

Session Management and Training Evaluation

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Brief Information on the Author

Mr. Wieckenberg holds M.A. in Political Science and Education from the University of Heidelberg, Germany. After his studies he worked as scientific employee at the „Distance Study Center“ of the University of Karlsruhe. In this position he was responsible for the development of distance learning courses in several subjects. In this period he integrated electronic media into the development of these courses and combined both the classical approach through correspondence learning and the modern approach through computer mediated communication – the „e-learning“ approach.

In 1997 he changed to the “Center for Distance Studies and Continuing Education“ at the University of Kaiserslautern, which is managed and directed by Prof. Dr. Arnold. At the Center he developed and implemented distance education certificate courses.

Mr Wieckenberg has relevant experience in international development cooperation for e-learning, distance learning and teacher training programmes.

Learning Objectives

After going through this module you will be able to

- know about the different components of session management
- know about the importance of motivation and how students can be motivated
- know the steps to develop students' motivation
- know about styles of teaching and leadership and know more about your own teaching style
- know the different levels of communication and the factors that influence the interaction between students and teacher
- plan a training session
- know about appropriate definitions of „evaluation“
- know about the purpose of training evaluation
- know about different evaluation types
- know the evaluation approach of Kirkpatrick
- know different evaluation methods.

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Glossary

Empirical research	Empirical research involves data collection through direct interaction with the data sources via questionnaires, interviews and observation.
Interaction	Interaction in our connection means that teachers/trainers and learners relate and supplement each other in their behaviour.
Motivation	In a simple translation, motivation is similar to “readiness”. According to various theories, motivation may be rooted in a basic need to minimize physical pain and maximize pleasure, or it may include specific needs such as eating and resting, etc.
Motivation to learn	This term describes to what motivation aims or refers to.
Motivation to performance (Readiness to make an effort)	These two concepts are linked to each other, because an action (or a result of an action) is only recognized as performance when a certain degree of effort has been necessary for it to be completed/achieved
Reliability	Data are said to be reliable if repeating the technique gives the same result again.
Qualitative data	Qualitative data are non-numeric in nature, making use of words in the form of descriptions. Such data are normally gathered through interviews, focus groups or observations.
Quantitative data	Quantitative data make use of numbers, which can be analysed by statistical techniques if drawn from a wide sample. Such techniques allow evaluators to establish the extent to which their findings are statistically significant. Quantitative data are normally gathered by questionnaires and from test results or existing databases.
Triangulation	In the strictest sense of its meaning, triangulation involves gathering data from three different sources, and often using more than one method, to strengthen claims resulting from an evaluation.
Validity	Data are said to be valid if they really measure what they claim to be measuring.

Preface

“Session management” and “classroom management” is basically the same. A comprehensive definition comes from Lemlech (1988, p. 3):

“Classroom management is the orchestration of classroom life: planning curriculum, organizing procedures and resources, arranging the environment to maximize efficiency, monitoring student progress, anticipating potential problems.”

In order to complete this line of thought, here is a definition of “management” to be found on www.businessdictionary.com:

“Management is the organization and coordination of the activities in accordance with certain policies and in achievement of defined objectives.”

The purpose of this module is to divide “classroom/session management” into its analytical components in order to give a clear understanding about important issues and to provide you with some implementation tools.

Furthermore we have to deal with another concept: When teachers or trainers hear the word “evaluation”, very likely they think of “control”, “check-up”, “performance measurement”, “review”, “rating” and recall old and unpleasant memories from their own schooldays.

No teacher and trainer like his/her own performance being evaluated. But on the other hand teachers permanently have to evaluate the performance of their students. This module provides you with an overview of definitions, levels and types of evaluation which are used in vocational education and training. Only when we are able to measure the degree to which the learning objectives have been achieved by the students, we are able to modify our own teaching and training input and behaviour and see at a later stage, if the modifications are bearing fruit.

1. Components of session management

The following table provides an overview of the components of “session management” deriving from different sources. They all have in common that three areas of session management have to be regarded:

- a) The environment of training/teaching (classroom, workshop, company)
- b) The way of teaching/training (types of instruction)
- c) The interaction and conduct of students and trainers/trainers/teachers.

Authors/Source	Components		
Florida Department of Education	Motivation	Instruction	Discipline
Emmer et al.	Managing student work	<ul style="list-style-type: none"> - Organizing classroom and materials - Planning and conducting instruction 	<ul style="list-style-type: none"> - Maintaining appropriate student behaviour - Managing problem behaviours - Managing special groups
Froyen	Context management	Content management	Conduct management

In other words:

- a) we have to prepare and manage the environment of teaching or training as well as the students (motivation)
- b) we have to plan, implement and manage the learning process
- c) we have to ensure that our target group remains open for learning and is focussing the learning process.

