

“There is no end to learning”

This quotation from the famous German composer and pianist, Robert Schumann (1810–1856), is more relevant today than ever. On-the-job seminars, private further education, information on the Internet, exchanging information on networks – the opportunities for acquiring knowledge seem infinite. But what do people actually need from it and how do people learn best what is most relevant?



Whether you are seeking general or expert knowledge, the opportunities for obtaining it are endless and open up hitherto unknown sources for people in 21st century. Global knowledge platforms, social networks and companies' internal knowledge management systems try to combine the flow of data and make it available in a systematic way. Now it is primarily a matter of finding new ways of filtering and processing relevant information. Learning itself is not the main focus here but rather the meaningful preparation and processing thereof. Thinking and learning must be freed from old attitudes so that they can be focused more on creative processes and problem solving.

Pre-requisite for successful learning: The quality of the information must be right.

Stimulating interest

A pre-requisite for any type of learning is predominantly interest as well as the quality of the information. If you look back at your own school days you will certainly remember the mindless learning by rote of mathematical formulae, the periodic tables of the elements or the mantra-like declination of verbs. Often, in spite of all our efforts, we still didn't learn it. If you want to be really good and successful in an area you must be interested in it and create suitable conditions. Successful learning is the result of being interested. That makes you more motivated, and, in turn, that motivation makes you more interested. That is what stimulates increased curiosity and a thirst for knowledge. As the Latin roots of the word reveal, interest is made up of inter, which means “between” and esse “to be” – when someone is in the middle of things and actively takes part in a topic or a process.

The 24-hour rule

There are lots of tricks and methods that can be used to help retain something you have just learnt. These include memory techniques, such as associating content with graphical characters or devising mnemonics. These are based on two principles: the association and conversion of words into pictures and models. Using these, even complex content can easily be saved and recalled later. For example,



Exchange of knowledge:
People absorb about 70% of their knowledge informally, perhaps with friends or in everyday life.



there is a simple mnemonic for learning the names of the planets in our solar system and their distance from the sun: **Men very easily make jugs serve useful necessary purposes.** Each initial letter stands for a planet with the same initial letter. The M in Men for Mercury (the planet closest to the sun), the V in very for Venus (the planet second closest to the sun) and so on... Earth, Mars, Jupiter, Saturn, Uranus, Neptune and Pluto.

It's not always easy, especially in the beginning. Even with the best intentions, sufficient interest, a high level of motivation and concentration, after one day we have already actually forgotten up to 80 – 90% of what we have learnt. The well-known saying "You can't always expect to get it right first time" expresses the most important principle of learning: repetition. Therefore, whether we like it or not, we must go back over what we've learnt at least two or three times. The best time for the first revision is one day after the first learning unit. The second revision is best done another 24 hours after the first revision.

Learning without learning

However, people do not only learn in the traditional sense by reading or direct teaching by teachers and course tutors. According to the UNESCO Faure Committee people absorb about 70% of their knowledge informally, i.e. outside →



Open innovation

The wisdom of many



Prof. Frank Piller, Technical University, Aachen/Germany

Independent acquisition of knowledge is one thing but how can the experiences and ideas of many people be merged into new concepts and solutions? More and more often expressions like “Open innovation” and “Crowd sourcing” do the rounds. Now many companies are trying to broaden their technological tunnel vision using these concepts. Prof. Frank Piller, Chair of Business Management focussing on Technology and Innovation Management at the Technical University in Aachen, talks in an interview with trends in automation about the innovative concepts and the importance of so-called lead users.

► **trends in automation:** What is open innovation?

Prof. Frank Piller: The latest studies show that in most industries functionally new developments emanate from customers. But these are often improvements to existing technologies, not far-reaching innovations. Truly new developments emanate from so-called lead users. Open innovation tries to sniff out these people and include them in a company’s innovation process.

► That sounds easy.

Piller: It does but it’s not really, because lead users are not direct customers of a manufacturing company but often people who only have indirect contact with these companies or sometimes none at all. It is possibly someone who is not connected at all with the industry or the discipline in question, but who is in a position to solve a problem in a completely innovative way that the technology experts simply hadn’t thought of because of their limited range of experience.

► How do you find lead users?

Piller: A tried and tested way is to advertise ideas competitions, either traditionally via printed media or, more and more often, on online platforms.

► Can you apply open innovation ideas from lead users as they are?

Piller: No, companies that want to incorporate the creativity of lead users into new concepts must co-ordinate them with the experience of existing customers. It is the only way that marketable products and solutions can be created.

► That all sounds very positive. Is there a catch to this?

Piller: I wouldn’t call it a catch, but it needs new processes through which the results of open innovation can successfully be transferred to the company’s own structures. Only if these are implemented correctly can open innovation develop its full potential over time.



Jogging is not only good for the circulation but also for the brain according to brain research findings (see page 10).



Active learning culture: Many companies are now setting up informal spaces and listening posts specifically to encourage employees to exchange information.

→ educational institutions, such as with friends, on the sports field, in everyday life. The same applies to professional life too. Places where you acquire knowledge without noticing it are the coffee area, the workbench or the printer in the corridor. However, informal learning cannot be easily controlled. What we learn in this way is acquired unconsciously. Therefore, more and more companies encourage an open exchange with colleagues outside training and seminar rooms. Informal learning and what is called an active learning culture cannot be prescribed, it must be left to employees themselves. What companies can do is provide the scope for it. The simplest methods are canteens or coffee areas where staff can meet and talk about work. In many places companies have noticed that it is just these meeting points that can be places for innovation, where an open exchange of ideas becomes a real production advantage.

Ready for the “listening post”

Apart from these common rooms many companies are now creating new informal spaces for informal learning. These include, amongst other things, deliberately wider landings. Here people meet colleagues whom they had always wanted to ask just this one question but the opportunity had never presented itself.

Another option is to set up so-called listening posts that are integrated into the work process. These are places where employees come together quite deliberately during production, design or development in order to talk about the experiences gained during a joint project. Listening posts can also contribute to employees being ready and able to solve difficult tasks on their own. This means their actions are controlled more by themselves than by other people. They develop and learn in and from the team. ■

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Absorbing knowledge in passing

About 70% of what we learn we absorb unconsciously, in conversations with neighbours, friends or colleagues. So-called informal or implicit learning can, under the right conditions, lead to a production advantage for the company. This includes five main points according to education advisor and e-learning specialist, Jochen Robes:

1. Creating open learning environments that provide space for self-organised learning.
2. Developing future-orientated learning processes.
3. Informing staff about the nature and value of implicit learning.
4. Stimulating joint, networked learning opportunities.
5. Encouraging the passing on of explicit knowledge and minimising a sense of entitlement.