

CONTINUING EDUCATION AND TRAINING (CET)

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Summary

Regardless of the level of instruction, formal courses can never provide the knowledge and skills which the labor market or a specific employer demands. CET fills the gaps. CET also helps to cope with scientific and technological progress and it is the only means for an employee to maintain professional fitness or to prepare for a higher career. Lifelong learning may result. This paper discusses the characteristics and methods of CET. It emphasizes the participation of adult learning and the role of personal commitment as well as the need for tailor-made programs and their rigid quality assessment.

1. Introduction

The more general treatment on training and education in the water sector contained a number of statements which it is necessary to repeat in order to understand and appreciate continuing education and training (CET).

Like in other disciplines, training and education in the water sector is organized in formal courses, in accordance with the established study forms. Reference is made to technician training, but much more, however, to university studies. Particularly the latter follow a clear structure, in which curricula, credit systems and examination system form a logical unit and the final degrees and grades perfectly correspond to this scheme. It should be recalled that the outcome of these studies is a graduate technician or a graduate academic holder of a title. It should also be recalled that a hierarchy of titles exist, in conformity with the hierarchy of studies. The keyword for these studies is "formal education".

Another statement previously made is equally important. Water-related aspects are scattered widely over many disciplines, with some priority centers in civil engineering, (hydro-)geology and in a number of physical sciences. Water-related topics may form the core of studies but they may also be auxiliary in nature. However, even where water forms the core it is not possible to teach all aspects at the desired depth. Most training institutions therefore wisely restrict their programs to providing a strong, consolidated basis which serves for as many professions as possible. Hence, the young graduate will have a broad knowledge but rarely will be ready for immediate release into professional work without additional training.

It is evident that the universities cannot provide his additional training within the prescribed study duration. On the other hand, the limitation has its advantages. Hardly any of the graduates will need in-depth knowledge in all water fields so that further training is better placed in the post-university period of life thus corresponding to the actual needs of a person. These limitations of university programs may sound negative, but in fact the opposite is true: the universities establish the solid foundation and life adds the supplements, through CET.

Legally speaking, students doubtlessly are adults. Their learning behavior, at least during the first semesters, still very much follows the patterns of school life: a prescribed program, a time schedule, learning discipline, and obligatory exercises. The subjects to be learnt have been selected by other people and they can be neither discussed nor contested. It is rare that a student (like a pupil) knows whether the knowledge acquired will ever be needed, or has a full insight into the requirements of life. However, as studies progress, the students—without being aware of it—gradually change their attitude. More and more the utility of course features will be questioned, and study systems offering elective subjects encourage self-responsibility. Eventually, the pupil-student has become an adult willing to determine the course of his/her own future life. Learning techniques and attitudes are changing and educationalists rightly distinguish between pedagogy and androgogy. One of the most important features of CET (since it falls into the post-university period) is that it fully obeys the laws of androgogy. These laws will be discussed below since the particularities of CET otherwise are difficult to understand unless seen as androgogical activities.

2. Reasons for CET

The most evident reason for CET has been mentioned above; namely, the purposeful limitation of formal study programs to only providing a broad basis, without undue specialization. From there on, the young graduate has to form his/her professional career by acquiring additional knowledge such as demanded by the intended labor environment. CET is the only means for reaching the desired perfection in a chosen professional area. In order to avoid misunderstandings it must be emphasized that the limitations of the formal study periods are deliberately designed since the basis has to suit a broad program of professional activities.

Unless in a very senior position, hardly any young graduate would be supposed to have in-depth knowledge in a large number of water-related subjects. However, both the private and the public sectors engage graduates not to serve as generalists but to work in

more or less specialized fields. Basically, two ways offer themselves. The graduate, having an aim in mind, continues to study specialized fields: as a matter of consequence, the person does not earn money but spends it. The other way is on-the-job training. Both forms are CET.

The labor market is fully aware of the deficiencies of young graduates and the first years of practical work normally also constitute a learning period, with CET as a daily practice. In many cases the young employee is not even aware of CET but simply feels that the job is interesting, and that it daily offers new impressions, new knowledge and particularly skills. While this form of CET has some automatic features it will often be supported by more formal CET activities such as are offered on the learning market for adults.

As a consequence an equation can be offered, namely “formal studies” (FS) plus CET is equal to professional fitness (PF). Under stable conditions of science and technology this would suffice unless the person wants more knowledge and skills for a higher career. But even then the point will be reached that the equation applies: $FS + CET = PF$.

Stable conditions in science and technology do not exist: on the contrary, the development is fast and even seems to accelerate. PF of a given day “i” will not suffice on day “j”: $PF_i < PF_j$. In order to reach level “j” CET is needed $PF_i + CET = PF_j$. As a result, CET is a process without upper limits and therefore correctly the expression, as an androgogical term, has been created: lifelong learning is required. Of course, it would be a mistake to believe that lifelong learning is restricted to the professionally-active period; people in retirement must continue to learn, even if it is only how to purchase a rail ticket from an automated vendor.