2. The environment of training and teaching

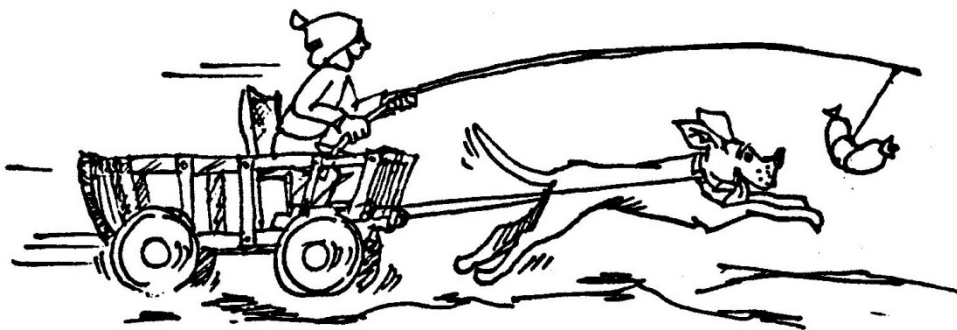
The environment of teaching or training is – beside the place of learning – essentially determined by the motivation of the students and the teaching style of the teacher/trainer. Also to be considered are the different teaching and training methods (see study text “Modern Training and Teaching Methods” by Uwe Wieckenberg).

2.1 Motivation

One of the most important issues in preparing a good environment for teaching and training is to motivate the students.

“Motivation” is a very common and frequently used concept. A football coach motivates his team before the match, superiors motivate their employees, a teacher his students and a trainer his trainees.

How different these situations may be, there is one common feature: somebody wishes to cause another person to do something which this person would apparently not do by himself, or at least not in the desired manner. This means that this behaviour involves a special effort to which this person is initially not willing to do.



Consequently, a special incentive must be given, very often in the form of a promised consequence for fulfilling or not fulfilling the desired performance and the associated effort. Such forms of incentive usually consist of various types of rewards (praise/compliments, gifts, “chocolate”, ...) or various types of punishments (additional duties, reprimand, ...).

This everyday understanding of motivation restricts to a great extent the understanding prevalent in practical teaching and training: rewarding and punishing,

praising and reprimanding are without a doubt those measures which are most frequently employed to cause students to adopt a specific mode of behaviour.

Such measures can – under certain circumstances – be potential modes of action which are suited to the situation but all these measures can be indicated as “**extrinsic motivation**” or “**secondary motivation**” (motivation from outside) because the readiness to make the effort does not come from the task itself to be fulfilled but is transmitted via a system of incentives which normally has no connection to the task.

To produce „**intrinsic motivation**“ or „**primary motivation**“ (motivation from inside) we have to produce those conditions which enable the development of an independent readiness of the students to approach and complete tasks which are set from outside.

Before we proceed to the next sections to finally give hints and recommendations, we should first be aware of several concepts and terms which are connected to motivation itself:

- Motivation
- Motivation to learn
- Readiness to make an effort
- Motivation to performance.

The definitions and explanations of all these concepts are to be found in the glossary at the beginning of this module.

We assume that students (and all learners) generally are active and ready to deal with their environment. This process of „dealing with the environment“ can be regarded as learning process in which new experience is collected and processed. When this learning process is constructed and organised in a systematical way according to didactical principles, we call it training or teaching.

How to develop motivation to learn at the beginning of a training session:

No.	Step	Explanation
1	Establishing transparency	Students should know from the beginning of a training session what they are supposed to do and to learn. <ul style="list-style-type: none"> - What are the objectives of the teaching/learning process? - What subject matter and what methods are to be used to achieve these objectives?
2	Establishing a relationship to the world in which we live	Motivation to learn can be particularly developed wherever a clear relationship to the world in which the student lives can be established and where a clear relation to the students' experience is given.
3	Enable orientation	Give the students support in enabling orientation in respect to the whole training programme as well as in respect to the training session. To stay motivated, it is extremely important always to know, where I am and how far am I regarding the objectives.
4	Give information which can be grasped	Do not overtax the students and do not expect too much. Try to provide new information according to the level of complexity corresponding to the state of knowledge of the students.
5	Take existing knowledge into consideration	Always consider the context of student experience. The readiness to adapt to new learning processes grows to the extent with which previously acquired knowledge and skills can be utilized and implemented. Very often it is vice versa: the „old“ experience of the student is deemed by teachers and trainers as “fit for the scrap heap” and classified as unnecessary in spite of knowing that we have to start from the existing knowledge and experience.

Activity 1:

Read again chapter 2.1, think of one of a „typical sessions“ you have participated as student and then answer the questions:

How did the teacher promote students' „motivation to learn“?

How did the teacher support their „readiness to make an effort“?

How did the teacher promote students' „motivation to performance“?



2.2 Styles of teaching and leadership

In the behaviour of every trainer and teacher dealing with the students certain principles or basic forms can be established. These forms can be named as “styles of teaching” or “styles of leadership”.

These styles can be characterized by the following features:

Features of teaching styles	Guiding questions
Control of teaching	<ul style="list-style-type: none"> - Who determines what happens in class? - Are suggestions, wishes and needs of students noted and adopted? - Do students have room for free expression in tasks or do they exactly have to work as the teacher said? - How closely are the actions of students controlled by the teacher? - Who is predominately active in class?
Respect	<ul style="list-style-type: none"> - Does sympathy or antipathy exist between teacher and students? - Are students treated as equal or subordinate by the teacher? - What expectations does the teacher have?
Praise/reprimand	<ul style="list-style-type: none"> - How does the trainer react to desired and undesired student behaviour?

