TRAINING AND EDUCATION

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PROFESSIONAL MILITARY EDUCATION. APPRECIATING CHALLENGES OF THE LEARNING ENVIRONMENT

"The sooner I can get rid of the questions that are outside the military scope, the happier I will be! Sometimes I think I live ten years each week, of which at least nine are absorbed in political and economic matters" [1, p. 95], those are the words of General Dwight D. Eisenhower in his letter to General George Marshall, Chief of Staff of the US Army, regarding the situation in North Africa during Operation Torch in November 1942.

Unfortunately, this can never happen. No military leaders have ever gotten rid of the questions outside the military scope, neither during the planning nor execution of operations. Military planners at all levels have to appreciate the complexity of the contemporary operational environment, which is rapidly changing due to the significant number of variables (military, religious, ethnic, economic, information, etc.); populated with a large number of non-state actors; and influenced by the rapid development and spread of information technologies. The contemporary operational environment requires a comprehensive approach[1] to problem solving and it sets high demands for planners and decision-makers.

In order to operate effectively, military decision makers require abilities which are related to the category of productive, cognitive, and interactive skills associated with critical thinking, creativity, problem-solving and interpersonal communications. This means that officers must be taught not what to think, but how to think. William S. Lind, the author of the *Manoeuvre Warfare Handbook,* has come to a similar conclusion discussing the requirements for the education and training of the Marine Corps: "True education removes the need for checklists and "school solutions," enabling commanders to approach each problem equipped with a large array of possible solutions, placing the problem in a larger context and evolving innovative answers". [2, p. 57]. He argues that in order to provide professional development opportunities, professional military education needs a high quality effective learning environment; desired educational outcomes can only be achieved through using teaching methods and instructional activities which promote students' critical thinking [2, p. 59]. C. M. Reigeluth's confirms Lind's arguments, "In order to develop good, effective skills in students, it is necessary to teach them good, effective methods". [3, p. 347]. The selected methods have to "develop the analytical and decision making skills, the internalisation of learning, learning how to grapple with messy real-life problems, the development of skills in oral communications and often team work. It is a rehearsal for life". [4, p. 30].

Unfortunately in the military, and particularly in international military educational institutions, instructors are often not prepared to deal with these challenges. Instructors approach teaching by relying

1 *"Whilst there is no commonly accepted definition for 'Comprehensive Approach', there is broad agreement that it implies pursuing an approach aimed at integrating the political, security, development, rule of law, human rights and humanitarian dimensions of international missions."* [89].

on intuition and their own life experiences, rather than a professionally justified curriculum, and teaching and assessment methods. Even professional educators may unknowingly fall into the trap of trying to coach others, relying too heavily on their own preferred learning styles rather than adapting to the style of those whom they are attempting to educate [5, p. 5].

The purpose of this article is to examine the main characteristics of the learning environment of professional military educational institutions. The key subjects addressed in this paper are: constructivist learning theory, adult learning, and professional military education.

Applying Constructivism learning theory

There are a substantial number of overlapping teaching and learning theories and concepts which are constantly evolving. The major learning theories are behaviourism, cognitivism and constructivism. Constructivism is among the most influential theories of learning and is considered as "one of the most significant areas for current research and practice in adult education" [6, p. 1]

The main difference between learning theories is in the distinct view of how knowledge, skills and attitudes are acquired. "Learning theories have two chief values (…). One is in providing us with vocabulary and a conceptual framework for interpreting the examples of learning that we observe. The other is in suggesting where to look for solutions to practical problems". [7, p. 277]Behaviourism is a broad set of theories based on the idea that "behaviour is shaped by the consequences that follow the behaviour". Behaviourist theories ignore the cognitive and psychological factors of the learning. Learners are regarded as "passive responders" to the environment. [8, p. 20]. Cognitivist learning theory considers the learner to be an information processor, and learning is defined as change in a learner's schemata [9]. The constructivist "idea rests on the notion of continuous building and amending of previous structures, or schemata, as new experience, actions and knowledge are assimilated and accommodated". [10, p. 10]. The theory promotes the idea that the learning process accrues though reflection on the learner's own experiences and that the teaching must consist of appropriate educational strategies encouraging and promoting engagement of the students into "knowledge interpretation processes" [11, p. 29]. In constructivism, according to Kirschner, Sweller, and Clark, "learners, rather than being presented with essential information, must discover or construct essential information for themselves". [12, p. 1].

