapter 4. Fogarty also has her own website. For further information use a search engine like Google (<http://www.google.nl>), entering "meta cognition", "metacognitive reflection", or "learning to learn". This will direct you to a lot of websites.

APS contacts

Mrs Evelien Janssen, Mrs Paulien de Klein

Multiple Intelligence

Summary

The concept of multiple intelligence assumes that there are various types of intelligence that students can learn, and not just one. It is also assumed that students can develop their intelligences. They are not fixed, as was assumed in the past in IQ thinking. Brain research supports this approach. Gardner distinguishes eight intelligences, even though the count is sometimes seven or nine.



Mrs. Evelien Janssens

Definition

In his basic study, *Frames of Mind: The Theory of Multiple Intelligences* (1983), Gardner describes seven intelligences. Later, in 1995, he added an eighth one, the naturalist intelligence. Gardner describes intelligence as the ability to solve a problem or to adjust a result. He speaks of multiple intelligence since he assumes that there various ways to be intelligent. We can summarize the multiple intelligences in the overview on page 79.



Mrs. Det van Gils

How can it be applied?

Multiple intelligence lends itself well for experiments of varying scope in the classroom. The experience of teachers shows the following to be excellent ways of introducing multiple intelligence in the classroom:



Mr. Dolf Hautvast

1. Teachers can analyze their own lessons in the use of multiple intelligence and add the missing intelligences. Since this primarily involves attending to the way teachers present their classroom material, it is seldom necessary to change the material itself. Presenting the material differently from the standard approach (or next to the standard approach) already makes a big difference for students.
2. Teachers can offer students various options in assimilation assignments that stimulate the use of multiple intelligence. In that way students can try out or investigate other intelligences. For example, with regard to a subject that students find difficult, they might tackle the assignment first with their favourite intelligence and then look for the solution using a wider range of intelligences.



Mrs. Karen Verheggen

When various teachers operate in this way, students will quickly discover significant changes in themselves. Many of them will discover that they are capable of more than they thought. This effect is reinforced if teachers simply identify what they do, thereby making clear to students that there are more ways than one to grasp a subject (and to show that you grasp it).

Relevance to educational practice

There are four reasons to apply multiple intelligence in the learning process of students:

1. Most people are capable of applying two or three intelligences adequately. That is where their talents and/or preferences lie. When teachers make room for all eight intelligences in their lessons, students can develop them. Weak intelligences can be strengthened in that way. Alternatively, strong intelligences can be applied to develop the weak ones. In the view of Gardner, no intelligence is fixed like in the way that IQ was thought of.
2. It turns out that it nearly always takes more than one intelligence to solve a problem. A focus on multiple intelligence will enable students to tackle more complex problems as they then possess a larger arsenal of means. That is a good way to help them prepare for their future.

The 8 intelligences	
<i>Eight intelligences</i>	<i>What behaviour do we see in the student</i>
Interpersonal	Seeks contacts with others, enjoys working together, has a sharp sense for what occupies others, feels comfortable in groups, enjoys company and parties, is prepared to help others, ...
Intrapersonal	Prefers to stay in the background, lives in his/her own world, loves to daydream, knows own strengths and weaknesses well, observes sharply, writes a diary, tends toward reflection and poetry, ...
Bodily-kinesthetic	Usually reacts with athletic movements, has a good sense for use of own body, has fine motor skills, loves to tinker, learns best by doing or playing, ...
Logical-mathematical	Keeps data well-organized, enjoys playing with figures, considers when solving problems, reasons logically, thinks critically, ...
Musical	Picks up melodies quickly, enjoys playing a musical instrument, works with memory aids and rhymes to remember things, has a good sense of rhythm, Has style in use of voice, is a good storyteller, ...
Naturalist	Is fascinated by everything that grows and blooms, quickly recognizes plant and animal features, observes and explains changes in nature, learns easily by observing outside, is good at collecting and organizing, enjoys dealing with animals, ...
Linguistic	Thinks in words, formulates easily, can express ideas well, reads fast and with insight, can reason and debate well, ...
Spatial	Observes reality through space and colours, has a sense for colour nuances, often draws doodles or scribbles, experiments with sketches or designs, quickly finds the way in buildings and cities, ...

