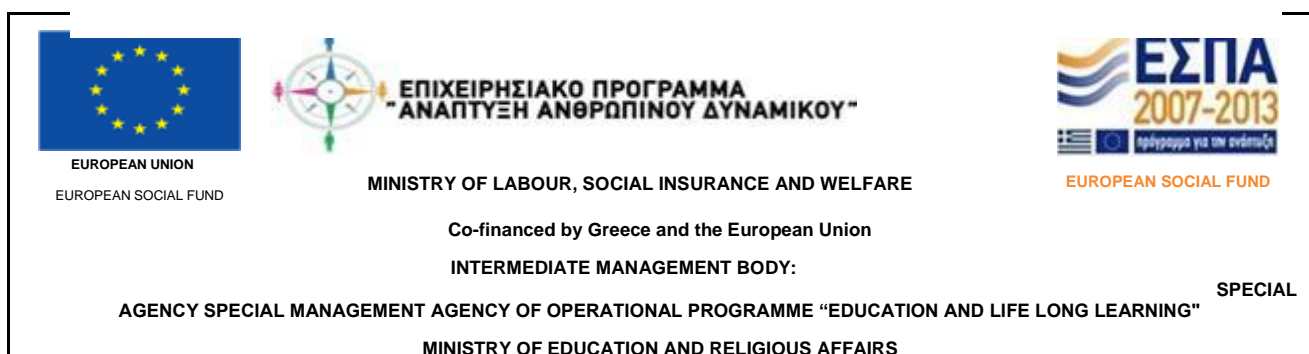


Methodology for the Design and Development of Learning Outcomes

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Athens/Split, January 2015



The project titled: "DEVELOPMENT OF NATIONAL QUALIFICATIONS FRAMEWORK" is implemented through O.P. "Development of Human Resources", with the co-financing of the European Union (European Social Fund - ESF) and National resources. The Intermediate Managing Body is the Special Management Agency of Operational Programme "Education and Life Long Learning" of the Ministry of Education and Religious Affairs.

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Acronyms

ECTS	European Credit Transfer and Accumulation System
E.O.P.P.E.P.	National Organisation for the Certification of Qualifications and Vocational Guidance
EQF	European Qualifications Framework for lifelong learning
ESCO	European Skills, Competences, Qualifications and Occupations Taxonomy
ESG	Standards and Guidelines for Quality Assurance for Higher Education
HQF	Hellenic Qualifications Framework
IEK	Vocational Training Institute
NQF	National Qualifications Framework
QF-EHEA	The Qualifications Frameworks for the European Higher Education Area
SEK	Vocational Training School

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Executive summary

The entire qualifications systems in any country are more and more forced to prepare competitive individuals who can respond successfully to the changing economic and other society challenges in the globalised world. Dynamic and ever-growing labour market terminated the traditional view of education as a single, initial period of life. In modern times, education is rather a lifelong process for all individuals, but not one-stage process.

Rapid development of modern technology and its influence to labour markets and general part of citizens' life in all member states of the European Union have presented numerous challenges to the education. Leading challenges are transparency, relevance and quality assurance of qualifications, which can be improved by shift and implementation of learning outcomes.




The implementation of learning outcomes approaches is of critical importance not only to the implementation of qualifications frameworks but also for a range of other purposes relevant to the modernisation of education and training. In European tools, such as Europass, EQAVET, ESG, ECVET and ECTS, ESCO, etc., a particular emphasis is given to learning outcomes. There are main areas where learning outcomes bring benefits: understanding and recognition of qualifications, supporting teaching and learning process, assessment and quality assurance.

There are a number of potentials by implementing learning outcomes in qualifications systems of any country. It is expected that learning outcomes are explicit components to support quality assurance system by making existing standards more effective and clearer. Learning outcomes can help quality assurance systems by making learning expectations understandable in terms of knowledge, skills and wider competence.

Reading well written learning outcomes, the complexity level and the profile of all learning achievement in a qualification are better understandable for all stakeholders. Learning outcomes facilitate the feedback of labour market stakeholders regarding the relevance of qualifications and their learning outcomes for their specific needs. Labour market partners very often are not experts in education and training processes, didactics and pedagogy. But they have better understanding of what to expect from learners when their achievements are expressed in terms of learning outcomes.

The shift to learning outcomes has also an impact to social and political aspects. Learning outcomes make qualifications system more transparent to all citizens and in that sense learning outcomes can shift the balance of influence over the way the system operates. Shift to learning outcomes enables the development of the relevant system for recognition and validation of non-formal and informal learning and to modernise recognition of foreign qualifications and citizens' mobility.




Learning outcomes enable learners to understand better the expectations they should meet, the preparation for learning and the management of their learning. Well-written learning outcomes allow both teachers and learners to have a clear picture of the behaviour that is expected at the end of a course or units. Clear learning outcomes support adjustment of proper teaching and training methods to facilitate the achievement of the intended learning outcomes. Learning outcomes force

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teachers and institutions to think deeply about what they are trying to achieve, but, in many cases, also makes them take the first step towards a systematic approach to course design and course monitoring. Learning outcomes also enable the assessment process to become more transparent and fit for purpose, because learning outcomes give exactly what behaviour is supposed to be assessed. Different types of behaviour require different forms of assessment.

Similar as most of national qualifications frameworks in the world, the Hellenic Qualifications Framework has introduced learning outcomes as the central concept in the qualifications system. In the HQF, learning outcomes are defined as statements of what a learner knows, understands and is able to do on completion of a learning process.

In Greece, as in many countries in the EU, to achieve all benefits by implementation of the HQF, it is important to guide all stakeholders in qualifications system with intention to facilitate the development and implementation of the HQF, including development and implementation of learning outcomes, which is the focus of this Methodology.

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1. Introduction

1.1. The need for the methodology – scope of the subproject

The National Organisation for the Certification of Qualifications and Vocational Guidance (E.O.P.P.E.P.) is developing the mechanism for registering the qualifications (titles of studies) of formal, non-formal, and informal learning and establishes the National Qualifications Framework (NQF). The objective is to classify qualifications in the levels of the NQF and reference them with the 8-level scale of the European Qualifications Framework for lifelong learning (EQF).

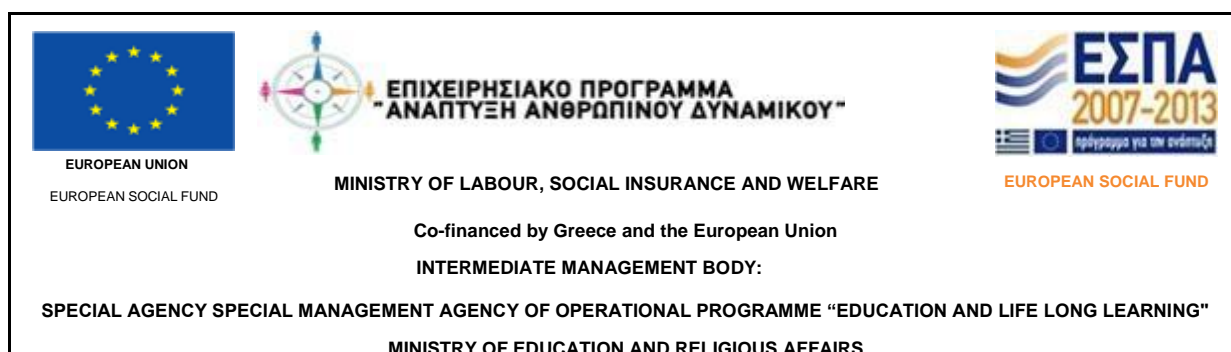
The Subproject 1, titled *“Development of methodology tools”* refers to the design and development of the necessary principles, methodologies, mechanisms and tools ensuring transparency in the various processes and in the terms for the establishment of the NQF. The Subproject 2, titled *“Classification of qualifications in the NQF and referencing thereof to the European Qualifications Framework”* aims further at the application of the methodologies and tools of the NQF in order to specialise and reference the qualifications with the 8 referencing levels of the NQF. Specifically, the scope of the work within the Subproject 1 *“Development of methodology tools”* is as follows:

1. Development of methodology, definition and development of learning outcomes.
2. Principles, criteria and procedures for the development and classification of other titles (review of European and international practices for classification e.g. of titles of non-formal education, of international qualifications, etc.).
3. Preparation of general principles, submission of proposals - applications for the classification of titles to the NQF based on the European and international practice.
4. Development of criteria for the evaluation of proposals - applications for the classification of titles in the NQF (examination of European and international practices, general principles and evaluation procedures).
5. Transfer of knowhow about the above issues to E.O.P.P.E.P. employees and other interested parties through seminars and workshops.

1.2. Potentials of learning outcomes

The implementation of learning outcomes approaches is of critical importance not only to the implementation of qualifications frameworks, but also for a range of other purposes relevant to the modernisation of qualifications systems, such as understanding and recognition of qualifications, better responding to labour market needs, supporting teaching and learning process, assessment and quality assurance.

Similar as most of national qualifications frameworks in the world, the Hellenic Qualifications Framework (HQF) has introduced learning outcomes as the central concept in the qualifications system. In the HQF, learning outcomes are defined as statements of what a learner knows, understands and is able to do on completion of a learning process.



The awarding of qualifications in Greece, as in many other countries, is mainly based on input-based parameters, for example on type of providers and required time for the completion of formal learning process. Thus, the shift to learning outcomes represents a significant change in the current qualifications system in Greece. It is expected that the use of learning outcomes will have a great impact on a wide spectrum of education and training practices and policies in Greece.

There are a number of potentials by implementing learning outcomes in qualifications systems of any country. It is expected that learning outcomes are explicit components to support quality assurance system by making existing standards more effective and clearer. Learning outcomes can help quality assurance systems by making learning expectations understandable in terms of knowledge, skills and wider competence.

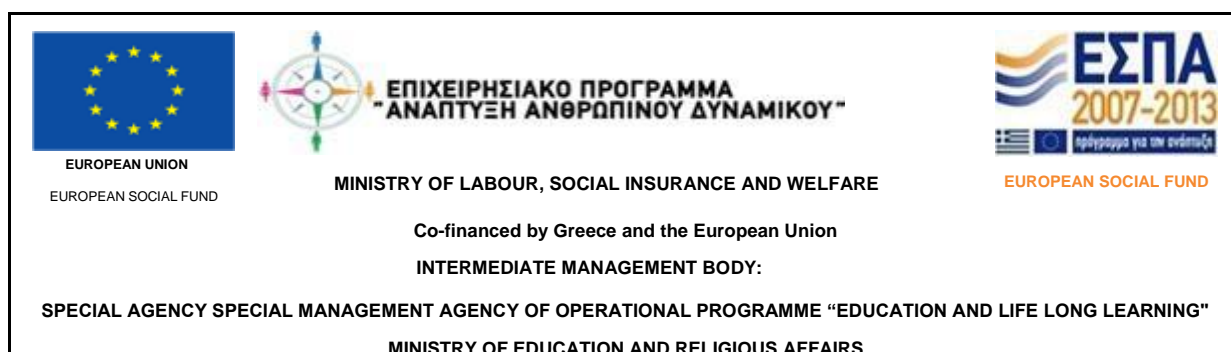
Reading well written learning outcomes, the complexity level and the profile of all learning achievements in a qualification are better understandable for all stakeholders. Learning outcomes facilitate the feedback of labour market stakeholders regarding the relevance of qualifications and their learning outcomes for their specific needs. Labour market partners very often are not experts in education and training processes, didactics and pedagogy. But they have better understanding of what to expect from learners when their achievements are expressed in terms of learning outcomes.

The shift to learning outcomes has also an impact to social and political aspects. Learning outcomes make qualifications system more transparent to all citizens and in that sense learning outcomes can shift the balance of influence over the way the system operates. Shift to learning outcomes enables the development of the relevant system for recognition and validation of non-formal and informal learning and to modernise recognition of foreign qualifications and citizens' mobility.

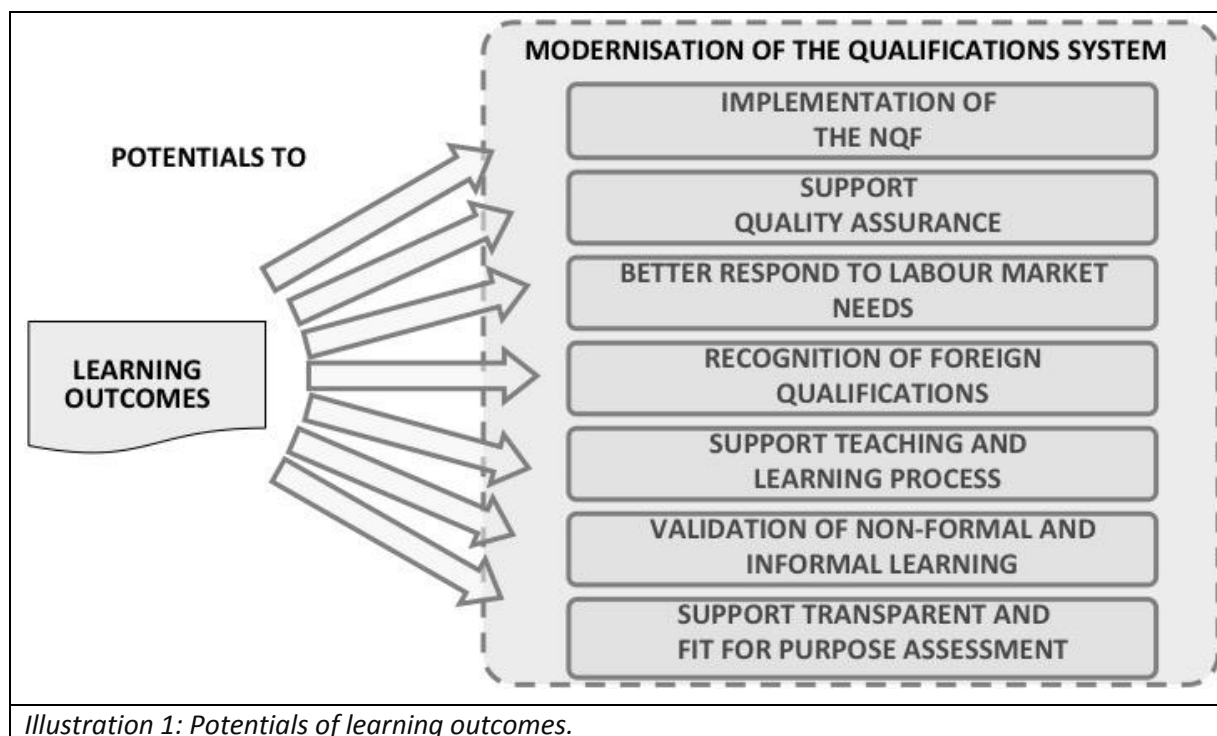
Learning outcomes enable learners to understand better the expectations they should meet, the preparation for learning and the management of their learning. Well-written learning outcomes allow both teachers and learners to have a clear picture of the behaviour that is expected at the end of a course or units. This can help to provide direction and stability in the programme, and can also help to guard against self-interpretation of curricula. Learning outcomes help with planning laboratory and other practical work. It is possible to provide the learners with a clear indication of the desired outcomes of such work before the start of each practical session. Clear learning outcomes support adjustment of proper teaching and training methods to facilitate the achievement of the intended learning outcomes. Learning outcomes force teachers and institutions to think deeply about what they are trying to achieve, but, in many cases, also make them take the first step towards a systematic approach to course design and course monitoring.