This factor sets a number of challenging requirements for teachers. Firstly, educators must make the transition from the role of lecturer to guide, mentor, coach, tutor and facilitator [13, p. 12], who are able to give up their own preferred learning styles and adapt to the style of those who they are attempting to coach [14, p. 5]. The preparation of directing staff members to take these roles should be taken seriously by military education institutions, thus enabling a learning environment where lecturing becomes one of, but not the dominating teaching method. Secondly, educators have to be prepared to facilitate the integration of the core characteristics and factors of adult and experiential learning (according to Kemp, the characteristics of experiential learning closely match adult learning principles [15, p. 221]) which are described later in this article. Thirdly, teachers must know the training audience. "The trainee characterisation provides a starting point for training delivery". [16] Understanding the training audience will allow the selection of teaching strategies encouraging students to reflect upon their experiences, thus setting preconditions for constructing new knowledge. But teaching strategies and methods are usually standardised and/or built before the students arrive at the education institution. This situation leaves the preparation of the training audience as the primary tool to set a proper learning environment.

Another aspect characterising constructivism is the view that the construction of new knowledge can occur only under circumstances where learners see the purpose of the learning and are involved in the development of the learning goals. This aspect was emphasised at Dr Kevin Basmadjian's speech at the Excellence and Education Seminar at Quinnipiac University. He stated that "constructivism sees learning as a process of sense-making (as opposed to acquisition of knowledge from somewhere outside the learner). Learners are co-constructors of knowledge". [17, p. 11]. Therefore, the effective

engagement of the learners and establishment of the learning environment for the 'sense making' can occur only if the learning challenges are relevant to the learners' capabilities and correspond to their interests. In other words: the teaching design has to appreciate students' intrinsic and extrinsic motivators. According to Raymond J. Wlodkowski, the author of "A Comprehensive Guide for Teaching Adults; Enhancing Adult Motivation to Learn", the learning environment must establish four essential motivational conditions: establishing inclusion or creation of a positive social climate, developing attitude, enhancing meaning and engendering competence. [17, p. 114].

In the constructivist learning environment, the learning process is equally as important as the outcome. "The problem drives the learning. Students learn domain content in order to solve the problem, rather than solving the problem as an application of learning" [3, p. 218]. This characteristic of the constructivist learning theory emphasises an important factor, which should be incorporated into the teaching. The problem context for learning must be realistic and within the scope of tasks the learner considers relevant for his/her future benefits. One of the most popular problem contexts for military education institutions is a case study. The designing of the problem context is a very complex and time demanding activity. When developed, the problem context (the case study) should accumulate learning audiences' interest and create a real world environment. It can be achieved by manipulation with the format which is used to present the problem context and by highlighting possible correlation of the setting factors with learning audiences' daily responsibilities. "When one becomes aware of a disequilibration (experience cognitive conflict, according to Piaget) between one's existing explanatory schemes and one's new experiences, one is moved to restore equilibrium by reconstructing the explanatory schemes; that is, one adapts one's explanatory schemes to fit experience". [18, p. 23]. It means that a case has to present a learning environment that allows the acquisition of new and adequate experience. It has to "provide an authentic context which reflects the way knowledge is used in real life; invite innovation and exploration by allowing for the complexity of the real world" [19, p. 3]. A general perception of the case study context is that it must be a real world historical event. But the true purpose of the case is to replicate the socio-historic context which is relevant to the learners, engages them and challenges them. It means that a fictitious scenario, if developed and presented properly, can serve the purpose as well as a real world case.