Every trainer or teacher should consider how his own pedagogical behaviour is to be categorized in terms of these three behavioural features.

Usually we can distinguish two teaching styles: a more democratic style and a more autocratic teaching style. Every teacher/trainer tends more to the one or the other style in a teaching situation.

Characteristics of teaching styles:

	Teaching style	
Feature	autocratic	democratic
Control	<ul style="list-style-type: none"> - Teacher alone determines what is done in class - No/few self-responsible activities by students - Predominantly teacher-centered methods are used (lectures, chalk & talk, question-answer teaching) 	<ul style="list-style-type: none"> - Teacher tries to awaken the initiative of students - Objectives and organisation of teaching is determined jointly (as far as possible) - Student-centered methods (group work, discussion, ...) are predominant
Respect	<ul style="list-style-type: none"> - Students are not seen as partners of the trainer - The trainer does not consider students to be capable of very much (with respect to readiness to learn) and he has little confidence in them 	<ul style="list-style-type: none"> - Trainer and students are partners - Trainer assumes that students are ready to learn and to make an effort - The relationship is characterised by mutual trust and respect for each other
Praise/reprimand	<ul style="list-style-type: none"> - Trainer criticises harshly, reprimands, threatens and punishes if his instructions are not followed 	<ul style="list-style-type: none"> - Students are encouraged to supervise themselves - Teacher expresses objective criticism and gives constructive hints for improvement
effects	<ul style="list-style-type: none"> - A passive learning behaviour is promoted - Personal initiative, independent thinking and creativity are suppressed 	<ul style="list-style-type: none"> - Students master a high degree of independent work without supervision - Students can learn without fear and find interest in the subject - Spontaneity and creative thinking are promoted

A decision for one of the two teaching styles cannot be taken independently of the particular situation in which the teaching activity is embedded.

There are three groups of factors influencing the educational behaviour:

- the personality of the trainer/teacher
- the society
- student behaviour.

Beside these factors every teacher/trainer is affected (consciously or unconsciously) by models which he has acquired as a result of previous experience (with his own parents, in school, etc.).

Self-reflection 1:

Try to describe your own teaching or training behaviour in terms of the named features „control“, „respect“, and „praise/reprimand“. What behaviour occurs more often? What behaviour less often?



3. The way of teaching and training

This component of „session management“ refers to teaching and training methods which are subject of Module 2 and will not be discussed here again.

The only thing which should be mentioned here is the fact that teaching methods do not represent neutral mediating techniques, but that they themselves have a training and an educative effect. In contrast – the subject matter does not have a training and an educative effect (e.g. concerning the acquisition of key competencies) by itself.

In other words, teaching and training methods have a strong influence on objectives and the subject matter in the training process.

Methods always have to be regarded in interrelation with the learning objectives, the subject matter itself and the general goal-orientation of the training.

To enable orientation (see chapter 2.1) teachers and students should always be aware in what stage of the learning process they are.

Stages of the learning process:

No.	Stage	Explanation
1	Stage of motivation	Motives to learn are forming the prerequisite for learning.
2	Stage of difficulties	Usually the acquisition of an object of learning is combined with difficulties which may be very powerful, so that the learning process fails.
3	Stage of solution	The learning difficulties are solved by adaptation of working behaviour, by experimenting and insight.
4	Stage of action and execution	According to the solution, preliminary practical trials are made.
5	Stage of retention and practice	What has been learned is memorized by repetition and practice, so that the new competence is strengthened.
6	Stage of making available and transferring what has been learned	What has been learned is transferred to professional situations and is available for application in professional work.

4. The interaction of students and teachers

4.1 Levels of communication

In the previous chapters we have seen that motivation of students at the beginning of the learning process is very important. But whether a student learns anything in the training session is not only depending on **what** the trainer/teacher is teaching or training in terms of the subject matter. Above all, successful learning is also depending on **the atmosphere in the learning group** or class and on **the relationship between trainer/teacher and the students**.

Any form of teaching gives both factual information and also an indication of the relationship between trainer and students (relational information).

We can name these two levels of communication

Content-level versus relationship level

or

Factual level versus personal level.

In other words: people always regard not only **what** is being said, but as well **how** it is said (e.g. in a friendly or unfriendly way).

Now please consider whether the behaviour of a trainer/teacher contains anything which hinders students from learning or which particularly motivates them to cooperate and learn.

Teaching/learning processes do not consist of **active teaching by the trainer** on the one hand and **passive learning by the students** on the other hand. On the contrary: both patterns of behaviour are mutually related, e.g. the students ask questions - the teacher answers, the trainer sets an exercise - the students solve it.

This, the students react in a specific way to what the trainer is saying or doing, and vice-versa. The reaction of students can lead to a change of behaviour in the trainer, because it forces him to have new insights of himself and of his effect on others.