In addition to a number of other practical potential benefits, learning outcomes also enable the assessment process to become more transparent and fit for purpose, because learning outcomes indicate exactly what behaviour is supposed to be assessed. Different types of behaviour require different forms of assessment.

The expectations by using learning outcomes are very high to all relevant stakeholders. Many stakeholders in different countries see the shift towards learning outcomes as an opportunity to adjust education and training processes to individual needs, to promote active lifelong learning, to support citizens' mobility, to increase effectiveness and the accountability of education and training institutions and qualifications systems. It is expected that learning outcomes are more than just a



common language enabling a better understanding and dialogue between education and labour market stakeholders.






1.3. Current practices and impacts in different countries

As we have seen from the above, there is a wide spectrum of benefits for all main stakeholders, teachers, learners, parents, employers and others. Hence, there are interests and needs to use learning outcomes firstly by stakeholders at the labour market and specific sectors, then learners, policy makers and others. Stakeholders at the labour market have needs to use learning outcomes because they usually describe knowledge, skills and wider competence relevant for jobs and their workplaces by using similar group of concepts as learning outcomes. Other stakeholders have other needs and interests to use learning outcomes, mainly for better understanding of different qualifications, their relevance, effective learning and higher quality of qualifications.

In some EU member states, there are examples where learning outcomes are the basis of occupational and qualification standards. Further, there are examples where by different level of details, leaning outcomes support curricula development and implementation, assessment criteria and procedures, descriptions of qualifications and national qualifications frameworks.

Learning outcomes are a part of new educational standards in many EU member states, where expected achievements of learners are described as clearly as possible for teachers, learners, parents and other individuals and institutions. They have been introduced in all educational sectors, general, vocational and higher education.

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In some countries, learning outcomes in general education are formulated by the knowledge, skills and wider competence that are needed to cope effectively with the demands of the school curriculum by subject and years of learning. The emphasis is on defining key competences for lifelong learning. In range of countries, learning outcomes are being used to point the way to modernising general education systems, thus acting as a reforming influence at different levels – governance, systemic reform, curriculum, didactics and assessment. In addition to the above needs in general education systems, currently there are some countries taking a broader view of the learning outcomes facilitating better preparation of learners for labour market, community life, as well as for personal well-being.

Learning outcomes in vocational education and training systems in EU member states are used to make better linkage between qualifications and occupations. This makes better preparation of learners for an immediate transition into the labour market.

At its beginning, the Bologna Process was designed as an instrument to strengthen the competitiveness and attractiveness of the European higher education systems and to foster student mobility and employability through the introduction of a system based on undergraduate and postgraduate studies with easily readable study programmes and qualifications. By time the Bologna process has been broadened. The basic three-cycle system has been introduced, which now includes the concept of qualifications frameworks with an emphasis on learning outcomes. The concept of social dimension of higher education has been introduced and recognition of qualifications is now clearly perceived as central to the European higher education policies. Quality assurance plays an important role in the Bologna Process, giving an additional emphasis for implementation of learning outcomes.

Learning outcomes also have an increasingly outstanding role in higher education in EU member states. The Qualifications Frameworks for the European Higher Education Area (QF-EHEA) provides a mechanism for relating NQFs for higher education qualifications so as to enable international transparency, international recognition of qualifications and international mobility of students and graduates. The QF-EHEA is based on learning outcomes and has become a central part of the Bologna Process. The QF-EHEA has a pivotal role to play in bringing together various elements of the EHEA, including learning outcomes and ECTS credits. According to the Bologna Process and NQFs, higher education institutions in many EU countries are reforming existing or developing new curricula by using learning outcomes. In addition to other types of higher education institutions, the greater degree of autonomy of universities gives them the ability to develop or control their own curricula. But, still, that opportunity has not been widely used by universities in member states, and currently most universities are using learning outcomes to only limited extent and not in a coherent or holistic way.

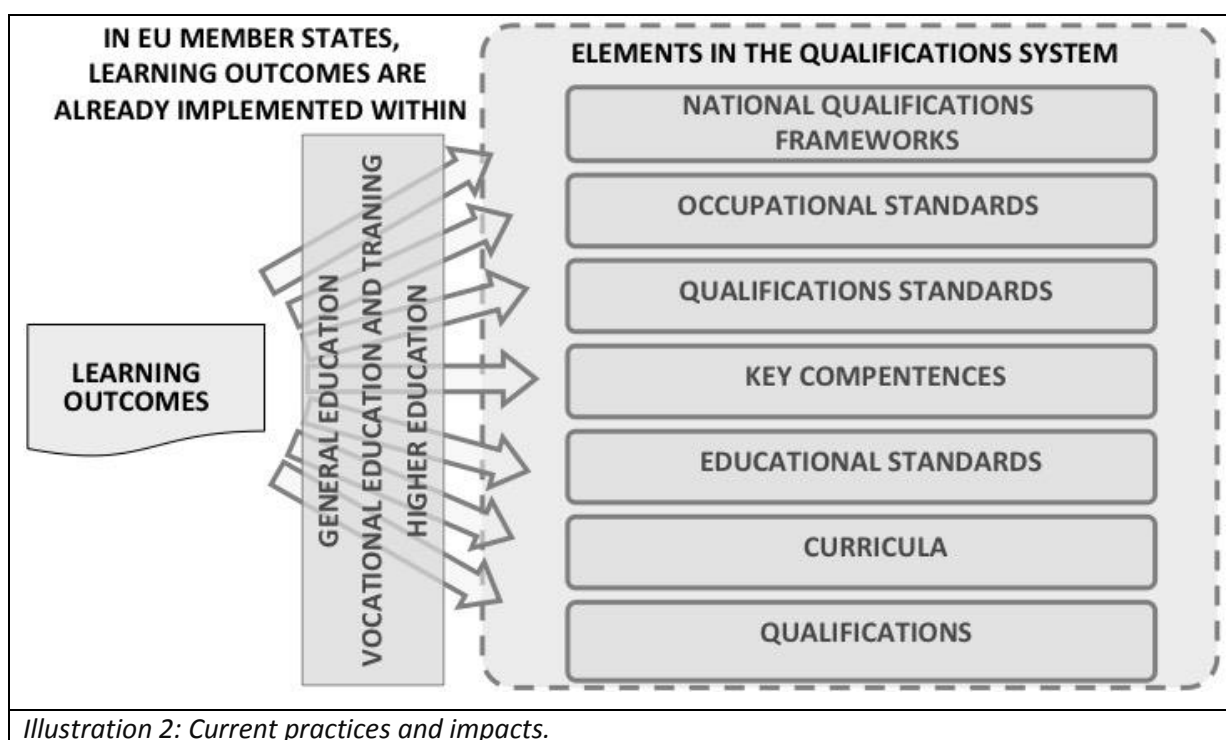
There is already a wide spectrum of great impacts in many countries even by limited use of learning outcomes. For example, there are new partnerships between educational institutions and employers, which make programmes more relevant to labour market needs. There are also good examples of agreements between institutions from different countries, making mobility and recognition to practice. Learning outcomes are very prominent in the development of national qualification frameworks, which gives additional impetus to lifelong learning, mobility and the

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quality. Growing priority is being given to development of recognition of non-formal and informal learning.

Learning outcomes have clear impacts on assessment methods and practices. Currently, they have a limited, but increasingly impact on the ways in which learning is assessed. Learning outcomes also are used as a way of driving efficiency, quality and relevance in education and training systems. Internal and external quality assurance systems are based on implementation of learning outcomes, level descriptors and wider implementation of national qualifications frameworks.

As a final introductory remark, it is important to realise that orientation to learning outcomes and their usage have huge potentials in qualifications system and relevance at the labour market, but it does not mean automatically to remove all input-based characteristics and processes from education and training systems. It rather means that a combination of two approaches – inputs and outcomes – should be in place and carefully combined. For example, competence-based qualifications can be structured in combination to type of providers and duration of education and training. Also, selection of learners and assessment methods should use inputs and outcomes. It means that it is not an idea entirely to replace inputs by outcomes. Learning outcomes bring additional support to quality assurance and transparency in qualifications systems, transparency to education and training practices, and transparency of qualifications. Learning outcomes complement and enhance other existing elements in education and training systems, including input-oriented, but not replacing them.





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Key messages:

For all countries, the implementation of learning outcomes has potentials for modernisation of qualifications system, including the implementation of the national qualifications frameworks; support quality assurance system; better respond to labour market needs; recognition of foreign qualifications; support teaching and learning process; recognition and validation of non-formal and informal learning; support transparent and fit for purpose assessment.

In EU member states, there is already implementation of learning outcomes in describing some or more elements of qualifications systems: national qualifications frameworks; occupational standards; qualification standards; key competences; educational standards; curricula and qualifications, including diploma and certification supplements. Those examples have been implemented in all sub-systems: general education, vocational education and training, and higher education.

2. The concept of learning outcomes and qualification

2.1. Definition of learning outcomes

According to the European Qualifications Frameworks for lifelong learning, learning outcomes have been defined as statements of what a learner knows, understands and is able to do on completion of a learning process, which are defined in terms of knowledge, skills and competence. This simple and clear definition of learning outcomes can become more complex when considering the level of details that should be used to write learning outcomes and how to align them to assessment criteria and procedures. In other words, when considering how learning outcomes should be written so as to be useful, too detailed descriptions can be confusing, but too general statements may become meaningless. It means that the most important consideration of all is how to write learning outcomes that are fit for purpose, including their relevance to labour market or further learning and clear alignment to assessment criteria and procedures.

In addition to the definition in the EQF Recommendation, there are other relevant definitions of learning outcomes. For example, within the Bologna process, learning outcomes are defined as statements of what a learner is expected to know, understand and/or be able to demonstrate after completion of a process of learning. S. Adam defines learning outcome as a written statement of what the successful learner is expected to be able to do at the end of the module/course unit or qualification.

These definitions of learning outcomes do not differ significantly from each other. One definition stresses more one aspect, other definitions some other aspects of learning outcomes. But all definitions stress the importance of completion of learning process, and even one of definitions stresses the successful learner, which even more emphasise completeness of learning. The key aspect each of the definitions has in common is the desire for more precision and consideration as to what exactly a learner acquires in terms of knowledge, skills and wider competence when he/she successfully completes some learning.



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2.2. Learning outcomes, learning objectives and competence

There is often some confusion between learning outcomes, learning objectives and competence. For example, while referring to learning outcomes-based qualifications, in practice in different systems, sometimes instead of learning outcomes there is a usage of different terms, for example the term of competence. Some literature uses the term competence-based qualifications when referring to qualifications that are described in terms of learning outcomes. Competence-based qualifications take into account the influence of learning or working context when learning outcomes are defined and assessed. This context has a strong influence on the range of learning outcomes that are considered important, the interaction between them, the way the learner learns, and how the learning outcomes are assessed.

Distinction between learning outcomes and competence is clear in the EQF Recommendation. There, competence means the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development. In the context of the EQF, competence is described in terms of responsibility and autonomy.

In addition to the above, for better understanding the concept of learning outcomes, it is useful to distinguish the concept of learning outcomes to the concept of learning objectives. Learning objectives can be written as learning outcomes, but they are written for teachers, while learning outcomes are more easily understood by learners as well as by teachers. Learning objectives are written as a guide to the teaching programme that might, or might not, lead to the desired learning.

Very important aspect of learning outcomes is a clear alignment to assessment. Learning outcomes are a kind of common reference for assessment, in addition for teaching and learning. Appropriate assessment methods and procedures are used to check if the learning outcomes have been achieved. The alignment between learning outcomes, teaching, learning and assessment helps to make the overall learning experience more coherent, transparent and meaningful for learners, and all other stakeholders. This directly facilitates internal and external quality assurance systems, which is important. Quality assurance is more transparent and more effective if it is based on learning outcomes. Of course, quality assurance should also include context, input, process and output, but giving emphasis to learning outcomes. In the institutional review processes, learning outcomes are explicitly part of internal and external quality assurance processes.

The term “learning outcomes” may also embrace general knowledge and ethical, cultural, and social skills that go beyond the needs of the labour market.