The weakness of the use of an artificial scenario for case teaching is the absence of a historic solution of the case. At the same time, the solution of the problem from previous courses can be a very good substitute. The decisions can also be manipulated by the instructors to shape the discussion. Another approach could be the integration of real life events and facts into the artificial framework, for example, credit potential opposing forces with attributes, interests and capabilities of real world 'red' actors. If students recognise the elements of contemporary conflicts in the scenario, it promotes interest to solve the problem, consequently creating preconditions for constructing new knowledge and skills.

It can be summarised that the teaching model which is based on constructivist learning theory should be designed so that it engages learners' "cognitive and affective domains" [20, p. 264], thus encouraging them to construct essential information or "make sense" of new experiences for themselves. One of the most influential and effective instruments to "aid scientific understanding and progress, as well as theory development and research" [21, p. 29], is Kolb's Experiential Learning theory. It is described in the following chapter.

Implementation of Kolb's Experiential Learning

The first and the dominating factor of the learning environment at military education institutions is that the training audience is composed of adult learners. Therefore, the teaching approach must follow the main principles of andragogy – "humanistic conception of self-directed and autonomous learners and teachers as facilitators of learning" to ensure the best results. [22, p. 336].

Kolb's learning cycle provides a highly influential and practical module of the adult learning process [23, p. 12]. The theory lies in the constructivist learning paradigm and is based on the thesis that new skills, knowledge and attitudes for adults are

acquired through concrete experience, reflective observation, abstract conceptualisation, and active experimentation rather than passive learning. The learning environment has to create opportunities for the training audience to adapt smoothly through elements of the cycle, ensuring "conscious and deliberate learning from the experiences" [24, p. 7]. This kind of learning environment can be created only through selection of proper instructional activities and teaching methods.

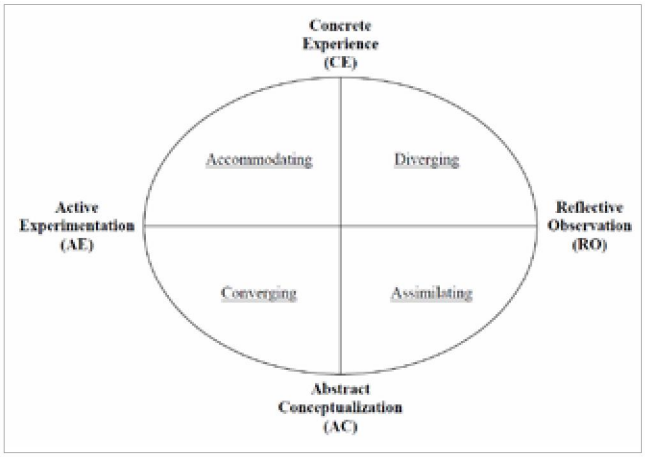

Figure 1. The Experiential Leaning Cycle and Basic Learning Styles (Kolb, 1984). [25, p. 39]

Typically, the learning cycle starts with the concrete experience or gathering of facts. The most typical methods and activities include lectures, simulations, and other in class activities to recall someone's experience. For example, one of the subjects taught at the professional military educational institutions is NATO Knowledge Development and Comprehensive Preparation of the Operational Environment (CPOE). It is a relatively new concept introduced in NATO with the purpose of enabling the assessment of a wider spectrum of factors of the operational environment. If the teaching is to be initiated at this stage of the cycle, it could be done by introducing the audience to examples illustrating problems NATO has faced during contemporary operations due to weak understanding of the operational environment. This should recall audiences' experiences and set preconditions for the next stage – observations and reflection.