It once happened in class that the trainer was not able to answer questions by students. The trainer did not want to admit this, and tried to conceal his lack of knowledge by ignoring the question, by throwing the question back at the students, or by setting it as homework. In time, however, the students recognized the tactics of the trainer. As he again shirked answering a question, he overheard one student saying quietly to his neighbour: „Did you hear, he’s back to his old trick; he doesn’t know the answer either“. The trainer felt caught. He resolved to say so in future if he does not know the answer.



Case Study

This harmless example illustrated that the way of communication influences the interaction between students and trainers or teachers.

Interaction means that teachers/trainers and students relate and supplement each other in their behaviour.

Self-reflection 2:

Think of situations similar as described in the case study above. How did you as teacher or trainer react in similar situations? What different ways of reaction are possible? Please write three different ways how a trainer/teacher can behave in situations like this.



4.2 Factors influencing interaction

The relationship between teacher and students is influenced by multiple factors which can be summarized in two groups:

- a) **Personal factors** (factors lying in the person of the trainer and/or the students)
- b) **Environmental factors** (factors lying in the training environment).

Personal factors

Both trainer and students have quite **different experiences** with several types of people (family members, peer group, superiors, etc.). These different experiences and expectations influence their behaviour. For example, trainers who themselves have been able to learn quickly and easily assume that students find it easy to learn as well. In the view of these trainers, students who cannot keep up in training might occur lazy.

Trainers and teachers tend to have a different behaviour towards students with a high or a low level of performance. The behaviour of the teacher/trainer might have an encouraging or discouraging effect on students. Their self-confidence and thus their work performance is reinforced or weakened.

Trainers are often not aware of this interaction between their expectations and behaviour in the teaching process and the respective performance of the students. For these teachers/trainers the reasons for failure of students lie exclusively in their individual characteristic features.

Environmental factors

Training always takes place within a framework of a specific institution, and under certain social conditions. These factors transport not only knowledge in certain subject matters but as well the respective values and attitudes of the institution.

Further environmental factors are the behaviour and expectations of colleagues and superiors, etc.

These environmental influences, together with personal factors, influence the trainer's understanding of his role as trainer, i.e. his behaviour within the teaching/learning process. The reaction of the students to this behaviour then acts for the trainer either as confirmation or as an indication that students behave in a wrong way.

The fact that the teaching/learning process consists of a process of interaction can be of use for the trainer/teacher with respect to his task of teaching in two ways. It can

- support and/or organize the formation of social relationships to promote learning
- and
- promote interactive learning.

5. Session planning

Many training institutions and vocational schools require trainers/teachers to write daily session or lesson plans in a prescribed format. Normally, daily plans outline content to be taught, motivational techniques to be used, specific steps and activities for students, needed materials, and evaluation processes. The amount of details can vary.

Daily plans can take many forms. The features of a particular session often determine the form of the plan.

The following session plan is to be regarded as an example that should be extended or changed according to the respective institution and subject matter.

Session topic/subject:.....		Grade/level:
1. Pre-instructional planning		
Objectives	Domains	
_____	Cognitive	
_____	_____	
_____	Affective	
_____	_____	
_____	Motor/skills	
_____	_____	
Materials/special arrangements/individual modifications		

2. During Instruction		
Introduction/establishing set _____		
Sequence of learning activities _____		

Closure _____		
Assignment _____		
3. Postinstructional		
Evaluation of student learning		
Formal _____		
Informal _____		
Evaluation of the session (How did the session go? Revisions needed?):		

Conclusion about „session management“

All in all, there are many factors which influence teaching and learning processes and one core competence of teachers/trainers is to be able to manage all of them.

Although we have divided session management only in three components, this topic is quite comprehensive. Of course, we have not mentioned one important factor of session management which enables us to optimize this competence during our professional life: experience. But unreflected experience alone will not improve professional behaviour. You will improve the quality of teaching and training if you always think about and reflect “How did I deal with certain situations and how can I improve my performance in a similar situation in the future?”

6. What is Evaluation?

Many people working in the educational sector are likely to agree that evaluation and that this information should be linked to decision-making. The information which has been gathered might include the scores students have achieved in tests, measures of cognitive abilities, measures of attitudes, data from observations, questionnaires, and interviews from students, teachers and other people associated with the training programme.

The following statement has been collected to show the broad area of evaluation (see Bennett 2005, p. 5 and Kirkpatrick 1998).

Evaluation is ...

- „ ... the process of determining to what extend educational objectives are being realized by the programme of curriculum and instruction“
- „ ... the collection and use of information to make decisions about an educational programme“
- „ ... concerned with securing evidence on the attainment of specific objectives of instruction.“
- „ ... the process of delineating, obtaining and providing useful information for judging decision alternatives.“
- „ ... the assessment of merit or worth.“
- „ ... an approach to determine the effectiveness of a training programme.“

On a more abstract as well as comprehensive level we can define:

„Evaluation means ...

- the methodological acquisition of data and
- the justified assessment of procedures and results in order to
- understand and design a training measure in a better way through results monitoring, control and reflection
(Reischmann 2003, p. 18).

