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ENTELIS

“European Network for Technology Enhanced learning in an inclusive Society”

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Executive Summary

This deliverable – produced within Work Package 3 of the ENTELIS project (**WP3 - State of Art Analysis on innovation in ICT and ICT-AT education and learning**) – provides a taxonomy and glossary for ICT-AT (Information Communication Technology – Assistive Technology) learning events and processes in various educational settings, on the basis of the literature and resources review, as well as the focus of the project’s aims. The taxonomy and glossary include terms and definitions necessary to identify the concepts used and interpreted in the project’s deliverables and outcomes. Hence, this deliverable presents relevant terminology organized in the following different ways:

(a) Part I Taxonomy; this part includes concepts that were able to be classified under either mutually or non-mutually exclusive categories, referring to the area of education, the setting of learning, the reasons for learning, the format of learning, the expected outcomes of learning, the assessment of the learned and the formal output of learning.

(b) Part II Controlled Vocabulary; which includes concepts that cannot actually be classified in categories, but can represent broader areas the terminology on learning as well as ICT-AT. Hence in this part the glossary is divided in terminology related to Lifelong Learning, terminology related to ICT and ICT-AT specific learning, in terminology related to design of curriculum and learning programmes and finally in terminology related to actors/stakeholders involved in the learning process.

(c) Glossary Alphabetically; which includes all concepts and definitions of Parts I and II, in alphabetical order.

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Glossary Rationale

A **glossary** is an alphabetical list of terms in a particular domain of knowledge with the definitions for those terms.

The purpose of this glossary is to support the ENTELIS network in defining and describing learning and learning events in the field of ICT and ICT-AT. The specific focus is on the digital skills acquisition of persons with disabilities and elderly.

The glossary should make it possible:

- to **classify and describe** initiatives and experiences (e.g. curricula, learning programmes, certification programmes, etc.) in formal, informal and non-formal education.
- to facilitate the understanding in the network by **defining relevant terminology** used in describing learning and learning events.

The entries in the glossary are presented in different ways: Needing to respond to requirement of being a classification tool, **the first part** of the glossary has taken the form of a **taxonomy** based on the classification of descriptors in specific domains: areas of education, setting of learning, reasons for learning, format of learning, expected outcomes of learning, assessment of the learned, formal output of learning. **The second part** of the glossary is a controlled vocabulary presenting key terms and their derivatives in four areas: terminology related to Lifelong Learning, ICT and ICT-AT specific learning, designing curriculum and learning programmes, people involved in the learning process.

In the last part of the glossary all terms are listed in a purely **alphabetic list** of entries.

PART I - TAXONOMY

Taxonomy is a classification of concepts.

An important property of taxonomy is whether its categories are mutually exclusive or whether multiple categories are allowed to characterize the phenomenon of interest. Taxonomy may contain mutually exclusive categories, as well as non-mutually exclusive categories. An example of mutually exclusive categories is the distinction between formal and informal education. An example of non-mutually exclusive categories is the distinction between face-to-face learning and collaborative learning.

To classify and describe learning events many variables can be used, some of which contain mutually exclusive categories, while others contain non-mutually exclusive categories.

For this document the following variables have been considered relevant:

- The Area of Education (In which area of education does the learning take place?)
- The Setting of Learning (In which physical environment does the learning take place?)
- The Reasons for Learning (Why is the learner motivated to learn?)
- The Format of Learning (How is the learning organised?)
- The Expected Outcomes of Learning (What does the learner hope to achieve?)
- The Assessment of the learned (How will the learning process be assessed?)
- The Formal Output of Learning (What will certify the learning process?)

Areas of education (In which area of education does the learning take place?)

Mutually exclusive categories

- **Formal education:** Institutionalized school systems of teaching and learning based on a curriculum with predetermined purposes. Official school systems.

- **Early childhood/Pre-school education:** Educational programs and strategies geared toward young children up until the age of about eight, with a particular focus in the period before the commencement of compulsory education at primary school.
- **Primary education:** Compulsory educational programmes following pre-school/early childhood education, aiming at basic literacy of all levels and aspects. Curricula of primary education include objectives, content and methodologies for establishing foundations for all scientific fields.
- **Secondary education:** Educational programmes usually in compulsory education following primary education. Curricula of secondary education may have academic or vocational content and objectives.
- **Tertiary Education/Higher Education:** The educational level following the completion of secondary education, for the acquisition of an academic or professional degree, including universities and other institutions that provide qualifications for higher learning degrees
 - **Graduate/Post Graduate:** Academic or professional programs following undergraduate education
 - **Undergraduate:** Academic programs up to the level of a bachelor's degree, following secondary education
- **Non-Formal education:** Organized educational activities that take place outside the formal educational system.
 - **Adult Education:** A non-formal learning situation where adults engage in systematic learning activities for acquiring skills, knowledge, attitudes or values (in this case relevant to digital competences). However, it should be noted that formal education (such as tertiary education) also offers programmes for adult education.
- **Informal education/learning:** Learning experiences outside formal or non-formal education settings.