The second stage is reflective observation, which is a bridge between concrete experience and abstract conceptualisation. The reflective observation is the stage of the learning process where the student reflects on what he has noticed during the experience stage of the learning. In this stage, students evaluate the facts. The traditional methods applied for the reflection are group discussions, brainstorming or answering questions. Using the same example of the NATO concept of the Knowledge Development – the next step would include class discussions, brainstorming and sharing experiences about the particular subject.

Abstract conceptualisation is a process where conclusions identified during the reflection stage are developed into a hypothesis, put into context, linked with other experiences, and related to the earlier acquired theories. During this phase instructors should provide additional facts and theory, supporting the achievement of the learning standards. The most common methods to facilitate conceptualisation are modelling situation and development of projects. With regard to the Knowledge Development, it is the introduction to the audience of its theory, background, structure and procedures and the Comprehensive Preparation of the Operational Environment (CPOE). This phase would include distribution of the assignment and the training audience's orientation and preparation for the task.

The final stage of the learning cycle is active experimentation, where the projects, concepts and hypothesis are tested. During this stage, in the case of Knowledge Development, students would conduct Comprehensive Preparation of the Operational Environment by applying earlier acquired theoretical knowledge. After accomplishment of the task, students would arrive back into the first stage of the cycle with new, concrete experience.

If Kolb's Learning Module is applied to the teaching, instructors have to create learning opportunities so that the content of every learning objective, or in some cases supporting objectives, should be run through all four stages (small cycles); and the whole learning period of the operational planning process has to include all four stages as well (large cycle). In this case, every planning step and supporting concept of the planning process would be taught as a separate subject but within the context of the overall planning process with links identified and explained.

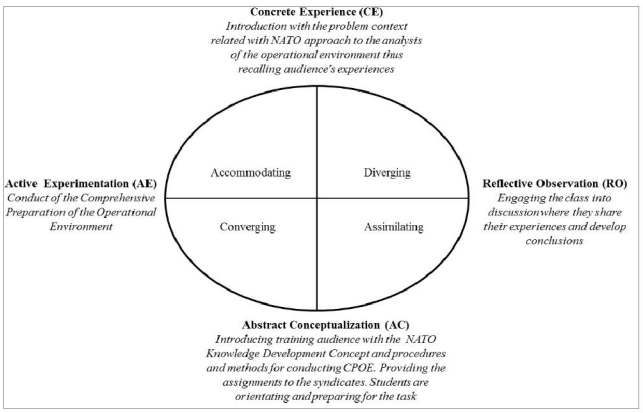

Figure 2. Teaching CPOE though Kolb's Experiential Leaning Cycle

Another very important aspect of the Kolb's Learning Module is his categorisation of the types of learning styles. There are different typologies for categorising learners' individual differences. Elizabeth Turesky and Dennis Galagher, in their research regarding the application of Kolb's learning theory in teaching adults' leadership skills, learned that development of these skills is a "highly individual process". Nevertheless, these individual differences tend to fall into patterns approximating Kolb's four modes [24, p. 7]". In 1971, David Kolb developed the learning style inventory, including four main categories of learners: divergers, accommodators, assimilators and convergers. Figure 2 is a graphical depiction of the learning styles in the context of Kolb's learning stages. According to Kolb, people with a diverging learning style are better with the generation of ideas, and prefer to work in groups. The dominating adaptive competences belonging to the diverging learning style is valuing skills. Assimilating learning style's dominating features is the capability of understanding a wide range of information and putting it into context. The most appropriate teaching methods for this category of learners are readings, lectures and exploring analytical models. The main adaptive competences are thinking skills. The converging style's main strengths are the ability to solve problems and make decisions. The preferable learning situations are related with experimenting with new ideas, simulations and practical applications. The main adaptive competences belong to the decision skills. The accommodating learning style mainly relies on intuition and information provided by other people than on logical analysis and facts. In the formal learning environment, the main preferences are related with accomplishment of assignments in team work and through testing different approaches. The main adaptive competences are related with actions skills. [25] Figure 3 summarises the main characteristics of the abovementioned learning styles.