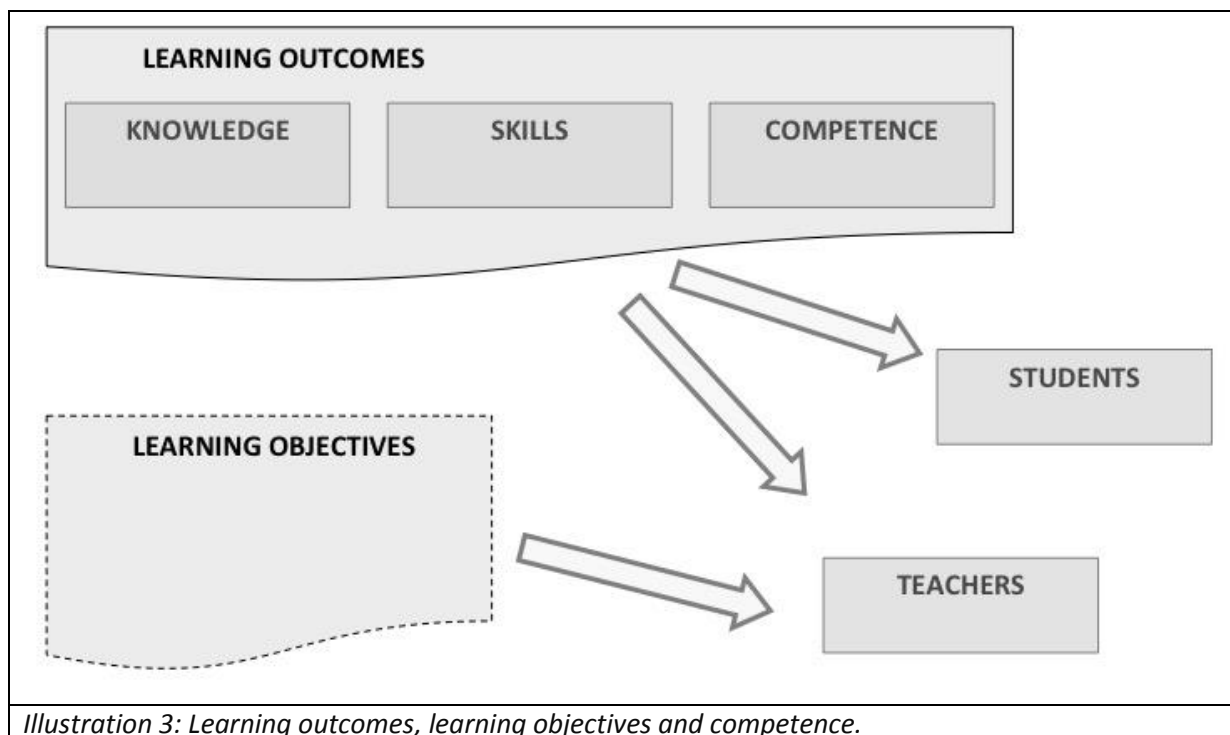


Illustration 3: Learning outcomes, learning objectives and competence.




2.3. Categories of learning outcomes

There are different ways of describing all learning outcomes that a learner can achieve, such as knowledge, skills, social competences, autonomy and responsibility, attitudes, values, and other wider competence. In qualifications systems of most countries, learning outcomes are described as knowledge, skills (i.e. application of knowledge) and competence (i.e. proven usage of knowledge and skills). Competence refers to the conditions in which the knowledge and skills are used, including spatial, temporal and other conditions. In addition to the above written domains of learning outcomes, there are example of national qualifications frameworks that include attitudes and values as additional descriptors of learning outcomes.

Most of learning achievements can be described in terms of expected learning outcomes, but there are difficulties in some cases. For example, being good citizens is difficult to define in terms of learning outcomes, and difficult to measure objectively. In practice there are difficulties to validate attitudes and values and to assess such learners' achievements.

Within the EQF, learning outcomes are classified into the following categories:

- Knowledge (facts, principles, theories and practices),
- Skills (cognitive and practical) and
- Competence (such as ability to take responsibility and show autonomy).

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This structure of learning outcomes simplifies description of learning outcomes, understanding of their complexity level, validation, assessment and recognition. It makes implementation easier and sustainable. Similar description of learning outcomes has been adopted in most national qualifications frameworks in the world. Such description of learning outcomes is considered to be an optimal, understandable and measurable structure of all learning outcomes. Additional domains to the above structure of learning outcomes (such as above mentioned attitudes and values) usually make validation, assessment and recognition processes more complex and less transparent.

As suggested by the EQF, learning outcomes in the HQF are expressed in terms of:

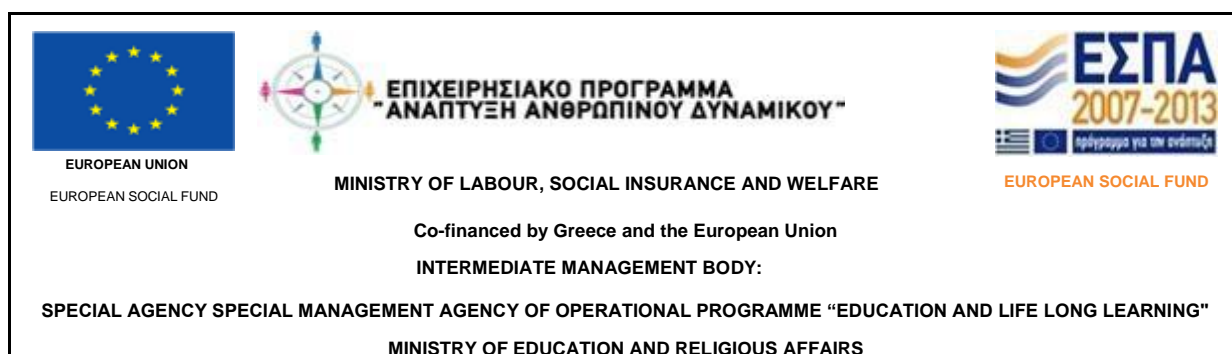
- Knowledge,
- Skills, and
- Competence.

According to the HQF, knowledge means the outcome of the assimilation of information through learning. In the HQF, knowledge is the body of facts, principles, theories and practices that is related to a field of study or work. Skills mean the ability to apply knowledge and use know-how to complete tasks and solve problems.

Skills involve everything that facilitates an adequate application of knowledge (factual and theoretical), regardless of whether this application refers to the speed and quantity of information processing, decision-making or physical reaction, or to the behaviours and relationships with others within different social groups, or a combination of different skills.

In the HQF, competence means the proven ability to use knowledge, skills and personal, social and/or methodological abilities in work or study situations and in professional and personal development.

It means that a qualification refers only to knowledge, skills and competence that have been assessed by the competent body. Without alignment to the assessment process, development of learning outcomes approach is pointless.



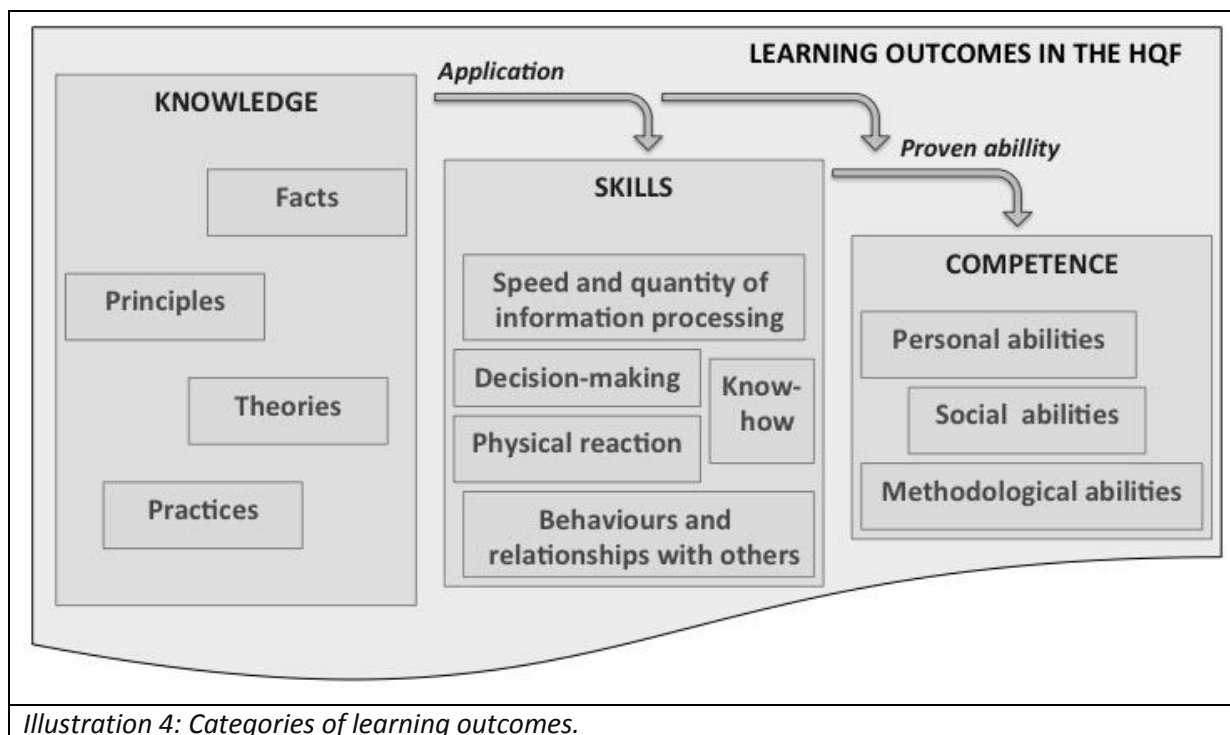


Illustration 4: Categories of learning outcomes.


2.4. Learning outcomes in different contexts

Learning outcomes are defined in different contexts and different purposes, for example, in educational and quality assurance context, occupational context, guidance context, and personal context.


In educational context learning outcomes are expressed in curricula, units, modules, course descriptions, educational standards, and qualifications and assessment standards.

In occupational context, learning outcomes are embedded in occupational standards, performance measurement, job advertisements and recruiting systems. Level of details and style of expression of learning outcomes depends on the context, making learning outcomes fit for purpose.

The purpose of learning outcomes in occupational standards is to define key functions, tasks and activities of a given occupation. In occupational standards, learning outcomes serve as a basis for defining work practices, lifelong learning, recruitments, etc. Occupational standards describe all knowledge, skills and wider competence within a job. They usually specify the professional tasks and activities the holder of a qualification is supposed to be able to carry out and the competence needed for that purpose. Occupational standards are often used to as the basis of designing proper standards of qualifications and learning programmes. They are also tools for companies to use in defining the company structure, work structure, training needs, etc.




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In curricula, learning outcomes define outcome expectations of learning activities. They guide learners and teachers in the teaching process and choice of methodology. Learning outcomes in curricula inform learners about what they can expect to be able to do after a given learning activity. In curricula, learning outcomes define overall goals, general and specific outcomes of a programme and each module. Learning outcomes in curricula explain to learners what they are expected to know, understand and be able to do at the end of the programme, module and each unit. Levels of details of learning outcomes are different when they are applied to whole programmes of learning (where learning outcomes are broader) and modules or units (where learning outcomes are more specific).

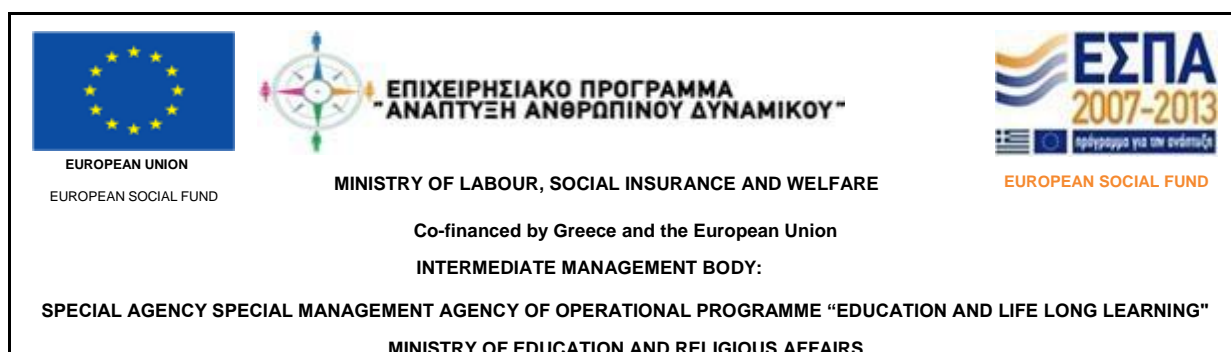
Programme level learning outcomes are statements of what a learner is expected to know and be able to do at the end of the whole programme. Therefore they are written in a broad way that takes account of all the learning outcomes that are associated with units or modules within the programme. Programme level learning outcomes are often called qualification profile. Learning outcomes written for units and modules are directly aligned to assessment criteria. They are more detailed comparing to overall learning outcomes at the programme level. Designing a programme by using learning outcomes needs to be an iterative process. One usually starts with formulating broader aims and specific objectives and provisional learning outcomes. When thinking through the whole programme and reflecting the learning outcomes of different modules together, the preliminary learning outcomes might be changed. Again, when specifying the assessment criteria, the expression of the learning outcomes might change again.

Learning outcomes are directly connected to learning assessment. Without a clear alignment to assessment, learning outcomes are pointless. They clearly define what and how is to be assessed. They enable harmonisation in assessing learner's performance. Learners and teachers are focused on what is going to be assessed. Hence, learning outcomes affect the process of teaching and learning through assessment.