The evaluation of a training programme or other educational programmes should be embedded in the systematical composition of ten factors which must be considered carefully to get effective results (see Kirkpatrick 1998):

No.	Factor	Description
1	Determining needs	Effective programmes always must consider the needs of the participants; the assumptive needs usually are given in the curriculum.
2	Setting objectives	After determining the needs we have to take care of the learning objectives. What knowledge, skills and attitudes do we want the participants to learn? (see Module 3)
3	Determining subject content	Needs and objectives should be prime factors when the subject content has been determined in the curriculum or training plan.
4	Selecting participants	To select appropriate participants the respective prerequisites of the programme have to be clarified.
5	Determining the best schedule	... in terms of best possible conditions for learning.
6	Selecting appropriate facilities	... which should be both comfortable and convenient if possible.
7	Selecting appropriate instructors	... who are experts in the subject being taught and who have the ability to communicate and the skill to get students to participate.
8	Selecting and preparing teaching aids	... in order to support the training and learning processes.
9	Coordinating the programme	... in order to put all things of the programme together
10	Evaluating the programme	... in order to improve the training programme.

As trainers and teachers we can only influence some of these factors because most of the factors are set by the curriculum or the training institution/vocational school. On the other hand it is obvious that evaluation is only one step of the systematical design of a training programme. If the (learning) objectives are not given in a precise manner, we cannot expect the evaluation giving good results.

7. Levels of Evaluation

The US-american research about evaluation, which is characterized by the findings of Kirkpatrick (1998), distinguishes four different approaches with different scopes:

- a) Reaction
- b) Learning
- c) Behaviour
- d) Results

Approach	Meaning, Object(s) of research	Remarks
<p>Reaction</p>	<p>“Reaction” means “opinion” of participants about the programme;</p> <p>how participants “react” to the programme;</p> <p>in the purpose of “customer satisfaction”</p>	<p>Usually the participants are asked about their opinion of the programme or course; they have to give their assessment/rating on a scale e.g. beginning with “excellent” or “fully agree” to “very bad” or “fully disagree”.</p> <p>Advantage:</p> <ul style="list-style-type: none"> - This evaluation method is easy to implement - You easily can get an overview of participants assessment of the course - results are rapidly available - questionnaires/forms can be used for different training courses/ programmes <p>Disadvantage:</p> <p>Participants can only give their subjective impression (that’s why we say “opinion”) which has been influenced by many factors that must not necessarily match up with reality. Sometimes these evaluation forms are called “happy sheets” because you easily can see, if participants have been “happy” during this course.</p> <p>There is no information given whether they have really learned something or whether they are able to implement new skills and knowledge.</p> <p>A more general point of criticism regards the fact that learning need a certain amount of effort to acquire knowledge, skills and attitudes. Sometimes participants judge a course as “poor” because the trainer expected (in their opinion) too much effort from the students.</p> <p>The course would have been evaluated as “excellent” if the students had some fun and had no to make these efforts.</p> <p>Furthermore, you can be very satisfied with a course without having learned anything.</p> <p>Evaluating on “reaction level” does not give any information about the output or outcome of the training course.</p>

<p>Learning</p>	<p>“Learning” means knowledge and skills which have been acquired during the training programme; “Learning” can be defined as the extend to which participants change attitudes, improve knowledge, and/or increase skills as result of attending a training programme; what is the output of the programme or course?</p>	<p>To know if students have acquired knowledge, skills, attitudes you have to check if they really have acquired certain knowledge, skills and attitudes. To check you can use tests, examinations, simulations, sample works, tasks etc. You should not ask them what they have learned, you should let them show what they have learned.</p> <p>Advantage: This approach gives both the trainer and the students a realistic assessment of the students’ abilities after a training course.</p> <p>Disadvantage: The preparation of respective tests and examinations etc. is very often very time-consuming. Complex learning objectives e.g. in the field of “generic skills” (see Modules 1 and 2) are hardly be evaluated. Furthermore, the evaluation of knowledge and skills at the end of a training does not give any information, whether students apply these new knowledge and skills at the workplace.</p>
<p>Behaviour</p>	<p>“Behaviour” or “application” is aiming to define the application of the newly acquired skills and knowledge e.g. at the workplace or in the respective application situation.</p>	<p>It is one thing to know something or to be able to perform a certain skill; another thing is, whether this knowledge or these skills are being applied in practice. We only can measure “behaviour” if we go to the respective application situation (workplace, ...) some time after the end of the course and examine, whether the skills/knowledge is being applied by the former participant.</p> <p>Advantage: Here we really can determine if the course/programme has led to a different behaviour.</p> <p>Disadvantage: It is very time-consuming and costly to collect necessary data when (former) participants are placed in different locations. Moreover: The non-application of skills and knowledge does not automatically mean that the learner has not acquired these skills/knowledge in the training programme/ course; we all know the situation that we have the certain knowledge (“smoking is dangerous to your health”) and we do not apply this knowledge (we keep on smoking). Another reason for non-application of skills and knowledge might be that participants have learned skills which they do not need at the workplace (the acquired skills do not match to the needed skills).</p>