ACCOMMODATORS	DIVERGERS
Getting things done Initiating tasks Getting personally involved Willing to take risks Strong sense of urgency Needs patience Speed vs. input	Creative Involve others in their process Try to view concrete solutions from different perspectives Do something new just for the sake of it People oriented Can miss the point Difficulty actually making decisions Focus vs. more ideas
CONVERGERS	ASSIMILATORS
Makes decisions from alternatives available Move towards decisions very fast Finds practical uses for theories May shut out information that does not fit the solution they develop May not involve others with different views Technical vs. people	Organising and integrating information Planners Creating models Developing theories Slow to make decisions Data vs. people

Figure 3. Learning styles chart (adapted from Kolb: learning styles inventory (2005)) [24, p. 11]

Different learners require different learning situations. Exemplary teachers can offer classes of very high quality using different teaching formats – lecture, discussion, active or cooperative learning assignments. [26, p. 203].

LEARNING ENVIRONMENT

Besides the learning styles of the training audience there are a significant number of different external and internal factors influencing the learning and teaching environment. Knowles, Holton and Swanson have developed a comprehensive Andragogy in Practice Module which depicts the main characteristics of the adult learning environment.

The model represents three groups of factors or rings of adult learning: the goals and purpose of the learning, individual and situation differences, and core adult learning principles. The authors of the module emphasise that the three rings of the module constantly interact; therefore, the learning transaction is a multifaceted activity. [22, p. 78]

The external ring represents the goals and purposes for learning. Knowles depicts three categories of goals – societal, individual and institutional. In the learning environment of military institutions, two of three categories dominate – the individual goals of

the students, and the institutional goals of students and instructor sending organisations. Individual growth is the dominating factor in the development and implementation of the learning programmes, although in some cases institutional goals affect the inner ring of the module.

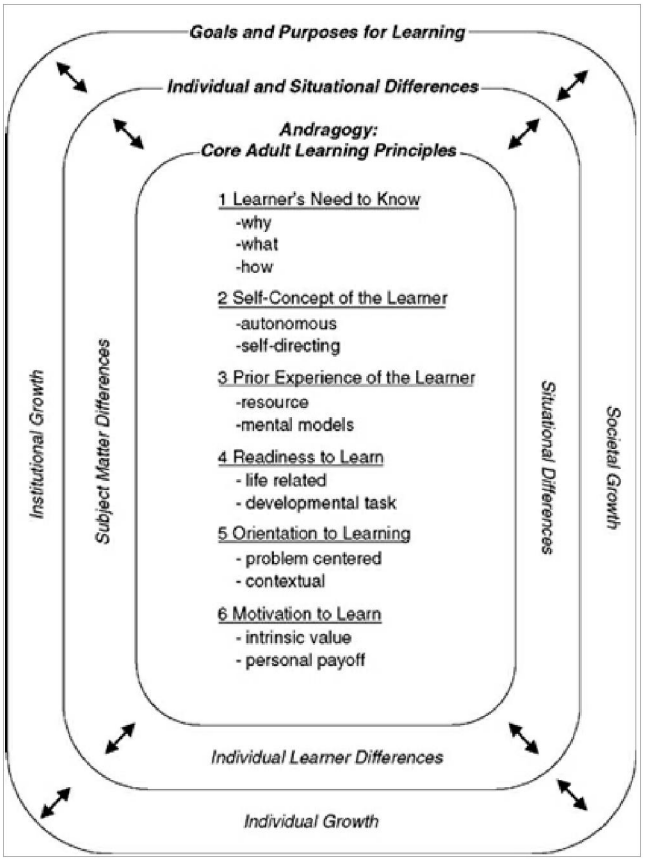

Figure 4. Andragogy in practice model [22, p. 79]

The middle ring represents three categories of individual and situational differences, including: subject matter differences, situational differences and individual learning differences. All three categories will have direct implications when developing teaching strategies. For example, the literature does not offer any useful tool which could be applied for the categorisation of the complexity of the teaching subject. The chart below depicts the author's proposed methodology for defining the complexity of the subject. The author proposes assessment of the complexity of the subject based on three criteria: the structure of the concept, complexity of the terminology and requirements towards student's previous experience related with the application of the concept. Based on this, the teaching subjects can be assessed as low (level 1), medium (level 2) or high complexity (level 3) subjects. Engagement techniques and teaching time allocated for every teaching subject can be selected based on its complexity.