It would be absolutely unclear to what extent a learner will pay attention to learning outcomes if they are only written but not transparently assessed. Assessment criteria can be "threshold assessment criteria" leading to the decision whether a student has passed or failed or they can be formulated as "grade assessment criteria" that can be used for articulating different levels of achievement (leading to different grades). In both cases it is necessary that they determine the expected level of performance.

Some categories of learning outcomes are more difficult to assess. Usually, it is easier to assess knowledge and skills. Assessment of some other categories of learning outcomes is sensitive. For example, assessing personal characteristics, attitudes and personal values may be considered as private. In several countries this is even seen as ethical problem. On the other hand, personal characteristics, attitudes and values are of growing importance at the labour market, usually used to define specific requirements of occupations. Still, it seems that personal characteristics should not be part of qualifications, but rather for specific requirements of occupations.

Learning outcomes have been used most often to define overall expectations of a learner holding the qualification, and each module or units of the qualification. Learning outcomes inform employers on knowledge, skills and competence when recruiting a person with a given qualification.



Within the qualification and qualifications standards, learning outcomes inform learners on further choosing a pathway for further learning. They inform providers and policy makers where qualifications are missing.

Learning outcomes within qualifications standards support and facilitate internal and external quality assurance systems in reviewing providers and new programmes and curricula. The use of learning outcomes can bring a strong focus to the purposes and quality of the teaching, assessment, validation and certification. Learning outcomes provide the language that enables different quality assurance stakeholders to interact and coordinate activities. They are the most important statement about what is expected at the end of learning and assessment. Therefore learning outcomes should be clearly understood to all learners. This also helps to teachers as they provide feedback and guidance to learners on the learning challenges.

In the personal context, learning outcomes are used for curriculum vitae and personal competence profiles.

And, finally, within qualifications frameworks, learning outcomes define complexity and profile of learning in a country and region. They facilitate classification of different types and forms of qualifications in the framework according to levels and other characteristics of qualifications.

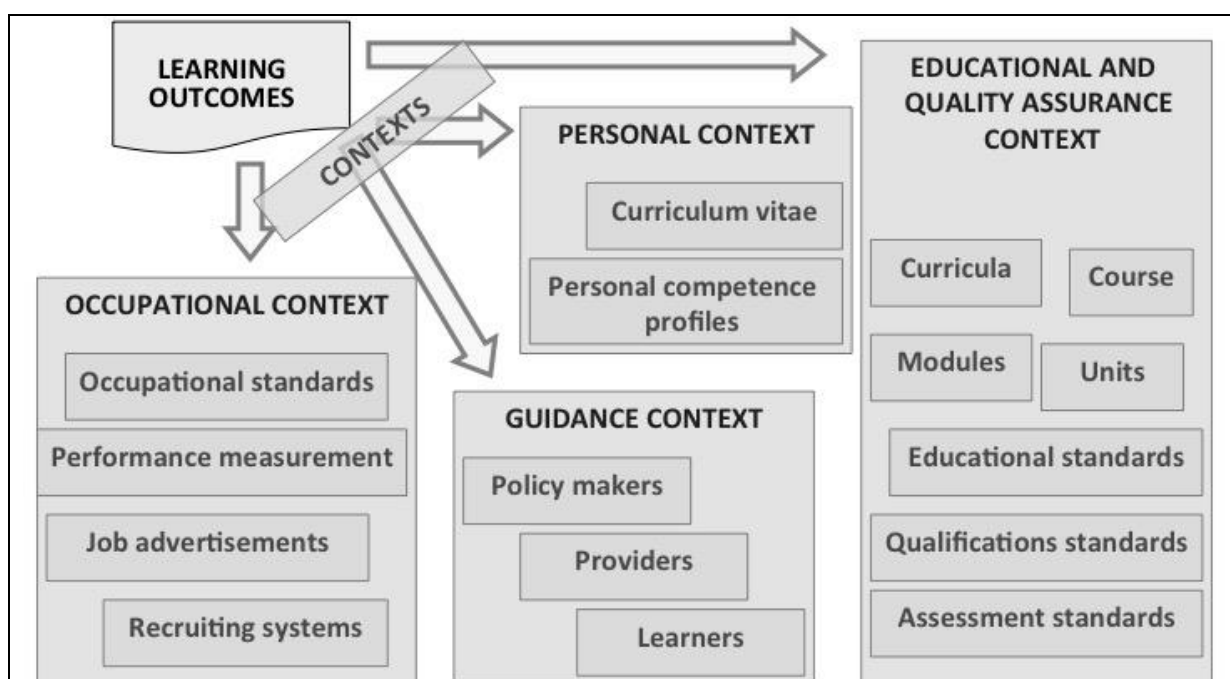




Illustration 5: Learning outcomes in different contexts.

Examples:

- Overall learning outcomes at the level of qualifications: “On the successful completion of the study programme, a student will be able to:




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- Apply advanced concepts of Mathematics and Statistics;
- Analyse business problems and propose solutions;
- Confidently engage in and successfully resolve building services engineering projects in both the technical and managerial aspects and communicate effectively their resolution;
- Work independently and effectively in a team;
- Take responsibility for his/her own learning;
- Etc.
- Unit or module learning outcomes: “On successful completion of the module, a student will be able to:
 - Identify a wide variety of learning and teaching methods that may be employed effectively in higher education;
 - Discuss the theories of learning that underpin their teaching approach;
 - Explain the role of accounting information in organisations;
 - Identify effective on-line marketing strategies and incorporate them into a marketing plan;
 - Etc.

2.5. Learning outcomes and related concepts in the HQF

Learning outcomes and central concepts of the Hellenic Qualifications Framework are very well defined in the HQF Referencing report to the EQF. They are very well compatible to concepts defined by the EQF Recommendation and many other NQFs in different countries. The central concepts in the HQF are as follows:

- **“Learning outcomes”** – means statements of what a learner knows, understands and is able to do on completion of a learning process; the statements are defined in terms of knowledge, skills and competence:
 - **“Knowledge”** – means the outcome of the assimilation of information through learning. Knowledge is the body of facts, principles, theories and practices that is related to a field of study or work;
 - **“Skills”** – means the ability to apply knowledge and use know-how to complete tasks and solve problems;
 - **“Competence”** – means the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and/or personal development;
- **“Qualification”** – means a formal outcome of an assessment and validation process, which is

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obtained when a competent body determines that an individual has achieved learning outcomes to given standards;

- **“Level”** – refers to a structural element of a qualifications framework and is one of a series of successive steps that can be described in terms of the learning outcomes required for the award of qualifications. There are 8 levels in the HQF, and each level is described by level descriptors:
 - **“Level descriptors”** are sets of statements related to learning outcomes, which describe levels in a qualifications framework;
- **“Qualification type”** – refers to a class of qualifications sharing common characteristics and level. Qualification types are instruments that allow the classification of Greek qualifications into levels of the HQF, as well as enabling the comparison between them. Main characteristics of each Qualification type are described by corresponding Type specification:
 - **“Type specification”** – describes the characteristics of qualifications of a specific type. Qualification type (described by the Type specification) can constitute the basis for the subsequent development of new qualifications in the future. Learning outcomes described in the Type Specification are extended from the respective level descriptor of the HQF. All Type specifications in the HQF are annexed to the Methodology for the Design and Development of Learning Outcomes (for example, “*Doctorate – Didaktoriko Diploma*”; “*Master’s Degree – Metaptychiako Diploma Eidikefsis*”, “*Bachelor Degree – Ptychio*”, etc.). Among information on the title, level, awarding bodies and other characteristics, the “Type specification” also includes:
 - The “size” or “volume” of the learning achievement related to the Qualification type;
 - The purpose of the Qualification type (“Basic”, “Supplementary”, “Special purpose”);
 - The education sector related to the type;
 - The access and progression possibilities related to the type;
 - The connection of the Type to employment.

Learning outcomes can be listed within qualifications and units (or modules). Unit is defined as a set of knowledge, skills and competence, which constitute a part of a qualification. Unit can be the smallest part of a qualification that can be assessed, validated and, possibly, certified.

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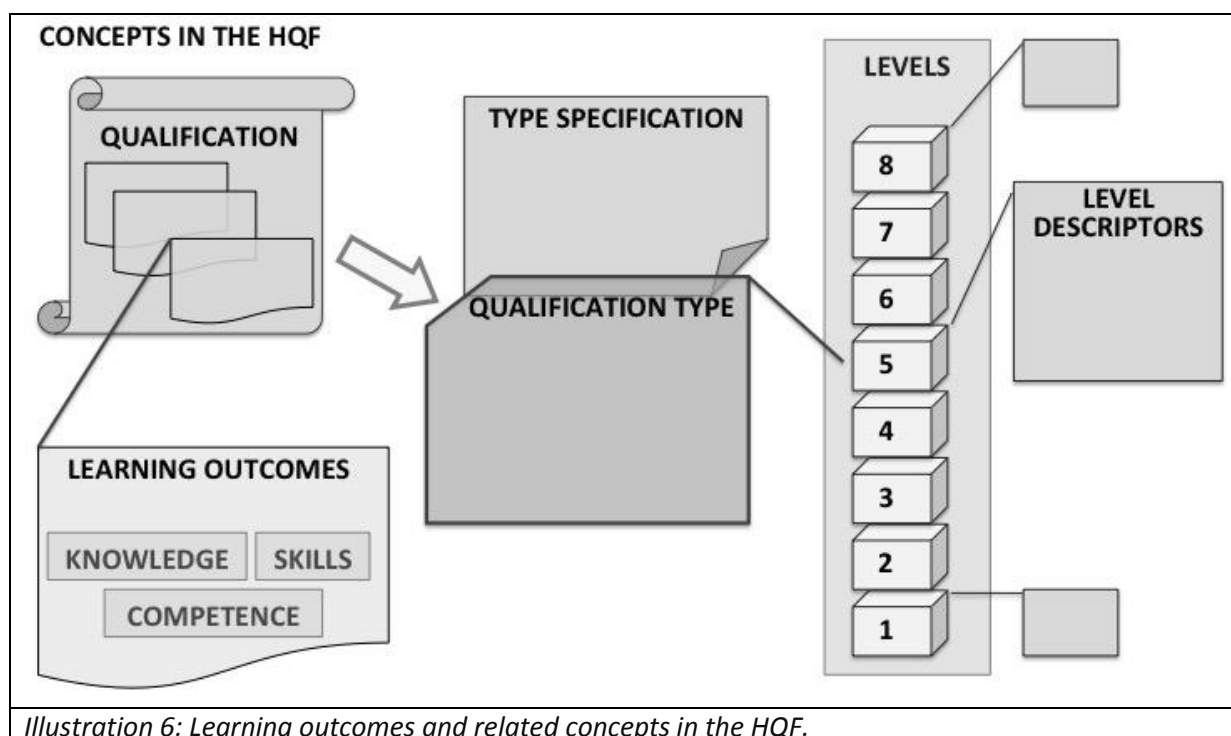


Illustration 6: Learning outcomes and related concepts in the HQF.

2.6. Characteristics of effective learning outcomes

Well-written learning outcomes provide a clear picture of the performance a learner expects to have as a result of learning. Among others, effective learning outcomes should be specific, and most importantly, measurable. Effective learning outcomes have 4 main components, as follows:

- **Audience** – an intended participant. It describes the intended learner or end user of the instruction and learning. Usually it means – a learner, student, etc. Very often the audience is identified only within the first level of learning outcomes because of redundancy. The following question helps for better understanding of audience and interaction to other characteristics: “Who will be performing the behaviour?”;
 - For example, “A learner will be able to ...”.
- **Behaviour** – observable action verb within the context to describe what a learner will be able to do as a consequence of a learning activity. The use of action verbs is important as they clarify what the learner will do in order to demonstrate relevant knowledge, skills and competence. Those verbs could be: “list”, “explain”, “identify”, etc.; Verbs that should be avoided are: “know” “understand”, “increase awareness of”, “learn”, etc., as these are not easily measurable. This component must be observable or measurable. If learning outcomes represent skills, they should be real world skills. The following question helps: “What should the learner be able to do?”;

- For example, “A learner will be able to explain the basic characteristics of CNS machines...”
- **Condition** – determines the actual environment or situation in which the task will occur or be observed speak to time and place. The condition might also identify tools, procedures, materials, aids or facilities to be used in performing the task. It is important to know what is given and what not; what are the variables; what tools are provided; and in what environment or situation must the behaviour be performed. The following question helps: “Under what conditions do learners demonstrate their mastery of the outcomes?”;
 - For example, “A learner will be able to explain ... without reference to a manual ...”.
- **Criteria** – describes the limits or range of an acceptable response. It states the standard for acceptable performance (time, accuracy, proportion, quality, etc.). Effective learning outcomes indicate the nature (in context or in terms of standards) of the performance required as evidence that the learning was achieved, addressing some of the following questions: “How many?”, “How fast?”, “How well?”, “How often?”, etc. The following question helps: “How well must the learned behaviour be done?”;
 - For examples: “A learner will be able to explain ... by checking a chart within the given time period”.

Combining those four components it is possible to write effective learning outcomes. Often, when writing learning outcomes, some components are not explicitly stated, such as components related to “Criteria” and “Condition”. For examples: instead of explicitly written learning outcomes: “*After this unit, a learner will be able to label correctly the five major organs of the female reproductive system*”, it could be written in less explicit way “*A learner will be able to label the five major organs of the female reproductive system*”.

Examples:

- “A learner will be able to compute the standard deviation for a given set of data.”
 - Audience: “A learner”
 - Condition: “given set of data”;
 - Behaviour: “compute the standard deviation”;
 - Criterion (implicitly stated): “the number computed will be correct”.
- “A learner will be able to list at least 3 characteristics that are present in most sustainable residential housing and apply these characteristics to an existing residential project”
 - Audience: “A learner”
 - Condition: “an existing residential project”;
 - Behaviour: “list and apply the characteristics”;
 - Criterion: “at least 3 characteristics”.