3. The multiple intelligence approach takes the differences among students into account. Since each student has a personal style to solve problems, the multiple intelligence approach offers a specific alternative for each style. Gardner believes that the current approach to education is very limited in that regard, with the linguistic and logical-mathematical intelligences dominating to the detriment of the other six. By introducing multiple intelligence, teachers can enhance the uniqueness of each student.
4. When they recognize their own strengths and weaknesses in terms of intelligence, teachers enlarge the likelihood and possibility of students to enhance their own intelligences.

Sources

A wide range of information is available, in American literature in particular, including Gardner's own book. A useful book is the book written by Armstrong, T. (2001), *Multiple Intelligences in the Classroom*, Alexandria: ASCD. Meanwhile, a lot of Dutch books have been published. We refer to, for example, Chapter 5 about multiple intelligences in *Effectief leren* written by Ebbens and Ettehoven (WoltersNoordhoff, 2005). Several websites are available. For further information use a search engine like Google or Altavista, entering "meervoudige intelligenties" or "Multiple Intelligences". This will direct you to a lot of information, including all kinds of tests. We found Gardner's site on www.ed.psu.edu/insys/ESD/Gardner/menu.html and other websites such as www.infed.org/thinkers/gardner or www.education-world.com. The last ones refer to other websites.

APS contacts

Mrs. Evelien Janssens, Mrs. Det van Gils, Mr. Dolf Hautvast, Mrs. Karin Verheggen.

Natural Learning¹

Summary

Meaningful learning tasks are the heart of natural learning. Meaningful learning tasks, called achievements in natural learning, nearly always involve realistic practical situations and are often developed in conjunction with the business community. For students this leads to a learning process that is meaningful, with the likelihood of transfer and broad development. In natural learning there are two key teacher roles, those of the specialist teacher (who guides the students in their personal growth) and the vocational training coordinator (who guides the students in their professional development).



Mr. Alex van Emst



Mrs. Hanna de Koning

Definition

In natural learning, meaningful learning tasks are essential for students to be challenged to learn. They are the heart of natural learning. Meaningful learning tasks, called achievements (or performances) in natural learning, nearly always involve practical situations and are often developed in conjunction with the business community. It is worth mentioning in this context that natural learning was developed in the adult and vocational training sector and that other educational sectors are currently showing great interest.



Mr. Hendrik de Vries

¹ This concept refers to what is known as Authentic Learning in so far it also is based on up-to-date learning psychology research.

Working in this way has three characteristics:

1. Since achievements are meaningful for students now, learning them feels natural. Learning comes more natural if the task is meaningful.
2. Since the achievement is directly linked to later professional life and involves practical situations, there is a good chance that the student will apply what has been learned in professional life when asked to. The chance of distant transfer is thus substantial.
3. Since the achievements are demanding since they are realistic and complex, students develop many personal qualities as they work on the achievements.



Mrs. Herriët Weegenaar

To optimize the learning process of students as they work on an achievement, two specific teacher roles have been developed to support students: those of specialist teacher and of vocational training coordinator. The *specialist teacher* guides students in their personal growth. This involves the development of those personal qualities that are relevant for life such as cognitive skills, social and communication skills, metacognitive skills such as planning and reflection, and general attitude. This support takes place both within the achievement and outside it, for example in everything that takes place inside but also outside the school. The *vocational training coordinator* guides students in their professional development. Here we mean the instrumental and vocational skills within the achievements (the profession). The portfolio that a student builds up plays a major role in the guidance offered to the student.

How can it be applied?

Students choose only for achievements that they consider meaningful. Sometimes they even design their own achievements. To enable them to make choices, they are invited to explore. The specialist teacher plays a key role in this since many students enrol with only vague notions. The exploration involves working on broad achievements, so that the students become aware of their personal interests. Lectures, practical assignments and training sessions provide support as they work on this. These are followed by a more intense and specialist phase. This buildup gives students the choice

to explore more deeply where their interest lies or to go ahead and choose a special programme within the vocational curriculum. A broad start proves to be quite important since natural learning also involves broad personal development. Students who want to choose quickly for a specific graduate profile will need to demonstrate, in consultation with the specialist teacher and their personal portfolio, that they already possess a broad background so that they know what they are choosing. Often students work in family groups. A family group does not necessarily consist of students with the same programme. Starting out from the family group, students spread out to personally chosen meaningful learning tasks and thus to their personally chosen profession.