Results	<p>“Results” can be defined as the final results that occurred because the participants attended the programme. These final results can include e.g. increased production, improved quality, decreased costs, higher profits, ...</p> <p>Another word for “results” is “effects” or “impact”.</p>	<p>Usually these “results” are the reason for implementing training programmes.</p> <p>Sometimes there is no difference between “behaviour” and “results”, e.g. when the objective of a training programme is the acquisition of skills to apply a certain software package.</p> <p>In other cases, “results” are aiming to the effectiveness, e.g. the effect of the correct application of the software package (because now certain work processes are finished in less time).</p> <p>Advantage: This approach is aiming to the “real” reason why (vocational) training programmes are conducted.</p> <p>Disadvantage: “Results” are usually not easy to measure.</p>
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As teachers and trainers we usually are concerned only about the first two approaches of evaluation “reaction” and “learning”. One reason for this is the fact that in our case the application situation (and location) is different from the training situation (and location) which usually is in the vocational school or training institution.

Activity 2:

Name three **advantages** of an evaluation on the level „reaction“

Name three **disadvantages** of an evaluation on the level „reaction“.



8. Types of Evaluation in TVET

The purpose of this chapter is to provide you with information about several different types of evaluation and to enable you to select the appropriate type of evaluation for your specific purpose in school.

8.1 Summative and formative evaluation

Summative evaluation refers to the evaluation of the learning process and summarizes the development of students at a particular time, e.g. after a specific training course or after a school year. After this period of training, the student sits for a test and then the teacher marks the test and assigns a score or a grade. The test aims to summarize learning up to that point. The test may also be used for diagnostic assessment to identify any weaknesses and then build on that using formative assessment.

In other words, summative evaluation seeks to monitor educational outcomes, often for purposes of external accountability.

In addition to this, summative evaluation (or assessment) is commonly used to refer to assessment of teachers/trainers by their respective supervisor to measure all teachers on the same criteria to determine the level of their performance. The evaluation usually takes the shape of a form, and consists of check lists and occasionally narratives. Areas evaluated may include classroom climate, instruction, professionalism, and planning and preparation of the lesson.

Formative evaluation is typically contrasted with summative evaluation. Formative evaluation is a range of formal and informal evaluation procedures employed by teachers or trainers during the learning process in order to modify teaching and learning activities to improve student performance. It typically involves qualitative feedback (rather than scores) for students. The feedback focuses on the details of content and performance.

Feedback on their performance enables students to restructure their understanding and/or skills and build more ideas and capabilities.

Purposes of formative evaluation:

- to provide feedback for teachers and trainers to modify subsequent learning activities and experiences;
- to identify and remediate group or individual deficiencies;
- to move focus away from achieving grades and onto learning processes, in order to increase self efficacy and reduce the negative impact of extrinsic motivation;
- to improve students' awareness of how they learn.

- ongoing formative evaluation allows both for improvement of instruction and student focus on progress.

8.2 Comparative and non-comparative evaluation

Every evaluation has a comparative element: an actual value is being compared with a target value and the discrepancy is going to be evaluated. But this is not within the focus of comparative evaluation. Comparative evaluation collects data from a target group at a certain moment and compares these data with the data of a different group of people. This means that you need two comparable data records.

As teachers and trainers we usually are not involved in comparative evaluations.

If there is no similar target group to compare certain data with, you collect data from one target group only and you evaluate these data. This is the “normal case” for teachers and trainers.

8.3 Internal and external evaluation

Doing an evaluation it is often not admissable or it “looks bad” if you are evaluation a your own work and if possible, you should avoid this. This would be the case if you ask students to evaluate their performance by themselves. The results of this “self-assessment” are usually different from the assessment/evaluation of the teacher or trainer. You find a similar case if you remember situations when you as teacher or trainer are evaluated or assessed. In most educational systems we have a system of evaluating the teacher performance by “supervisors” who come e.g. once a year or when a promotion is pending. They observe your behaviour and actions in classroom and evaluate your performance. It would be an “internal” evaluation when you evaluate your own performance by yourself and deliver the results to the supervisor. Now we can see that “internal evaluation” sometimes might be funny because every student and teacher most probably would rate his own performance at least as “sufficient”.

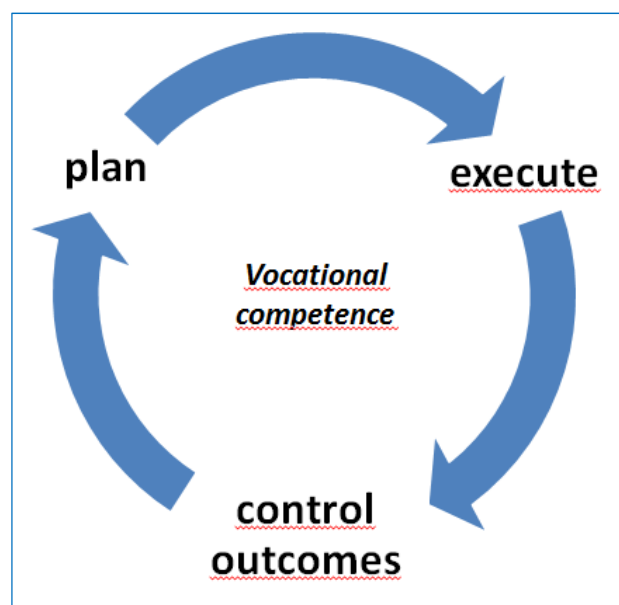
So, a “neutral” person seems to be more appropriate for this duty. In this case – if somebody who is not involved in the project or programme is doing the evaluation – we call it “**external evaluation**”.