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Very often, when writing learning outcomes it is not necessary to write all components explicitly, such as components related to “Criteria” and “Condition”, and even “Audience”. For examples: instead of explicitly written learning outcomes: *“After this unit, a learner will be able to explain basic operating principles of CNC turning machines”*, it could be written in less explicit way *“A learner will be able to explain basic operating principles of CNC turning machines”*, or even the best: *“to explain basic operating principles of CNC turning machines”*.




The above-mentioned four components of effective learning outcomes very often are combined only into two parts – action and context.

The “Action” integrates “Audience” and an active verb part of “Behaviour”, and the “Context” integrates context part of the “Behaviour”, “Condition” and “Criteria”:

- Action – Audience and Behaviour (verb)
- Context – Behaviour (context), Condition and Criteria.

Explicitly or implicitly, all four components (audience, behaviour, condition, criteria) of effective learning outcomes should be specified in an effective way giving learning outcomes the following characteristics:

- **Specific** – precisely states knowledge, skills and competence that a learner should be able to demonstrate;
- **Measurable** – possible to assess by test items, observation, problem-solving exercises, projects, or any other assessment methods, during or after education, training and learning. Learning outcomes should be open to assessment which accurately assesses whether or not the learning outcomes have been achieved;
- **Action-oriented** – uses contextualised action (active) verbs that represent a behaviour change or acquisition;
- **Reasonable** – reflects realistic expectations of knowledge, skills and competence; learning outcomes should be within the range of abilities of the learner;
- **Time-bound** – possible to achieve them by the end of learning.

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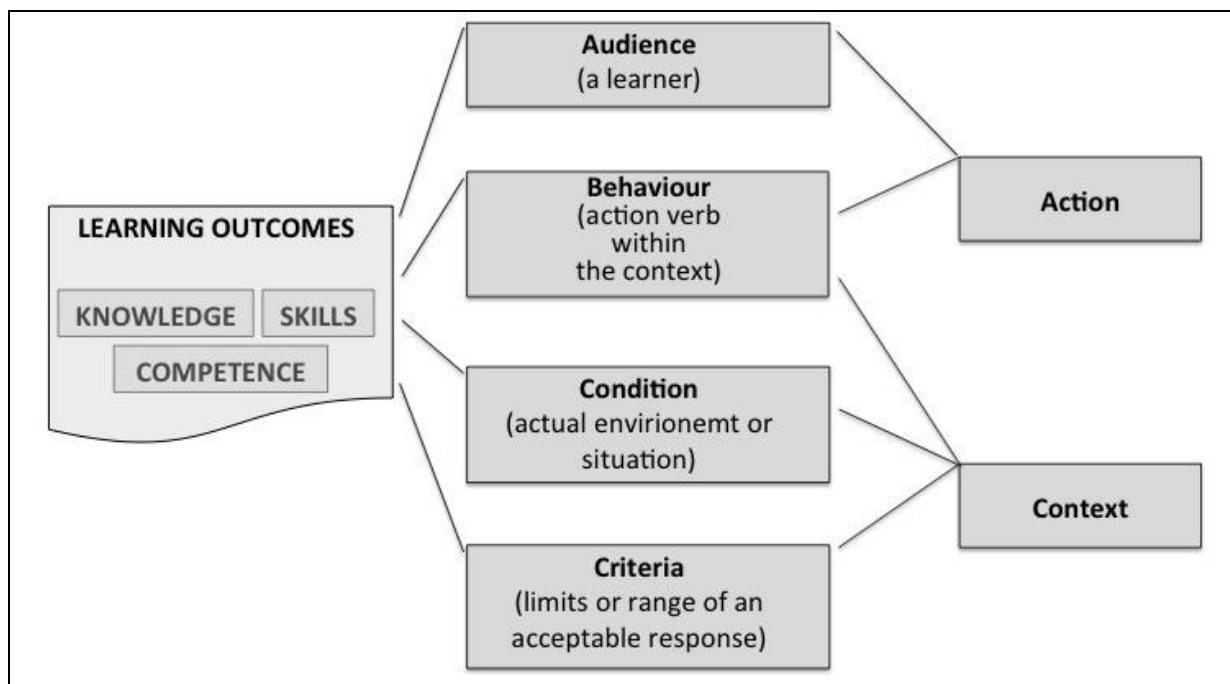


Illustration 7: Characteristics of effective learning outcomes.

2.7. The concept of qualification

As it is written above, in the context of the EQF, the term of qualification is defined as formal outcome of an assessment and validation process, which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards. This definition serves as basis for a common understanding in the context of the EQF implementation. However, the term and concept of 'qualification' in European countries differs substantially as regards to sources, degree of detail, form and structure. Differences not only occur across countries, but across areas of education and training and between institutions. These different understandings are captured in qualification descriptors.

Learning outcomes can be listed within qualifications and also within units (or modules). Unit of learning outcomes is defined as a set of knowledge, skills and competence, which constitute a part of a qualification. Unit can be the smallest part of a qualification that can be assessed, validated and, possibly, certified. Module usually represents several well-connected units of learning outcomes.

Analysing structure and complexity of learning outcomes (usually grouped into units or modules) as main components of qualifications, it is possible to define basic characteristics of qualifications:

- Level,
- Volume (defined as a way to measure workload or credit range),
- Purpose ("Basic", "Supplementary", and "Special purpose", including profile), and

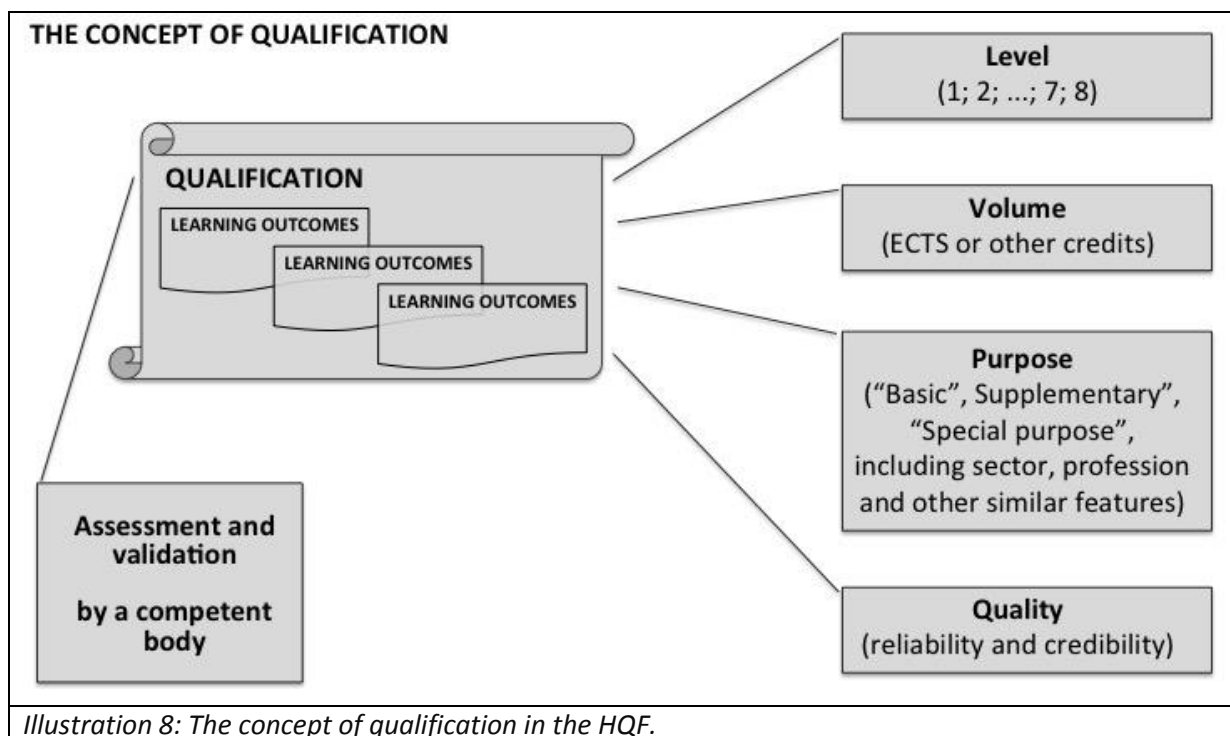
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- Quality (reliability and credibility).

Among those basic characteristics, one of them – the level – appears as the most visible and very interesting characteristic in qualifications frameworks. The rest of those basic characteristics are also equally important within national qualifications framework, or even more (such as the quality). The volume, for example, is also an explicit part in the higher reference levels of the EQF (and the Qualifications Frameworks for the European Higher Education Area, QF-EHEA). For illustration, all full (or standard) qualifications at the first cycle of the QF-EHEA (or level 6 in the EQF) should have the minimal credit range of 180 ECTS or equivalent.

The level is a new concept, introduced in qualifications systems by emerging national qualifications frameworks, so also in the HQF. The level denotes the complexity of a qualification, i.e. the achieved learning outcomes of that qualification. Volume denotes the total amount of the achieved learning outcomes. The purpose in the HQF is defined as: “Basic”, “Supplementary”, “Special purposes”. It includes also the sector or field of work or study, profession and other similar concepts of learning outcomes. The quality of learning outcomes denotes reliability and credibility of a qualification made by a competent body.

In the HQF, the main instruments for the classification of qualifications in Greece are Types of qualifications. They will allow classification of qualifications into the levels of the HQF. Each qualification type will have Type specifications that will describe the characteristics of qualifications of that type. This is also the base for the subsequent development of new qualifications in the future in Greece.



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2.8. Levels of qualifications

As it is written above, learning outcomes play an important role in the creation of qualifications frameworks. The main role of qualifications frameworks is to classify qualifications according to basic characteristics of qualifications. One of those basic characteristics is the level, and NQFs provide a methodology for transparent levelling of qualifications, which includes level descriptors, volume and some other parameters.

The levels and their descriptors are used for a number of purposes that are going even beyond the classification of qualifications, such as modernising the qualifications system and to open the system to external qualifications, facilitating accumulation, lifelong learning and mobility.

Level descriptors usually reflect the specificities and realities of the qualifications system in which the NQF exists. The majority of level descriptors based on learning outcomes, explicitly address the growing complexity of tasks and environments and how this is articulated at different levels. The progression across levels is expressed usually by: the complexity and breadth of learning outcomes, the context in which learning outcomes can be applied, autonomy and responsibility, self-reflection, and progressive introduction of learning outcomes at higher levels.

The Hellenic Qualifications Framework introduces 8 complexity levels and their descriptors. The HQF level descriptors are more detailed than the EQF level descriptors.

The HQF level descriptors offer a base for qualifications designers to level new qualifications or to place existing qualifications to the HQF. The level descriptors provide the mechanism for the referencing of the HQF to the EQF. They are set out in the Annex of this Methodology.

2.9. Classification of qualifications in the HQF

One of the objectives of NQFs is to improve transparency and understanding of qualifications. This is possible by transparent classifications of qualifications in NQF levels according to the complexity of their learning outcomes. Thus, for the transparent and credible classification, it has to be possible to identify the level complexity of learning outcomes for each qualification. This has been done on the basis of the level descriptors of NQFs. NQFs are usually based on databases or registers of qualifications.

According to the HQF, the classification of Greek qualification types to the HQF levels involved two related processes:

- The identification of an appropriate range of types; and
- The development of specifications for each type and the testing of each type to ensure its location at the correct level of the HQF.

The key element in Type specification is the description of learning outcomes. In addition to the learning outcomes, each Type specification in the HQF sets out a range of other information about



the type, such as: title, level, awarding body, summary descriptor, volume, purpose, education sector, employment relevance, and transitions.

The structural arrangement for the inclusion of qualifications in the HQF is that specific qualifications are related to defined Qualification types and the Types are placed at the HQF levels as appropriate. Each Specification in the HQF type is tested against the level descriptors to ensure correct location in the HQF. The process includes the comparison of learning outcomes of the Specification with those of the level descriptors.

Examples:

- Level 3 type of qualifications:
 - (SEK) Specialty Certificate – Ptychio Epaggelmatikis Eidikotitas Epipedou 3 – S.E.K
 - Vocational training Institute (IEK) Certificate (Pistopoitiko Epaggelmatikis Katartisis Epipedou 1 – IEK)

Key messages:

The central concepts in the HQF are: learning outcomes, knowledge, skills, competence, qualifications, level, level descriptors, qualification type, type specification.

Learning outcomes are classified into 3 categories: knowledge (facts, principles, theories and practices), skills (apply knowledge and use know-how) and competence (use knowledge, skills and personal, social and/or methodological abilities). Learning outcomes are defined in different context: in occupational context (occupational standards, performance measurement, job advertisements and recruiting systems), educational and quality assurance context, guidance context and personal context. Educational and quality assurance context (development of curricula, course, modules and units, educational standards, qualifications standards and assessment standards), guidance context (for policy makers, providers and learners), and personal contexts (curriculum vitae and personal competence profiles).

Components of effective learning outcomes are: action (audience and the action verb), and context (context of the behaviour, condition and criteria), which give the following characteristics to learning outcomes: specific, measurable, action-oriented, reasonable and time-bound.

The concept of qualification is defined as formal outcome of an assessment and validation process, which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards. Basic characteristics of qualifications are: level, volume, purpose ("Basic", "Supplementary", and "Special purpose", including profile), and quality (reliability and credibility). In the HQF, there are 8 levels of qualifications introduced, described by level descriptors.

Classification of qualifications in the HQF has been done by development and the usage of Qualifications types.