While working on achievements, students are supervised by both the vocational training coordinator and the specialist teacher. The collaboration between the two is important. The specialist teacher, for example, arranges the meeting at the start of the week during which the total planning is made, the learning progress is discussed, frequent learning problems are identified, etc. The vocational training coordinator, for example, supervises students during their refurbishing work on a car so that it will pass the safety inspection, or with the surfacing of a pathway, or in writing a letter in English. The vocational training coordinator is especially important when the student fails in some aspect of the achievement. In doing so, he reflects on the work of the student.

The vocational training coordinator and the specialist teacher regularly meet to discuss what their students need. If necessary, they decide, based on the gaps identified, whether an extra morning, training session, lecture or else should be added to the workweek. The expertise of other students is often involved in this. The first practical results show that the graduation requirements – a justified concern of many schools – are generally comfortably met.

Relevance to educational practice

The relevance of this concept for classroom practice is great. The concept of natural learning is a way of learning in school in which the social-constructivist vision on learning is put into practice in a consistent manner. It requires the school to adopt a way of thinking about teaching and learning that is different from what is generally the case. And it turns out to be a way of working that brings a lot of excitement to the school. It requires teachers to consult with each other on a regular basis. It requires the formulation of proper achievements, often in conjunction with business entities. It requires

a good balance between guiding students and letting them go on their own. It requires coaching on the job. From students it requires a considerably higher awareness of what they are doing than when working on non-meaningful learning tasks. After all, they must choose, collaborate, reflect on what they are doing, prepare an achievement, leave the school to apply the achievement, and so on. All this leads to broad personal development. In the support of the student, the joint involvement of the specialist teacher and the vocational training coordinator plays a key role. This combination provides a number of integrative aspects such as the integration of school and practical learning, and the integration of student guidance and instruction. In the current practice of many schools these are often difficult subjects to merge. Lastly, it should be mentioned that the natural learning approach differs by school. Each school must find its own modus that matches with its objectives and characteristics. A selection of relevant literature is presented below.

Sources

A limited number of sources is available in Dutch about natural learning, as it's a rather new concept. A few sites, however, are available from schools using the natural learning principles. The Friesland College, for example, has several departments that are structured according to this concept. These include '*Werken met de Stad*' (<http://www.fcroc.nl>) and the Talencentrum (<http://www.fcroc.nl/talencentrum/>). In December 2002, the NOT Onderwijsprijs (National NOT Education Award) was dedicated to '*Werken met de Stad*'. The Technodesign department of the Da Vinci College was designed according to this concept. Furthermore, several background articles are available through the APS newsletter. One of these articles is an interview with Hanna de Koning, natural learning expert at the APS (<http://www.aps.nl>). An other site is about *Werken met de Stad* (<http://www.aps.nl>). A book written by Alex van Emst about the natural learning concept is also available. It's called *Koop een auto op de sloop* and is available from VODA (<http://www.aps.nl/apssite/publicaties>). On the internet articles referring to education practice quite similar to natural learning can be found if one enters "authentic learning" (<http://www.google.nl>)

APS contacts

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Mrs. Herriët Weegenaar*

Numeracy

Summary

Numeracy is the ability of students to handle the quantitative aspects of our society. Students need this since many aspects of their daily existence are in quantitative terms, while they do not realize what this implies. This does not necessarily involve doing sums, but rather being able to express an opinion about the mathematical aspects of everyday situations that are encountered in life.



Mr. Kees Hoogland

Definition

In their daily life students encounter many numbers, such as prices, percentages and codes. In their textbooks, in newspapers and on television they encounter numbers from industry, the stock markets, profit margins, etc. They also run into all sorts of statements that involve an assessment and that are quantitative in nature. Some examples: economic growth must be at least ...%, profit margins are too low, ...% of the population lives below the poverty line, etc. Not everyone knows how to handle this type of information or statements. Or wants to know how to. Learning to deal with such numbers, figures and patterns is the goal of numeracy, the ability to process numerical, quantitative, spatial, statistical and mathematical information, to interpret it and to communicate with it in a wide variety of situations. When a student is numerical, he or she is able to participate more adequately in the quantitative part of our society. You might call numeracy mathematical literacy. But numeracy is not exactly the same as mathematics. Only a small part of the educational content that leads to getting a grip on numbers is reflected in the mathematics curriculum. That is because the mathematics curriculum focuses on calculus and works toward abstract concepts that are only needed in a limited number of professions. Arithmetic is already stopped at an early point, and skills in complex calculations and data analysis are not trained. Numeracy has a different emphasis, in which it

applies such mathematics. Learning to think in a quantitative way is not just the task of the mathematics teacher.