But now we enter “conflicting areas”. On the one hand we – as teachers and trainers – have to evaluate students’ performance, and on the other hand we have to qualify prospective skilled workers who are able to **plan** and **execute** their work processes by themselves and finally are able to **control the outcomes** of these work processes. These three items are the core of “vocational competence” within German vocational training regulations. Even if there are different approaches worldwide we can say that the ability to plan, to execute and to control is substantial for the competence of a skilled worker.

This is conflicting because we have to train the students to be able to control their outcomes reliably (internal evaluation) and at the same time we have to control their performance according to the respective regulations (external evaluation). We must let the students get used to internal evaluation (= self-evaluation).

To get students accustomed to evaluate their own work we can comply to the principle:

Internal evaluation (by students) as often as possible, and external evaluation (by teacher) as often as needed.



Vocational competence in German TVET

8.4 Quantitative and qualitative evaluation

Whenever we want to measure or evaluate students' performance we have to collect and analyse data. These data come from tests, questionnaires, observations or probably from other sources (e.g. documents) which are relevant.

The collected data can be classified as quantitative or qualitative data.

Quantitative data make use of numbers, which can be analysed by statistical techniques (e.g. arithmetic mean). Quantitative data are normally gathered by **questionnaires** (see below) and from test results or existing databases.

If we want to see the performance of a whole school class, we can collect the marks of all students (= quantitative data) and calculate the arithmetic mean to get an indicator of the the average performance of the class.

An evaluation can record **quantitative** data. Mostly these are

- number of items
- number of faults or errors
- number of solved tasks
- number of participants
- number of training sessions
- number of training hours
- ...

Even information about the quality can be collected quantitatively.

Quantitative example:

	1	2	3
How did you find the training programme?	Very good	good	poor

In this example the assessment is “translated” into numbers that can be counted and further processed.

Qualitative data are non-numeric in nature, making use of words in the form of descriptions. Such data are normally gathered through **interviews** or **observations**.

Qualitative evaluations collect statements in the form of words without any given response option (e.g. like “very good”).

Qualitative examples:

How did you find the training programme?	<p>.....</p> <p>.....</p> <p>.....</p>
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Another example for the collection of qualitative data would be if you ask the students within a test:

Describe the lever action in general and give a practical example.	<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>
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In this case the students have to answer this open question in their own words. The problem here is that we have to spend more time in evaluating the answers and that students must have a certain written ability of expression – in other words: they must be able to form correct sentences.

An **advantage of quantitative evaluations** is that we easily can ask many people, collect data and evaluate the results within a short period of time. You easily can imagine that the evaluation of data collected with the help of a questionnaire where students only have to tick boxes is much more convenient than reading the sometimes long-winded answers.

Disadvantage of quantitative evaluations is that the variety of answers is small and you only get answers on what you have asked and that you do not get answers on what people want to tell you and not on what they are particularly interested or want they really want to tell you (as it is the case in qualitative evaluations).

Of course qualitative evaluations need much more time to be analysed.

Activity 3:

Define the following terms in your own words:

- a) Comparative evaluation*
- b) External evaluation*
- c) Qualitative evaluation*



9. Methods of evaluation in TVET

An evaluation requires the collection of data. This collection of data must take place in a systematical way. When implementing an evaluation, we have to be accountable for the chosen method and for its advantages and disadvantages.

The most common methods to collect data in TVET are

- **Examinations and tests**
- **Observation**

9.1 Examinations and tests

This is the most widespread evaluation method in schools and training institutions. Usually we are not differentiating between “examination” and “test”. Examinations and tests can be written, oral or practical. In contrast to an observation, written or oral examinations/tests should be used, when behaviour, feelings, attitudes or the way, how people are considering and interpreting the world can not directly be observed or when students have to perform certain skills after attending a certain course or training programme. The grade of their performance will be checked by the evaluator (teacher/trainer).

Tests should normally be validated by a third party (this means not by the teacher or by the student) to become a „standardized test“. An example for a standardized test is in many countries the way how knowledge is tested before you get a drivers licence. Using a standardized test, you can be sure that you measure knowledge or skills that you really intend to measure.

Of course, we often use tests which are not standardized, but at least the final exams should fulfill this quality criteria.

You can implement examinations using a questionnaire (written) or using interviews (oral), which can be highly structured, less structured or not structured.

Examination	Degree of structuring	
	Less structured	Highly structured
Oral	Narrative interview	Guided interview
written	Questionnaire with open questions	Questionnaire with closed questions

Example of a question from a highly structured questionnaire with closed questions:

<i>(Please tick one box)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How do you assess the amount of the study materials?	Too large	appropriate	too short

This example makes sense when we already know in advance what answers are possible.