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3. Development of learning outcomes

3.1. Learning outcomes in different domains

According to relevant taxonomies of learning outcomes (for example, Bloom's taxonomy), there are 3 domains of learning outcomes developed, including lists of action verbs for each domain and their complexity:

- **Cognitive** (what a learner knows and understands);
- **Psychomotor** (what a learner is able to do/perform);
- **Affective** (Beliefs, values and attitudes of a learner).




Good learning outcomes guide training content and methods. They also guide the methods and tools used to assess the achievement of those learning outcomes. Evaluation questions for different domains focus on different elements, as follows:

- Cognitive domain evaluation questions focus on – “What knowledge was gained, and how well can learners apply them?”
- Psychomotor domain evaluation questions focus on – “What skills were developed or enhanced?”
- Affective domain evaluation questions focus on – “Did attitudes change, and in what way?”

3.1.1. Complexity of cognitive domain and action verbs

Complexity of **cognitive** domain (understanding, evaluating ideas, etc.) of learning outcomes is as follows:

- **Observation and Recall:** the ability to remember information
 - Example of action verbs: arrange, collect, duplicate, enumerate, express/state definition, extract, find, identify, list, memorise, name, order, outline, present, quote, rank, recall, recognise, recollect, recognise, record, recount, relate, repeat, reproduce, show, state, tabulate, tell, underline.
- **Comprehension** – understanding, the ability to interpret and explain information
 - Example of action verbs: associate, articulate, change, clarify, classify, compare, construct, contrast, convert, decode, defend, describe, differentiate, discriminate, discuss, distinguish, estimate, exemplify, explain, express, extend, formulate, generalise, give examples of, identify, illustrate, indicate, infer, interpret, locate, paraphrase, predict, recognise, report, restate, rewrite, review, select, summarise, solve, translate.

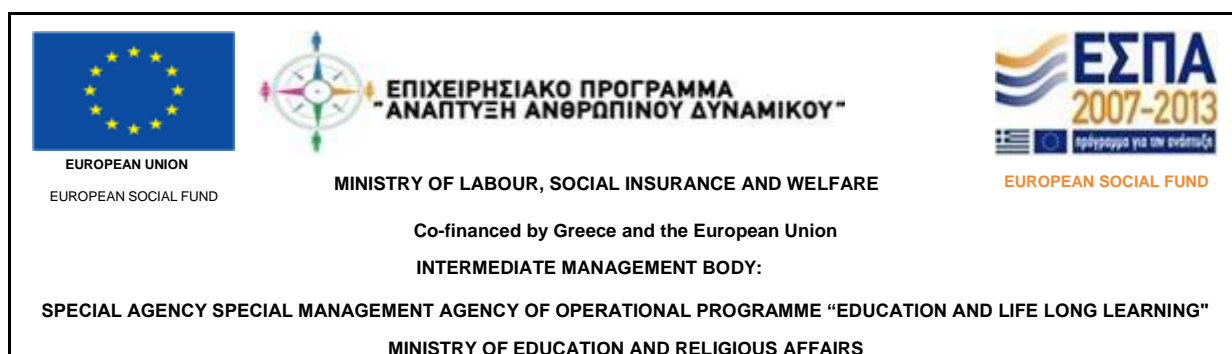
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- **Application:** the ability to use information in a new situation, to use knowledge and skills acquired by learning to solve problems and create new approaches (using general concepts to solve a problem).
 - Example of action verbs: apply, assess, calculate, change, complete, compute, connect, construct, demonstrate, develop, discover, dramatize, employ, examine, experiment, find, illustrate, infer, interpret, interview, investigate, manipulate, modify, operate, organise, plan, practice, predict, prepare, present, produce, relate, schedule, select, show, sketch, solve, transfer, use.
- **Analysis:** the ability to break down information to understand its structure, to categorize, and to recognize pattern (separating into elements to apply it on new information)
 - Example of action verbs: analyse, appraise, arrange, break down, calculate, categorise, classify, compare, conclude, connect, contrast, criticise, debate, deduce, determine, diagnose, differentiate, discriminate, distinguish, divide, draw a diagram, examine, experiment, identify, illustrate, infer, inspect, investigate, order, outline, point out, question, relate, resolve, separate, sub-divide, test.
- **Synthesis:** the ability to bring together sets of information to create or invent original solutions to problems, to illustrate relationships between parts of a whole
 - Example of action verbs: account for, alter, argue, arrange, assemble, build up, categorise, collect, combine, compile, compose, conclude, construct, create, design, derive, develop, devise, diagnose, diagram, enlarge, establish, explain, formulate, generalise, generate, integrate, invent, make, manage, modify, order, organise, originate, plan, precise, prepare, present, propose, put together, rearrange, reconstruct, relate, reorganise, report, revise, rewrite, set up, separate, summarise, structure, synthesise, teach, write.
- **Evaluation:** the ability to make a judgment based upon evidence
 - Example of action verbs: Appraise, ascertain, argue, assess, attach, choose, compare, conclude, contrast, convince, corroborate, criticise, decide, defend, describe how, determine, discriminate, explain, evaluate, grade, interpret, judge, justify, measure, predict, question, rate, recommend, relate, resolve, support, value,
- **Creation:** the ability to create or invent something original (something new)
 - Example of action verbs: the same as for Synthesis.

3.1.2. Complexity of psychomotor domain and action verbs

Complexity of **psychomotor** domain (manual, dexterous and physical skills) of learning outcomes:

- **Perception:** using sense organs to obtain cues about a motor activity, e.g. repeat oral/written instructions for performing and experiment






- Example of action verbs: choose, describe, detect, differentiate, distinguish, identify, isolate, observe, participate, relate, select.
- **Set response:** demonstrating readiness to take a particular action, e.g. explain the series of steps involved in a process
 - Example of action verbs: begin, display, explain, move, proceed, react, show, state, volunteer.
- **Guided response:** early stage of learning; a performance skill including imitation and trial-and-error, e.g. following stepwise instructions
 - Example of action verbs: copy, trace, follow, react, reproduce, respond.
- **Mechanism:** later stage of learning; a performance skill when it can be performed with proficiency, e.g. follow the same procedure smoothly and confidently
 - Example of action verbs: assemble, calibrate, construct, dismantle, display, manipulate, measure, mend, mix, organise, sketch.
- **Complex overt response:** skilful performance of a complex movement pattern e.g. performing a routine procedure quickly and accurately
 - Example of action verbs: same as Mechanism but includes adverbs such as quicker, more accurate, automatic, etc.
- **Adaptation:** skills that are so well-developed that the individual can modify them to fit the situation e.g. alter a routine procedure to deal with an unfamiliar problem
 - Example of action verbs: adapt, alter, rearrange, reorganise, revise, vary, change
- **Origination:** creating new movement patterns based on highly developed skills e.g. developing a new procedure to deal with new situations
 - Example of action verbs: arrange, build, combine, compose, construct, create, design, initiate, make, originate.

3.1.3. Complexity of affective domain and action verbs

Complexity of **affective** domain (emotional component of learning, interest, attitudes and values) of learning outcomes:

- **Receiving:** attending to a stimulus, e.g. willing to listen instructions – awareness, attention to new information
 - Example of action verbs: ask, choose, describe, follow, give, hold, identify, locate, name, point to, select, sit, erect, reply, use.
- **Responding:** reaction to a stimulus, participating in a discussion, willing to participate, active pursuit of an interest, willingness to respond, motivation

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- Example of action verbs: answer, assist, aid, comply, conform, discuss, greet, help, label, perform, practise, present, read, recite, report, select, tell, write.
- **Valuing** (willing to be involved): attaching value to an object, phenomenon, behaviour or principle e.g. demonstrate by means of action or expression an appreciation of good teamwork
 - Example of action verbs: complete, demonstrate, differentiate, explain, follow, form, initiate, invite, join, justify, propose, read, report, select, share, study, work
- **Organisation**: organising different values into the beginning of an internally consistent value system, e.g. adopt a systematic approach to problem solving
 - Example of action verbs: adhere, alter, arrange, combine, compare, complete, defend, explain, formulate, identify, integrate, modify, order, organise, prepare, relate, synthesise
- **Characterisation**: (willing to change one's behaviour): internalising a value system and behaving accordingly in a pervasive, consistent and predictable manner, e.g. display self reliance, work independently and diligently, act ethically
 - Example of action verbs: act, discriminate, display, influence, listen, modify, perform, practise, propose, qualify, question, revise, serve, solve, verify.

3.2. Linking learning outcomes to teaching and assessment

Learning outcomes without alignment to assessment are pointless. While developing assessment criteria and procedures it should be ensured that behavioural verbs within learning outcomes are well linked to them. It is important that each assessment not only reflects learning outcomes, but that the assessment is targeted at the complexity level of learning outcomes.

It is also important to choose suitable assessment tools for the learning outcomes, such as: exercise, quiz, exam, demonstration, project, paper, report, presentation, team participation, homework, etc. Some learning outcomes may be assessed by using a combination of assessment tools. There are some practical questions that can help to prepare suitable assessment:

- What should learners read, view, research?
- What is important for learners to know?
- What is important for learners to do?
- What knowledge should learners remember for a number of years from now?
- What is important in this field on a daily basis?
- Etc.

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3.3. Practical tools for the formulation of learning outcomes

There are important rules for the formulation of learning outcomes, such as for:

- Use action verbs for specific level and type specification;
- Specify and contextualise the action verb, including conditions and criteria in which the action takes place;
- Avoid vague formulations and link to teaching/learning and assessment;
- Group learning outcomes in “Units” or “Modules” and link them to overall learning outcomes at qualification level.

3.3.1. Use action verbs

Each statement, after the common statement on audience (“A learner ...”), should begin with a precise action (active) verb, followed by the object of the verb followed by a phrase that gives the context. For overall learning outcomes at the level of qualifications, it is important to use adequate verbs, according level descriptors and type specifications of the HQF.

For example:

- “A learner correctly is able to select the wires to be used, and pull them professionally, using an installation plan”. (**Not** well: “A learner was made familiar with the installation plans”)
- “An individual/learner is able to write a report that presents the relationship between chemical structure and material properties”. (**Not** well: “Material properties were properly identified and brought into relationship with chemical structure”).

It is generally benefit to use only one verb for one statement of learning outcomes, except in the cases when the complexity of specific learning outcomes additionally needs to be described.

3.3.2. Specify and contextualise the action verb

Learning outcomes must be specified and contextualised. Therefore it is essential to provide an indication as to what knowledge, skills and competence of the learner refer to, and as to what kind of performance is concerned.

For example:

- “A learner is able to explain the function of hardware components” (**Not** well: “A learner is able to explain the hardware”)
- “A learner is able to provide a general overview of the most commonly used materials and properties in electrical engineering” (**Not** well: “A learner knows the most commonly used materials in electrical engineering”).

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3.3.3. Avoid vague formulations and link to teaching/learning and assessment

All statements of learning outcomes should be clear and understandable for the wider public, or at least for learners, rather than only for experts. Avoid complicated sentences. If necessary, use more than one sentence to ensure clarity. In addition, the formulation of statements of learning outcomes should neither be too general nor too specific. Avoid vague terms like know, understand, learn, be familiar with, be exposed to, be acquainted with, and be aware of. These terms are associated with teaching objectives rather than learning outcomes. Take also into account prior knowledge, available time and the learning opportunities (credits, entry requirements, etc.)

As working on writing the learning outcomes, it is important to ask ourselves how these outcomes will be assessed, i.e. how will you know if the student has achieved these learning outcomes? If the learning outcomes are very broad, they may be difficult to assess effectively. If the learning outcomes are very narrow, the list of learning outcomes may be too long and detailed. Clearly, it is necessary to have some form of assessment tool or technique in order to determine the extent to which learning outcomes have been achieved. Examples of direct assessment techniques are the use of written examinations, project work, portfolios, grading system with rubrics, theses, reflective journals, performance assessment, etc. Examples of indirect assessment methods are surveys of employers, comparison with peer institutions, surveys of past graduates, retention rates, analysis of curriculum, etc.

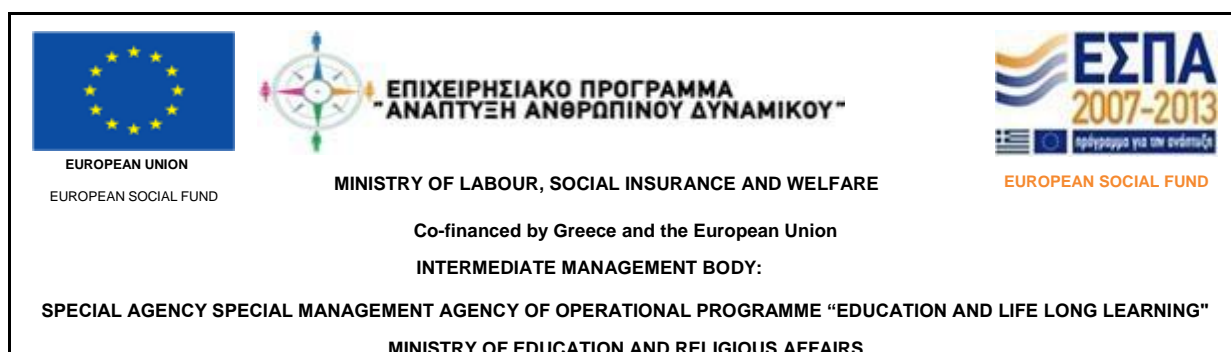
The challenge for teachers is to ensure that there is alignment between teaching methods, assessment techniques, assessment criteria and learning outcomes. This connection between teaching, assessment and learning outcomes helps to make the overall learning experience more transparent. Student course evaluations show that clear expectations are a vitally important part of effective learning.