Table 1. Classification of the subject complexity

	Level 1 Low	Level 2 Medium	Level 3 High
Structure of the concept	Connections among different elements and other concepts are clear and explicit. The organisational structure of the concept is simple	Connections among different elements and other concepts in some cases are implicit and subtle. The organisational structure consists of several levels that may be difficult to identify/ construct	Connections among different elements and other concepts are implicit and subtle. The organisational structure consists of several levels that are difficult to identify/ construct
Language and terminology	Includes some unfamiliar terminology and vocabulary	Contains unfamiliar terminology and vocabulary	Extensive amount of new terms and specific vocabulary (jargon)
Knowledge demands	Requires little personal experience	Demanding towards personal experience	Requires extensive personal experience

The next factor – situational differences, has very high implications for selection of the learning strategies. Situational differences include the socio-cultural context and influences, such as learning history, cultural, religious diversities, language proficiency level, genders, etc. Most of these factors are represented at professional military institutions and have to be appreciated when selecting student engagement techniques. A particularly important factor, represented at the international military colleges, is the differing English Language proficiency levels among students which have overarching implications on the teaching and learning. Learning at the College is done mainly through discussions and communication; therefore, language is the primary vehicle through which learning accrues. Due to language and cultural differences some students require more time to develop adequate conclusions. If such a chance is not offered, it creates the risk of losing learning opportunities and, consequently, the motivation of the students to participate. Therefore, the role of the instructor is to create a learning environment where all participants have equal

learning opportunities. Properly selected teaching methods can create equal opportunities for every class member and lessen the risks of 'losing' students during the course.

The third element of the circle represents the factors related to individual learner differences. There are numerous typologies of individual learning differences, and one of them (Kolb's) was discussed earlier. It is beyond the scope of this paper to discuss and assess how individual differences affect learning. But it has to be noted that the student body in military educational institutions usually represents diverse cultural and social values, and even the differences in the age of the training audience; the cognitive experience and prior knowledge of the training audience will differ significantly. A group with these characteristics is unprepared for learning, if not properly orientated. "Ensuring the progression of students from different educational backgrounds is one of the biggest challenges". [23, p. 11]. The main activities to mitigate the risk of failure have to include orientation of the learning audience and careful composition of the learning teams. The chart below shows the author's proposed classification of the training audiences' previous experience in relation with a particular learning subject.

Table 2. Proposed classification of the training audiences' previous experiences in relation with a particular learning subject

Level 1 Low	Level 2 Medium	Level 3 High
Most of the training audience have limited or no experience	The training audience have been indirectly exposed to the subject and are familiar with some of the supporting concepts	The training audience have been exposed to the subject and are familiar with some of the supporting concepts

The inner circle of the module represents core adult learning principles. All six factors are interrelated and set foundation and limits for the development of the teaching strategies. At the same time, motivation can be considered as the dominating factor of the learning environment. "Adults become ready to learn something when they experience the need to know something" [27, p. 14], which means – adults must be self-motivated to accept the offer to learn. In other words: the learning environment should create the "expectations that outcome will bring the desired rewards and required performance is within the capability of the person" [28, p. 12]. In military educational institutions, in most cases, students represent a wide scope of the interests and, therefore, differences in motivation. Therefore, one of the challenges for the teacher is to level the motivation of the diverse class. This can only be done through demonstrating the relevance of the subject the teacher is going to present with the future career of the student. Therefore, the teacher must be very familiar with the learning audience in order to be able to apply the most relevant teaching method. Effectiveness of the same student engagement technique for teaching the same subject for different classes will vary. The second – to level the load and the scope of the responsibilities so that assigned tasks would not exceed the capabilities of the individual. As Wlodkowsky emphasises in his book Enhancing Adult Motivation to Learn, 'if the learning tasks are well beyond their current skills or prior knowledge, people will not be able to accomplish them, no matter how motivated they are' [29, p. 28]. There are different methods of teaching that can be utilised to maintain a positive learning environment, for example, assignment of the individual projects, delegation of the distribution of the responsibilities to the learning audience or the selection of the appropriate content and format of the feedback.