How can it be applied?

Since one of the goals of numeracy is that students learn to deal better with the quantitative issues of our society, it is proper to link numeracy to the use of meaningful learning tasks. In that way:

1. learning numerical skills becomes socially or professionally meaningful for students. It deals with realistic, more or less complex situations, where the issue of numeracy or related competencies plays a significant role;
2. the chance of transfer of what is learned is greater. Students are more likely to apply what they have learned in the societal context.

In that sense, numeracy is directly linked to a learning theory such as natural learning.

Numeracy does not mean that are only calculations are involved. It also involves quantified reasoning and discussion. Students will, for example, be able to learn that the debt that you build up in a single month cannot be directly repaid in one month. Or that if one pill is good for a certain illness, two pills are not necessarily better. Or that the formula (from 1845) for population growth, $P(n + 1) = k.P(n) - c.P(n)^2$, was a good predictor for a long time, but since it is based on the assumption that population size gradually grows to a maximum, it also has its limitations under different circumstances. Or that a graph can present a subject in an accurate way but can also manipulate the truth if one of the axes is logarithmic. Or that 238 litres of paint for a 20 m² surface is an awful lot. Or how the calculation of a new mortgage loan may strongly favour the bank.

Issuing an opinion about the mathematical aspects of everyday situations in society is thus an important objective of numeracy. All these discussions should make students well-informed citizens about the quantified aspects of our society. The approach chosen here is altogether different from doing sums, or from reducing reality to doing additions and other sums, from giving answers, and from setting out the solution on a CD or on paper so that it can be checked. Assigning students for two weeks to collect examples of concrete situations in which their skill in dealing with numbers is called upon should make clear to them how much and how often their numerical skills are called upon.

Relevance to educational practice

Numeracy is a relatively new concept in Dutch education. Numeracy is based on the premise that students must learn to be able to understand and assess realistic quantitative situations. Since emotions and personal qualities such as daring, self-confidence and endurance also play a role, there is much to be said for competencies in the field of numeracy. Students need this since society requires it. Society assumes that you know how to act in situations that involve numbers, relations, calculations, measurements, codings, and so forth. The knowledge, skills and qualities that are relevant in this regard are also referred to as numeracy competencies. A certain level of numeracy or mathematical literacy is considered a minimum requirement to be able to function well in our global society. An innumerate student is vulnerable, and that applies to all students. Since numeracy is relatively new as a learning strategy, there are still only few examples of schools where this strategy works. But the situation is changing.

Sources

A wide range of sources is available about this subject. There is a Dutch website, managed by Kees Hoogland of the APS. This website features definitions, backgrounds, examples, references to other publications, etcetera. See: www.gecijferdheid.nl. Other websites include www.stolaf.edu/other/ql (about quantitative literacy), www.alm-online.org and www.std.com/anpn/numeracy.html. There is one overview article by Kees Hoogland, *Wiskundige geletterdheid en gecijferdheid* in the new *Wiskrant* of September 2003. This article is also available on the afore mentioned website.

APS contact

Mr. Kees Hoogland



Socratic Dialogue

Summary

The Socratic dialogue is a powerful instruction tool to have students think, under the guidance of the teacher, about a predefined problem. It makes the thinking process of students visible and gives the teacher and fellow students the chance to pursue that line of thinking. All sorts of approaches thus arise that shed light on the problem from different angles.



Mr. Sebo Ebbens

Definition

A Socratic dialogue is a dialogue between a teacher and one or more students or between a number of students under the guidance of the teacher. The teacher presents a problem or a key question (usually related to the specific course), decides on the structure of the dialogue, involves all students by asking questions and eliciting answers and passing them on, he prods and digs, confronts and leads the students to (preferably) common solutions and conclusions. The dialogue aims to develop the thinking of the students. In essence it comes down to the teacher first making the thinking process of the students visible, then testing it by slowing it down and burrowing deeper. In that way students get the chance to develop and test ideas and to come to conclusions. This requires that the teacher is sincerely interested in the thinking of the students and tries to show interest and respect for their thinking by means of questions. Our experience is that the teacher's knowledge of the professional field and about the learning process of students must be considerable for the dialogue to be successful.