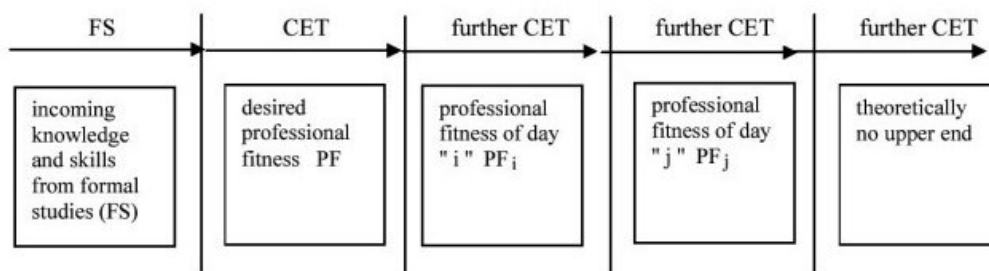


Figure 1. Growing professional fitness

The above considerations assume the constant ability of human beings to maintain their memories, knowledge and skills at the initial level. A person who, as a young pupil, could easily translate a Latin text may fail thirty years later. To forget is a process of ageing and nobody escapes from this deplorable development. CET is the means to maintain an initial level as a tool against forgetting. Of course, CET will be selective. No water resources engineer will revert to re-study Latin but other school and university knowledge needs revitalization. For example, a foreign language learnt at school and almost forgotten may one day suddenly be required, or mathematical capabilities,

unused for years, suddenly called on. Special CET programs—and they may be home-made—will overcome the difficulties. Surprising enough, this revitalization of (almost) lost knowledge occurs at relatively high speed. Firstly, there are existing residues. Secondly, the adult has developed learning skills. Thirdly, the full personality with its dedication is behind it. This dedication may be considered the main parameter of CET and it is both the reason for and a condition of a high success rate. Whether a person is undergoing CET voluntarily or compelled by the (work) environment is important for the attitude of the learner, although ultimately both lead to success. A voluntary attitude, however, will show the highest success rate.

3. Characteristics of CET

When professional educators speak of CET they have professional perfection in mind. This impression must be adjusted. In order to perform CET the learner needs a specific attitude, namely willingness. Learning for a hobby or for entering into the world of humanities develops, within a person, the capability of generating interest and then of transforming interest into an activity. Hence, the capability for CET conditions a development of the personality. It can often be observed that a person with increased knowledge outside the profession more easily enters into profession-oriented CET. One may conclude that one of the characteristics for CET is the human basis for learning beyond school and university.

Another characteristic is the lack of time limitations. CET is not a singular event like university studies but a lifelong chain of learning events. These learning events are not uniform but they consist of an extremely broad spectrum of CET forms. No individual CET career will resemble another one: each person has his/her CET sequence.

A third characteristic of CET is the absence of standardized forms. CET occurs in all forms of learning that can be imagined. Again, these forms do not condition a specific sequence; they may even go in parallel (normally they do: the learner is not aware of it). Given such a multitude of forms all sorts of consciousness are possible; the learner learns automatically—the scale reaches even to a new university study.

A fourth characteristic of CET is the fact that an award (in the form of a degree) is the exception. Professional opportunities (promotion) may result, but to maintain a position (rather than being fired) could also satisfy. To perform work more easily and efficiently could also satisfy. The myriad forms of CET correspond to the multitude of results and eventual benefits.

A fifth characteristic is the freedom from a time frame. CET can occur at any time, at any place, on any occasion; it can be planned, even organized, but it could also consist of a simple piece of advice: “Turn the screw to the left”. The lower (unorganized, unplanned) the form of CET the more often it will occur; high forms, additional studies, are the exception.

The sixth characteristic is that CET leaves the simple dualistic form of learning at school: teacher and learner. CET normally knows a complex system of partners: the provider, the learner, motivation and dedication of the learner and finally, often

invisible, the employer. Motivation and dedication have separately been mentioned already since in androgical activities these attitudes and the person can work together (showing success) or not. It makes an enormous difference whether the employer or a person's own motivation is behind the learning.

The heading of this section promised more than it could deliver: CET is characterized by the absence of characteristics! One can only try to understand the full scope of CET as something which is everywhere at any time. Yet, a professional education will not spend too time in describing the lower ranks of CET although they constitute the most frequent, the daily type. An educator will think of the more developed forms, which normally show at least elements of formality, organization, structure—and quantifiable results.

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Biographical Sketch

The author, **Wilfried H. Gilbrich**, was born in the East of Germany and received the degree of a Dipl. Ing at the Technical University of Hanover (Germany) and subsequently he was there a Principle Assistant in the Institute of Water Resources. He then joined the Water Resources Administration of Lower Saxons and a continuing education program in water resources law and management obtaining the degree of an Assessor in 1966. In 1968 he was called by UNESCO and primarily acted as education officer in the International Hydrological Programme (IHP) until retirement in 1995. He took care of more

than a dozen IHP working groups and was contributing to their publications; he was also responsible for the network of the (up to 32) UNESCO-sponsored postgraduate hydrology courses and he organized many regional training courses in developing countries, particularly in Africa. He then performed consultancies for UNESCO, in a number of German governmental projects and particularly in programs financed by the European Commission for development projects in Central and Eastern Europe. He is author of numerous publications in the field of training and education and in hydrological mapping.