For example:

- “A learner is able to prepare realistic workflow plans and staff assignments on the basis of the project planning” (**Not** well (too general): “A learner is familiar with personnel management in the construction sector”)
- “A learner is able to describe the composition of tires and can name their individual components” (**Not** well (too specific, or too convergent): “A learner is able to describe that the tires of a passenger vehicle are made of natural and synthetic rubber, chemical, oils, resins, carbon black, silica, steel, nylon and cord”).

3.3.4. Group of learning outcomes in “Units” and link to overall learning outcomes at the level of qualifications

The learning outcomes should be grouped into units (or modules or other ways of grouping). Units include multiple learning outcomes that are required for carrying out core tasks of the qualification to be described. A unit of learning outcomes, if possible, should consist of not too small, neither too large number of statements (preferable between 5 to 10 or 15). Unit of learning outcomes should be clearly linked to overall learning outcomes at the level of qualification (or programme level). It is



important to ensure that the learning outcomes of the module relate to the overall outcomes of the programme.

When writing learning outcomes, bear in mind the timescale within which the outcomes are to be achieved. There is always the danger that one can be over-ambitious when writing learning outcomes. It is important to ask if it is realistic to achieve the learning outcomes within the time and resources available. Even, before finalising the learning outcomes, ask your colleagues and experts and possibly former students if the learning outcomes make sense to them.

3.4. Overall learning outcomes comparing to unit learning outcomes




Overall learning outcomes at the level of qualifications are broader than unit learning outcomes. Learning outcomes at the level of units are written to clearly indicate how the learners will demonstrate their knowledge, skills and competence. Overall learning outcomes at programme level start, for example, as follows: “On successful completion of this programme, the learner will be able to ... (or something equivalent)”.

Units of learning outcomes should be clearly linked to overall learning outcomes at the level of qualification (or programme level). It is important to ensure that the learning outcomes of the units well relate to the overall outcomes of the programme. One of the best ways to ensure an effective link between units and overall learning outcomes is by using two-dimensional table, as shown:

	Overall learning outcomes at the level of qualification						
Units of learning outcomes	Overall LO-1	Overall LO-2	Overall LO-3	Overall LO-4	Overall LO-5	...	Etc.
Unit-1	X				X		
Unit-2		X		X			
Unit-3			X		X		
Etc.							

For example, for qualification learning outcomes:

- On the successful completion of the programme, the learner will be able to:
 - Apply Mathematics, Statistics and their applications in complex problems,
 - Analyse business problems and propose solutions,
 - Confidently engage in and successfully resolve building services engineering projects in both the technical and managerial aspects and communicate effectively their resolution.
 - Apply concepts and skills learnt in a variety of contexts,

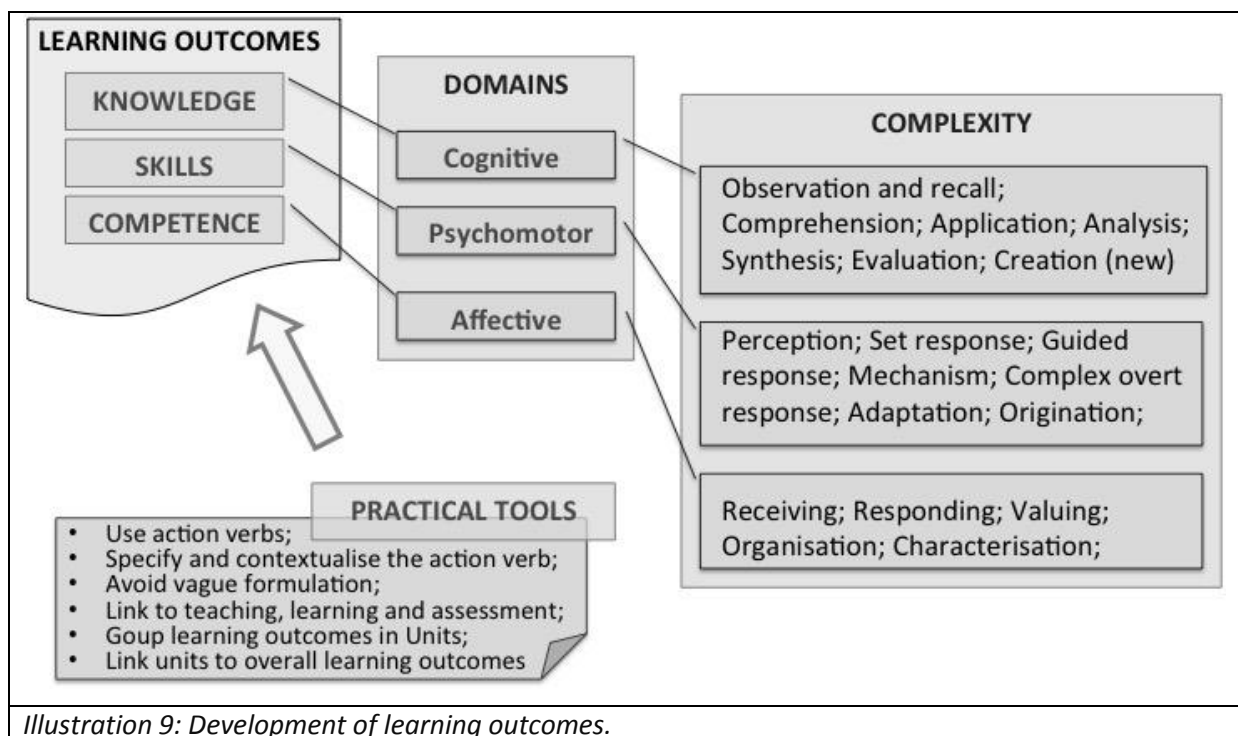
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- Work independently and effectively in a team,
- Take responsibility for his/her own learning,
- Etc.

Unit learning outcomes focus on what a learner can demonstrate. They define what a learner must be able to do in order to pass the unit. It is important to bear in mind when designing unit learning outcomes that all learning outcomes should be assessable. In addition, when designing unit learning outcomes, it is important to give consideration to how the module fits into an overall qualification (programme).

For example, for unit learning outcomes:

- On successful completion of the unit, a learner will be able to:
 - Identify a wide variety of learning and teaching methods that may be employed effectively in higher education,
 - Discuss the theories of learning that underpin their teaching approach,
 - Explain the role of accounting information in organisations,
 - Etc.



Key messages:

There are 3 domains of learning outcomes developed, including lists of action verbs for each domain and according to their complexity: cognitive (what a learner knows and understands); psychomotor (what a learner is able to do/perform); affective (Beliefs, values and attitudes of a learner).

Complexity of cognitive domain is: observation and recall (the ability to remember information; example of action verbs are in the text); comprehension (understanding, the ability to interpret and explain information); application (the ability to use information in a new situation, to use knowledge and skills acquired by learning to solve problems and create new approaches); analysis (the ability to break down information to understand its structure, to categorize, and to recognize pattern); synthesis (the ability to bring together sets of information to create or invent original solutions to problems, to illustrate relationships between parts of a whole); evaluation (the ability to make a judgment based upon evidence); creation (the ability to create or invent something original).

Complexity of psychomotor domain is: perception: using sense organs to obtain cues about a motor activity, e.g. repeat oral/written instructions for performing and experiment); set response (demonstrating readiness to take a particular action, e.g. explain the series of steps involved in a process); guided response: early stage of learning; a performance skill including imitation and trial-and-error e.g. following stepwise instructions); mechanism (later stage of learning; a performance skill when it can be performed with proficiency, e.g. follow the same procedure smoothly and confidently); complex overt response (skilful performance of a complex movement pattern e.g. performing a routine procedure quickly and accurately); adaptation (skills that are so well-developed that the individual can modify them to fit the situation e.g. alter a routine procedure to deal with an unfamiliar problem); origination (creating new movement patterns based on highly developed skills e.g. developing a new procedure to deal with new situations).

Complexity of affective domain is: receiving (attending to a stimulus, e.g. willing to listen instructions – awareness, attention to new information); responding (reaction to a stimulus, participating in a discussion, willing to participate, active pursuit of an interest, willingness to respond, motivation); valuing (attaching value to an object, phenomenon, behaviour or principle e.g. demonstrate by means of action or expression an appreciation of good teamwork); organisation (organising different values into the beginning of an internally consistent value system, e.g. adopt a systematic approach to problem solving); characterisation (internalising a value system and behaving accordingly in a pervasive, consistent and predictable manner, e.g. display self reliance, work independently and diligently, act ethically).

While developing assessment criteria and procedures it should be ensured that behavioural verbs within learning outcomes are well linked to assessment criteria and procedures. It is important that each assessment not only reflects learning outcomes, but that the assessment is targeted at the complexity level of learning outcomes.

There are important rules for the formulation of learning outcomes, such as: to use action verbs for specific level and type specification; to specify and contextualise the action verb, including conditions and criteria in which the action takes place; to avoid vague formulations and link to teaching/learning and assessment; to group learning outcomes in “units” or “modules” and link



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them to overall learning outcomes at the level of qualification.

4. Recommendation to the design of relevant and effective learning outcomes

Design of learning outcomes can be based on different settings, or in reality mix of the following:

- Learning outcomes based on a theoretical or research formulation;
- Learning outcomes based on negotiation between stakeholders;
- Learning outcomes borrowed/adapted from elsewhere.

In order to design relevant and effective learning outcomes, it is recommended to engage experts in the sector, as well as experts in learning outcomes development. The following questions may help experts to use the outcome-oriented way of thinking. For example:

- What learning outcomes should learners possess after completing the programme?
- What learning outcomes help learners achieve a successful professional career?
- Describe the qualification to wider society: knowledge, skills and competence.
- What knowledge, skills and competence have to be listed in an international and national tender (for example call for project, etc.) for candidates with that qualification?
- Explain the assessment for specific units or qualification: what knowledge, skills and competence must a learner display in order to successfully pass the examination?
- What sort of knowledge (theories, principles, formulas, etc.), skills and competence (degree of responsibility and the level of autonomy) are connected to the specific qualification?

Once the learning outcome description is drafted, a cross-check with the principles on how to formulate learning outcomes is recommended. The following checklist can be used for this cross-check:

- All verbs used in the description of learning outcomes are active verbs;
- There are no vague verbs;
- Written statements include all characteristics of effective learning outcomes;
- All verbs are specified and contextualised to provide adequate information;
- Regarding the number, there are neither too many, nor too few learning outcomes, both, at qualification and unit levels;
- The formulations are focused on the outcomes, not the processes (teacher's perspective);
- Learning outcomes are observable and can be assessed;



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- Learning outcomes are aligned with assessment;
- Appropriate conditions for performance are specified;
- Learning outcomes refer to the entire education and training programme (not to individual learner);
- Learning outcomes are realistic, taking into account prior knowledge, available time and learning opportunities;
- Learning outcomes are clear and understandable for learners;
- Unit learning outcomes fit within the overall learning outcomes, and all overall learning outcomes cover one or more unit learning outcomes.

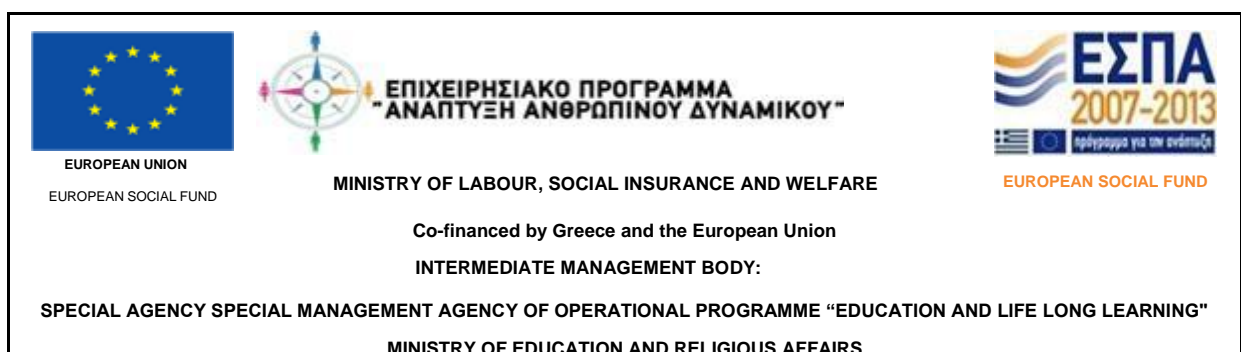
4.1. Practical steps to writing learning outcomes

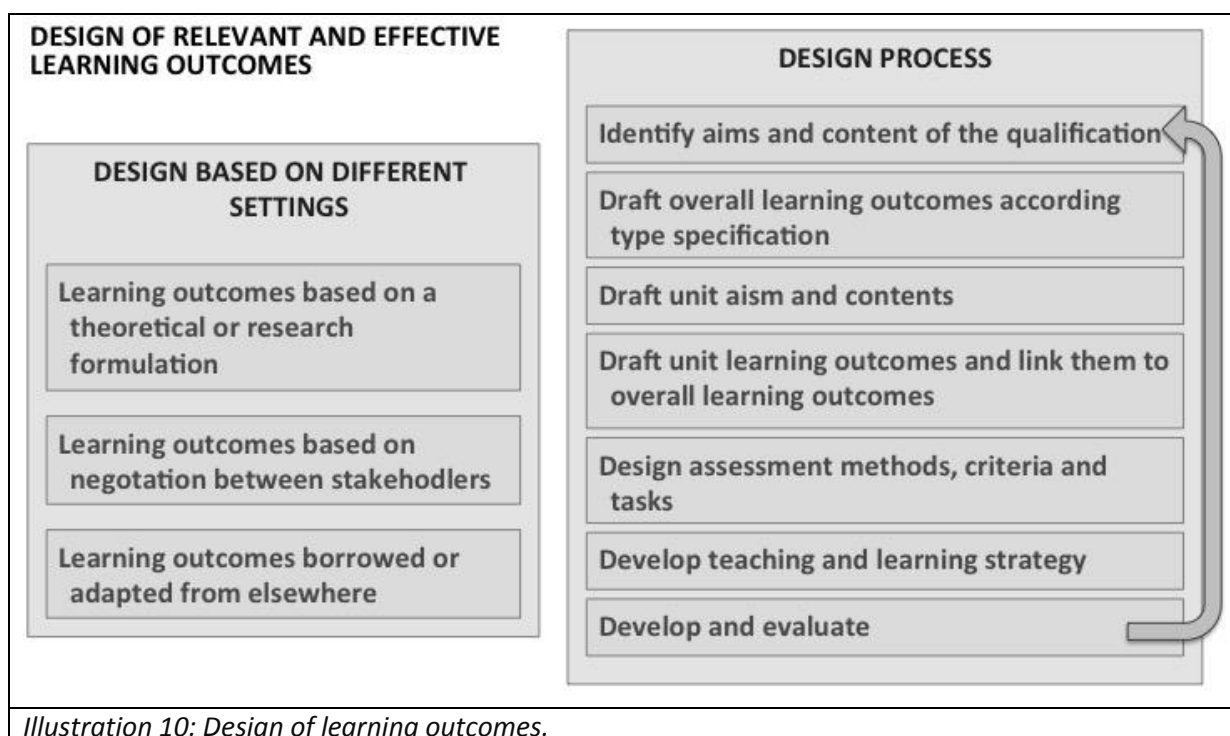
The following steps are recommended:

- Identify the aims of the qualification (programme);
- Classify learning outcomes (cognitive, psychomotor, etc.);
- Identify the level, level descriptors and type specification required;
- Choose a specific action verb for each learning outcome;
- Decide how you will measure and assess the achievement of the outcome;
- State success criteria.