Conclusions

The teaching model which is based on constructivist learning theory must be designed so that it appreciates and compensates different internal and external requirements and factors of the training audience. Different learners require different learning situations; therefore, learning situations created during the teaching must cover all four steps of the learning cycle – concrete experience, reflection, abstract conceptualisation and active experimentation. At the same time, the teacher has to appreciate and compensate for factors of the learning environment such as individual goals and presence of institutional interests, learners' previous experiences, socio-cultural context and influences. Therefore, when it comes to military educational institutions, besides particular military knowledge, professional development of the faculty should be associated with teaching theories and practical applications. Besides this, well prepared

teachers will eliminate the influence of the presence of the institutional interests.

One of the most effective tools to leverage situational differences is preparation of the training audience. Besides this, the preparation of the training audience can discharge the institutional interests and differences in students' experiences related with the subject. There are different methods to prepare the training audience for the learning. The most popular is provision of the preparatory material before classroom activities. This can include reading material, individual computer assisted learning, and individual projects. Another method includes development of the student's course guide with the purpose of providing direction to the students and making the course expectations clear. This guide could include description of learning objectives, teaching strategy, assessment principles, and expectations from the students, etc.

Usually the range of the learning subjects addressed in professional military educational institutions is very broad. The complexity of different subjects varies. Some of them, for example, operational planning process, are very complex and require the significant involvement of the instructors and are time consuming. Some concepts are very basic and can be acquired in a self-directed manner.

Table 3. Factors for selection of the teaching activities

Subject/ concept	Complexity of the subject (1-3)	Recommended time for teaching/ learning (1-3)	Training audiences' prior experiences (1-3)	Required learning level
	Level 1 – Low Level 2 – Medium Level 3 - High	Level 1 – up to 8 academic hours Level 2 – 8 to 16 academic hours Level 3 – 16 and more academic hours	Level 1 – Low Level 2 – Medium Level 3 - High	Learning levels in accordance with Blooms Taxonomy
Selected teaching activity			Establishment of the motivational conditions	

Factors of the learning environment discussed in the first part of this paper allow for the establishment of a framework for identifying the most appropriate student engagement technique and incorporation of institutional goals into the teaching process. These factors include: complexity of the subject and the training audience's previous experiences. Appreciation of these factors will allow selection of the student engagement technique and to assess the estimated time requirements.

The selection of the teaching approaches has to follow the dominating principles of constructivist learning theory:

1. Teachers serve in the role of guides, monitors, coaches, tutors and facilitators; the traditional teaching methods must be replaced with instructional activities supporting different learning styles.
2. Although learning objectives are defined by the educational institution, students must be involved in the development of learning goals. One of the methods which can be utilised is involvement of the training audience in the development of formative test questions. This method allows them to stay within the framework defined by the institution, and at the same time address topics most relevant to the training audience.
3. The problem context for learning must be realistic and within the scope of tasks the learner considers relevant for his future benefits. As discussed earlier, application of different scenarios (artificial, historical or a mixture) could be one of the most effective approaches to stimulate the interest of the training audience.
4. The tasks and problem context surrounding the task must be supported by intrinsic and extrinsic motivators. The four conditions of the motivational framework will be used as a criterion when developing instructional design for the operational planning process.

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