Mrs. Evelien Janssens

How can it be applied?

Teachers may conduct the Socratic dialogue with their students either in an open or a closed setting. In a closed Socratic dialogue the teacher addresses individual students with questions. The answers are then forwarded by the teacher to other students. (Another description of a closed Socratic dialogue is that students are led to a predefined conclusion or solution.) In an open Socratic dialogue the teacher stimulates students to respond to each other's questions and answers directly, to answer each other's questions or to ask questions. Asking questions and pursuing the answers with further questions is one of the most powerful means for teachers to make students think. A carefully developed sequence of questions provides clarity and structure to a lesson, even though a Socratic dialogue will never proceed exactly as planned. And it shouldn't. The contribution by students must by definition impact the progress of the dialogue. To get students to think, the level of the questions is important. In the table below we present three levels of learning activities. The Socratic dialogue should involve questions that stimulate higher order learning.

<i>Level of questions</i>	<i>Thinking activities of students</i>
Remembering	Describing, naming, saying out loud, telling, defining, indicating steps, ...
Understanding	Presenting in own words, distinguishing, explaining, deducing, predicting, reasoning, defending, summarizing, ...
Higher order learning	Evaluating, assessing, speculating, discovering, demonstrating, applying, analyzing, comparing, estimating, if-then reasoning, providing evidence for conclusions, designing, selecting, arguing, ...

Examples of questions involving higher order learning are:

- "What could have happened if ...?"
- "When do you state an opinion, and when is it true?"
- "Why do you think that ...?"
- "If you had the chance to do it differently, what would you do then?"

Reasons why the Socratic dialogue is demanding on teachers are:

- the group can easily lose sight of the intended subject;
- students may come up with arguments to which the teacher does not have the answer;
- some students may use the occasion to dominate the discussion;
- the dialogue no longer deals with the subject that the teacher intended.

Holding a Socratic dialogue is not a simple exercise.

Relevance to educational practice

The most relevant aspect for classroom practice is that, in a Socratic dialogue, students must thoroughly think about a subject. Because of the input of other students, a large variety of insights and thought approaches comes to the surface. As a result, it is not enough for students to just give some arbitrary answer. Instead, they will be asked to explain their answers. If the dialogue is successful and the participants feel safe, it will lead to a dynamic situation involving students who think out loud, and who demonstrate a great variety of approaches to a central question. Another objective is that students develop respect for their own thinking and for the thinking of other students. A third goal may be that thinking is simply fun and not something just for philosophers and other scholars.

For now we distinguish four applications of the Socratic dialogue in the teaching-learning situation. They are:

1. The exploratory dialogue preceding the explanation: what do you already know about this specific subject?
2. The exploratory dialogue following the explanation: what do you recall about the instruction?
3. The question-based dialogue to pursue or solve a question or theme presented by the teacher.
4. The dialogue that focuses on learning and solution strategies. The question that is key to this form of dialogue is: "How would you tackle this problem?"

Sources

Ebbens and Ettekoven (2004) wrote about the Socratic dialogue in a chapter 8 of their book *Samenwerkend leren*. This book was

published by Wolters Noordhoff. For further information use a search engine like Google (<http://www.google.nl>), entering 'Socratic dialogue' or 'Socratic method'. This will direct you to a great number of websites, including lesson schedules and detailed examples. We liked www.hetnieuwetrivium.nl. See under 'dialectics'.

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Student Participation

Summary

Participation involves less of student's learning and more of creating a teaching-learning situation in which students participate, in which students matter as human beings who are growing up. That is the basis of the learning climate. It turns out students develop better when they participate, than when they do not. More specifically, participation in the 'natural context of concrete social interactions' ensures the development of morality and self-confidence.