The relevant design process of learning outcomes that could help writing effective learning outcomes could be as follows:

- Identify aims and content of the qualification (programme);
- Draft overall learning outcomes at qualifications level according type specification;
- Draft unit aims and contents;
- Draft unit learning outcomes and link them to overall learning outcomes at the qualification level;
- Design assessment methods, criteria and tasks;
- Develop teaching and learning strategy;
- Develop and evaluate → and go to the beginning of the recommended process until you are satisfied.





Key messages:

Design of learning outcomes can be based on mix of different settings: learning outcomes based on a theoretical or research formulation; learning outcomes based on negotiation between stakeholders; learning outcomes borrowed/adapted from elsewhere.

The following steps are recommended: 1) Identify the aims of the qualification (programme); 2) Classify learning outcomes; 3) Identify the level, level descriptors and type specification required; 4) Choose a specific action verb for each learning outcome; 5) Decide how you will measure and assess the achievement of the outcome; 6) State success criteria.

The relevant design process of learning outcomes that could help writing effective learning outcomes could be as follows: 1) Identify aims and content of the qualification (programme); 2) Draft overall learning outcomes at qualifications level according type specification; 3) Draft unit aims and contents; 4) Draft unit learning outcomes and link them to overall learning outcomes at the qualification level; 5) Design assessment methods, criteria and tasks; 6) Develop teaching and learning strategy; 7) Develop and evaluate → and go to the beginning of the recommended process until you are satisfied.

5. Making learning outcomes happen

According to the analysis of the learning outcomes approaches in the EU member states, there are typical common approaches to increase the use of learning outcomes: top-down, bottom-up, and a combination of them.

All member states are using the EQF as the basis for comparison of qualifications levels using the EQF level descriptors. The member states are developing, implementing or reforming their national qualifications frameworks. These qualifications frameworks are also built on level descriptors and common quality assurance principles. The EQF and the NQFs put a top-down pressure on qualifications systems to use learning outcomes approach.

One of the key attributes of NQFs, as a tool for modernisation, is the capacity of NQFs to bring all stakeholders working together on learning, assessment and design of qualifications. When stakeholders try to establish ideas of alignments between their different sets of qualifications they are inevitably drawn to the use of learning outcomes since there is no other known reliable, objective and trusted method of making comparisons.

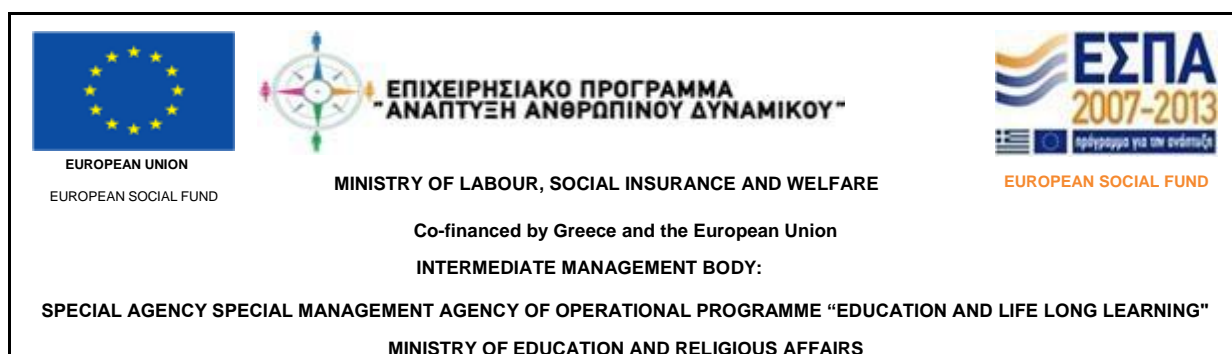
This top-down approach can be enhanced with concrete piloting of new approaches and good dissemination of results. In many countries there are already good examples of learning outcome approaches that have developed because they are better able to meet needs in comparison to other approaches (bottom-up developments, for example). The use of learning outcomes in vocational education and training settings is often advanced because competence is a key goal for training programmes. The transfer of good practice within a sector and between sectors is a major challenge, but is inevitably enhanced when concrete descriptions of practice and benefits are made clear.

The top-down and bottom-up approaches are not the only main strategic approaches. One of other approaches, as a combination of two, for example, is to engage experts within the key stakeholder group – the teachers and their institutions. Expert teacher training has the advantages of learning outcomes in didactics and assessment is a long-term strategy that could have a formative effect on curricula and qualifications.

5.1. Advantages of learning outcomes

As it is written in this document, there is a wide set of advantages by using learning outcomes. Detailed, well-written learning outcomes allow both teacher and learners to have a clear picture of the behaviour that is expected of the latter at the end of a course or units. Learning outcomes can help to provide direction and stability in the curricula, and can also help to guard against self-interpretation of programmes.

It is also possible to employ a learning outcomes-based approach when planning laboratory and other practical work. It is possible to provide the learners with a clear indication of the desired learning outcomes of such practical training before it starts.



Another advantage that clearly articulates learning outcomes is that of adjusting teaching methods to facilitate the achievement of the written learning outcomes.

An example of a further benefit, which can arise from a clear statement of learning outcomes, is clear alignment to assessment. Teachers who are in possession of such learning outcomes should be in a much better position to decide how those learning outcomes may be assessed, since they should know exactly what behaviour they are supposed to be assessing.

Further advantages for learners, teachers, employers, policy makers and other stakeholders are well explained in the document.

5.2. Potential issues and overcome

One of the issues of adopting learning outcomes-based approach is that the learning outcomes may be given greater status than they deserve. Learning outcomes are the end result of an assessment and judgement on someone's part.

Another danger inherent in learning outcomes-based approach is that teaching and learning may become so prescribed that spontaneity withers and initiative is stifled. Also, a total concentration on the achievement of clearly-defined learning outcomes may lead to the production of learners who are certainly well-trained in specific areas, but who lack the broad spectrum of knowledge, abilities, skills and desirable attitudinal traits that are normally associated with a balanced education.

There is also a danger of devaluing the art of teaching, which requires a readiness to treat different learners differently.

An example of a very practical weakness of the learning outcomes-based approach is that learning outcomes can be difficult and time-consuming to develop. Many teachers may feel that they simply do not have the time to produce well-written learning outcomes, and, if insufficient time and skill are devoted to the task, the net result may well be anything but beneficial to the course.

Another weakness of learning outcomes-based approach is linked to course or curriculum development, which should be an on-going cyclical process. It means that all learning outcomes should themselves be re-appraised at regular intervals - not only to determine whether they are being achieved in the course, but also to establish whether they continue to reflect a valid interpretation of the course's direction and emphasis; if they do not, then it is time to change them.

One of final weaknesses is that learning outcomes might bring a culture of cynicism and irresponsibility.

By step-by-step and careful implementation of learning outcomes, it is possible to overcome all of the above and similar issues regarding learning outcomes.

Key messages:

There are typical common approaches in the EU to increase the use of learning outcomes: top-down,



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bottom-up, and a combination of them. In many countries there are already good examples of learning outcome approaches that have been developed, because they are better able to meet needs in comparison to other approaches. The use of learning outcomes in vocational education and training settings is often advanced because competence is a key goal for training programmes. The combination of the top-down and bottom-up approaches is represented, for example, by engagement of experts within the key stakeholder group – the teachers and their institutions.

There is a wide set of advantages by using learning outcomes. Detailed, well-written learning outcomes allow both teacher and learners to have a clear picture of the behaviour that is expected of the latter at the end of a course or units. Learning outcomes can help to provide direction and stability in the curricula, and can also help to guard against self-interpretation of programmes. They can help in adjusting teaching methods to facilitate the achievement of the written learning outcomes. An example of a further benefit is a clear alignment to assessment.

One of the issues of adopting learning outcomes-based approach is that the learning outcomes may be given greater status than they deserve. Another set of weaknesses are: teaching and learning may become so prescribed that spontaneity withers and initiative is stifled; devaluing the art of teaching; learning outcomes can be difficult and time-consuming to develop; course or curriculum development, which should be an on-going cyclical process; learning outcomes could bring a culture of cynicism and irresponsibility.



By step-by-step and careful implementation of learning outcomes, it is possible to overcome all of these weaknesses and similar issues regarding learning outcomes.

6. References

1. Criteria and procedures for referencing national qualifications levels to the EQF, <http://ec.europa.eu/eqf/documents?id=73>
2. The European Qualifications Framework for Lifelong Learning – Brochure, <http://ec.europa.eu/eqf/documents?id=29>
3. The European Qualifications Framework documentation, http://ec.europa.eu/eqf/documentation_en.htm




7. Annexes

7.1. Brief Practical Guidelines how to write good learning outcomes in the HQF

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7.2. Level Descriptors of the HQF

Levels	Knowledge	Skills	Competence
8	Has knowledge at the most advanced levels of a field of work or study and at the interface with other fields.	Has acquired very advanced and specialized skills and techniques, including synthesis and evaluation, required to solve critical problems in research and/or innovation for enlarging and redefining existing knowledge or existing professional practice.	Demonstrate substantial authority, innovation, autonomy, scholarly and professional integrity and sustained commitment to the development of new ideas or processes at the forefront of work or study contexts including research.
7	Has highly specialized knowledge, some of which is cutting-edge knowledge in a field of work or study and which is the basis for original thinking; has a critical awareness of knowledge issues in a field and at the interface of different fields.	Holds specialized problem-solving skills required in research and/or innovation in order to develop new knowledge and procedures and to integrate knowledge from different fields.	Can manage and transform work or study contexts that are complex, unpredictable and require new strategic approaches; can take responsibility for contributing to professional knowledge and practices and/or for the performance evaluation of strategy groups.
6	Has advanced knowledge of a field of work or study, involving critical understanding of theories and principles.	Possesses advanced skills and has the ability to demonstrate the virtuosity and innovation required to solve complex and unpredictable problems in a specialized field of work or study.	Can manage complex technical or professional activities or projects, taking responsibility for decision-making in unpredictable work or study contexts; can assume responsibility for managing the professional development of individuals and groups.
5	Demonstrates comprehensive, specialized, factual and theoretical knowledge within a field of work or study and is aware of the limits of knowledge.	Holds a wide range of cognitive and practical skills required to find creative solutions to abstract problems.	Can manage and supervise, in the context of a specific task or learning process, in which unforeseen changes can occur; can revise and develop both their personal performance and that of others.
4	Has acquired a wide range of theoretical knowledge and intelligence analysis allowing them to understand the field of work or study and apply data and processes in a general context.	Can use fluently the knowledge and ability to apply a range of techniques and specialized skills in a field of work or study; has communication skills at the level of theoretical and technical information and can find solutions to specific problems in a field of work or study.	May perform independently qualitative and quantitative tasks in a specific field of work or study that requires professional competence; has the ability to oversee the quality and quantity of work of other people with responsibility and autonomy; demonstrates an increased level of key competences that can serve as the basis for studying higher education.
3	Has acquired basic general knowledge that allows them to understand the relationship of theoretical knowledge and information with a field of work or study; understands the components and procedures appropriate to complex tasks and instructions.	Can demonstrate broad cognitive and practical skill in successful execution of complex tasks both in intimate and nonintimate contexts; has communication skills and problem-solving capabilities through selecting and applying basic methodologies, tools, materials and information.	Can perform tasks autonomously in a particular field of work or study; has the ability to adjust their behavior depending on the needs of problem solving; takes initiatives in specified fields of work or study and acts under supervision in implementing emergency procedures of quality control.
2	Has acquired basic general knowledge related to a field of work or study that allow them to understand the procedures for implementing basic tasks and instructions.	Can apply basic knowledge and perform a variety of complex tasks in a field of work or study; has communication skills.	Can perform tasks in a specific field of work or study under limited supervision and/or with some autonomy in a structured context.

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1	Has acquired basic general knowledge related to the working environment that may serve as input into lifelong learning paths.	Can apply basic knowledge and perform a specific range of simple tasks; has basic and recurring social skills.	Can perform simple and repetitive tasks by applying basic knowledge and skills under direct supervision in a structured context.
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