But: If a student for instance wants to tell us that he found Module 1 of the study materials „too large“, and Module 3 „too short“, he is not able to give us the appropriate answer because we have asked about the „study materials“ as a whole and not about every module of the study material.

Another example from TVET:

A lever is in balance if the total left side torque is equal to the total right side torque. Which statement is correct?	<i>(Tick one box only)</i>
„A lever remains in balance when the sum of working powers is zero“	<input type="checkbox"/>
„A lever remains in balance when the sum of working powers is not equal to zero“	<input type="checkbox"/>
None of the statements above is correct.	<input type="checkbox"/>

In this case the evaluation is easy because only one statement (the first one) is correct.

You can clearly see one of the disadvantages of this method.

If you use closed questions in a highly structured way, you will get answers **according to the view of the interviewer.**

If you use open questions, you will get answers **according to the view of the respondent.**

Advantages and disadvantages of oral and written examinations/tests		
	Advantages	Disadvantages
written	<ul style="list-style-type: none"> - A great number of people can be asked - You quickly get the answers in written form - You are sure that all people have got the same questions 	<ul style="list-style-type: none"> - Not everyone wants to be asked like this and will not return the questionnaire - Good literacy is needed and a certain amount of motivation to spend time in answering questions - We cannot react on hints of the respondents, e.g. when they say that a certain question should be asked as well
oral	<ul style="list-style-type: none"> - People can speak as they like and they are not hampered through writing - Sitting eyeball to eyeball with the interviewer answers usually are not refused - The interviewer can react quickly on suggestions of the interviewed person 	<ul style="list-style-type: none"> - Spontaneously answered questions not necessarily are true - Interviews are time-consuming - Analysis of data is time-consuming as well

Advantages and disadvantages of practical examinations/tests	
Advantages	Disadvantages
<ul style="list-style-type: none"> - Knowledge and skills have to be „demonstrated“; the results are obvious - The quality of data collection can be checked by others - When using standardized tests the results can be compared to other target groups - The construction of tests might support the didactical planning and the design of a training measure 	<ul style="list-style-type: none"> - There are few standardized tests available - Tests are always geared to specific contents; when you modify the contents you have to modify the test as well - Tests are not suitable for all learning objectives (generic skills!) - Tests are always connected with a certain „exam stress“

Practical examinations will be also a topic of Module 7.

9.2 Observation

Not every „watching“ is observation! Observation is a method of evaluation when these four items are applicable:

- A question or problem to be evaluated is given
- The observation is planned systematically
- It will be documented
- The quality of conclusion is checked and tested.

Observation collects data at that place where they occur, in their normal context, not „filtered“ by the interviewer or respondent.

„Observation is the best technique to use when an activity, event, or situation can be observed firsthand, when a fresh perspective is desired, or when participants are not able or willing to discuss the topic under study“ (Merriam 1988, p. 89).

Observation is one of the evaluation or assessment methods which is frequently used in TVET because it is very useful for evaluation **skills and attitudes**. We will go deeper into that topic in Module 7.

Activity 4:

Name three **advantages** of an „observation“.

Name three **disadvantages** of an „observation“.



10. Hints for designing a questionnaire

When designing a questionnaire we have to consider at least three things:

- I. The particular target group for whom the questionnaire is being designed
- II. The particular purpose of the questionnaire
- III. How questions will be placed in relation to each other in the questionnaire.

The following suggestions are compiled mainly from Taylor-Powell 1998:

- a) Use simple wording
- b) Avoid the use of abbreviations, jargon or foreign phrases
- c) Be specific
- d) Use clear wording
- e) Include all necessary information
- f) Avoid questions that are too demanding and too time-consuming
- g) Avoid making assumptions
- h) Avoid bias in the question

You can find an example coming from the “Copper Development Association” in the United Kingdom **to test the skills** further and work towards gaining a “City and Guilds qualification in Industrial and Commercial Copper Tube Installation”:

<http://www.ukcopperboard.co.uk/education/quest.shtml>

Another sample questionnaire for the evaluation of a workshop (Workshop Questionnaire.pdf) is to be downloaded in our online-seminar.

11. Conclusion

Many professionals in the education sector are frequently talking about evaluation and you hardly can find a training programme without evaluation. Evaluation is very popular. But - as easy it is to speak about evaluation, as difficulty it may be to implement it.

Doing a good job in this respect we have to take care of these things:

- we need clearly defined learning objectives which are testable; if the learning objective is not clearly defined, we are not able to evaluate the achievement of this objective;
- we must specify what exactly we want to measure (skills, knowledge, attitudes);
- we must select an appropriate instrument which is suitable to measure exactly what we want to measure;
- we finally should avoid subjectivity.

If we take these recommendations seriously we can step-by-step improve our professional competence as teachers and trainers because evaluation forces us to reflect our teaching and training behaviour in order to improve students' learning progress and competence.

More about this topic is to be found in the module "Assessment and Evaluation in Technology Education".