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Definition

'Student participation' is not about the theory of learning. Participation is an educational theory or development theory. However, using participation techniques helps to stimulate the student's learning process. Participation means students (learn to) have a say in the decision-making processes concerning activities at school that immediately affect them. This could be their own learning process, the direct learning environment of the classroom, the entire school environment. Two conditions are required to speak of student participation. The first one is that students have to have some kind of say over their environment, that they have real choices that 'make sense' to them. A second condition is that students experience a *relationship* with their environment: students have to know they are accepted, know that they belong, that they are welcome. Student participation is only possible when both conditions are met. Both conditions are closely intertwined. They cannot exist separately. Having a say without a relationship will lead to ego-tripping. A relationship without say is more about obedience. Both conditions will mutually

reinforce each other. Both conditions also require skills from the students. And a context in which both conditions are experienced as meaningful and not just as an activity in itself. In order to shape participation regular discussion or dialogue with students is required, allowing them to 'freely' deploy their personal qualities. Four presuppositions are made in this respect:

- Participation assumes that students are seen as co-habitants of a school, not visitors. And that learning to participate now will result in civilians capable of participating in society;
- Participation assumes that students will benefit from learning to express their opinion, points of view and solutions. And if they learn to do so at school, they will also be better capable of doing so elsewhere;
- Participation assumes that students benefit more from dialogues than from monologues for their development. If there is participation, a stronger social, moral, intellectual and emotional development will take place. And the more 'tangible' this participation becomes (from the student's identity and convictions), the bigger the impact will be on the students;
- Participation assumes that students who participate more actively, will also be more actively involved in their own learning process. There will be a better learning climate, which will be more effective. Students will be more motivated to learn when the solutions to problems are their solutions.

How can it be applied?

Kohn (1996) distinguishes a dichotomy that explains the concept of student participation in daily teaching practice. He argues that in a learning climate in which we expect students to be co-responsible for their own learning process, teachers will rather have to work *with* students instead of *for* students. In that case, for example, participation is when teachers take into account questions from students when planning their lessons. Or if they discuss the implementation of new rules with the students first. Or when dealing with the subject matter, students are given the choice to study it by themselves first or to listen to the teacher first. Kohn calls it a *working-with* learning climate. That is something else than a learning climate in which teachers are mainly considering how they can get students to work or to have them follow up instructions more effectively. That is what Kohn describes as a *working-for* climate.

In other words: in a *working-for* climate teachers tend to focus on

students' behaviour in such a manner, that they stimulate students to act according to their intentions. The method to achieve this is preferably based on rewards and punishments. In a *working-with* climate teachers tend to focus on the students' underlying motives to help them develop positive values and an interest in learning. Their method is preferably based on a caring community and a curriculum that takes into account questions asked by students and which assumes that thinking along promotes the student's own development.

The distinction between real free choices and pseudo choices is directly related hereto. Kohn states that in the *working-for* climate the teachers are of the opinion that students have to do what they say. Their opinion is that the students' responsibility is 'doing what I ask them to do': 'If they don't do what I ask them to do, they deserve to be punished'. Students are given the choice to either or not do what they are asked. Moreover, teachers often believe that they punish themselves: 'If you choose not to do what we ask from you, you have to accept the negative consequences of that choice'. This is where pseudo choices come in. A free choice implies that students can choose between several alternatives without it entailing consequences for the relationship with the teacher. A simple example: 'You can work here in the classroom or if you want more peace and quiet, you can work in the corridor'. The student has the choice. And the next day he can make a different choice. The teacher also has to feel free 'towards the student'.

Relevance to educational practice

A wide range of studies has demonstrated that a more active student role is very important for their development. In society discussions and negotiations are considered matter of course. And newer insights in the field of development and education also consider it as such. A study by Damon (1998) found that morality is acquired by active participation in the 'natural context of concrete social interactions'. And this assertion of his is based on studies into cognitive, moral and social development, Donaldson (1978) says participation can be considered an essential condition for the development of self-confidence, self-respect and social responsibility. And De Winter affirms: 'Give children a voice, and fear less rabble-rousing. If you really accept children as co-civilians with their own interests and needs, and not just as consumers of a knowledge factory that is engrossed in itself, you will see that children can turn out to be enthusiastic and motivated students'.

Sources

One of the sources in The Netherlands is Prof. Dr. Misha de Winter, whereas Alfie Kohn is one of the main sources in the USA. The latter has his own website: www.alfiekohn.org. One of his books, which is about participation in particular, is *Beyond Discipline, From Compliance to Community* (ASCD, 1996). For further information use a search engine like Google (<http://www.google.nl>), entering "student participation". This will direct you to a great number of websites.

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