Setting of Learning (In which physical/virtual environment does the learning take place?)

Mutually exclusive categories

- **Educational institutions:** An educational organization that offers organized learning courses and activities.
 - **Mainstream school:** A general formal education school for all learners, which integrates learners with disabilities
 - **Inclusive school:** A formal education school based on the philosophy of differentiation and equality of education and designed to accommodate all learners' needs regardless of disability, language, gender, religion or ethnicity, by providing accessibility in physical and learning environment (Booth & Ainscow, 1998ⁱ; Symeonidou & Phtiaka, 2014ⁱⁱ)
 - **Special School:** A formal education school only for learners with disabilities. A special school may be specific to a certain type of disability (e.g. targeting learners with visual disabilities) or not. It is connected to the philosophy of segregating education in contrast to inclusive education (Booth & Ainscow, 1998; Symeonidou & Phtiaka, 2014).
 - **University:** A formal tertiary (higher) educational school that offers structured educational programmes for the acquisition of an academic degree and where academic research is conducted.
 - **Vocational Training Centre:** An educational institution that offers programmes to prepare learners for specific occupations in industry, crafts, technical careers or other professional positions in various fields, traditionally non-academic.
- **Day care centre:** An institution that provides care, rehabilitation and other facilities for people with disabilities of all ages.
- **Home-based learning:** Structured and organised learning activities that take place in the home environment.
- **Assistive Technology Centre:** An institution that supports the development of assistive technology learning, through various activities of education, assessment

and implementation of AT for people with disabilities of all ages, families and professionals.

- **Community:** A social unit of any size where persons with disabilities of all ages may belong and share values and experiences. It can be a face-to-face (e.g. village, neighbourhood, club, region) or a remote community (e.g. digital community, social network).
- **Virtual Learning Environment:** A learning environment based on the web, which is “designed to act as a focus for students’ learning activities and their management and facilitation, along with the provision of content and resources required to help make the activities successful.” (JISC, 2008)ⁱⁱⁱ

Reasons for learning (Why is the learner motivated to learn?)

Non-mutually exclusive categories

- **Personal/Intrinsic motivation:** Reasons to learn which are driven by an interest or enjoyment in learning, and which exist within the individual
 - **Personal goals:** The aims set by an individual as desired results of effort and actions
 - **Personal interest:** An individual’s feeling to want to learn and know about a subject
 - **Personal success:** An individual’s belief to accomplish personal goals.
 - **Career:** Opportunities to progress through an occupation and ongoing professional development.
 - **Self-fulfilment:** The fulfilment of an individual’s hopes and ambitions
- **External/Extrinsic motivation:** Reasons to learn which are driven or rely on external factors and pressures or a desire for reward.
 - **Reward:** Anything (e.g. object, certification, grade, etc) provided in recognition of the completion of a course, or an achievement, or effort.
 - **Expectations from others:** Imagined expectations or real expectations imposed on the learner by other people in his/her life (e.g. parents, friends etc.)

- **Incentives:** Any encouragement or motivation - external or internal – for learning, such as acknowledgment.

Format of Learning (How is the learning process organised?)

Non- mutually exclusive categories

- **Blended Learning:** A learning approach that combines face-to-face and computer mediated learning and instruction (Duhaney, 2004^{iv}). It is also referred to as hybrid learning, and it is a mixture of real time and space and virtual (online) setting that involves both synchronous and asynchronous learning.
- **Collaborative Learning:** Learning environments in which small groups of learners work together, in a joint commitment to a shared goal (Littleton and Häkkinen, 1999^v). It is about mutual engagement in a single unified task with shared conceptions of a problem (Roschelle & Teasley, 1995^{vi}), taking into consideration the social effects of working together. Collaborative learning represents a philosophy of interaction whereby learners are given more power over their own learning (McWhaw *et al.*, 2003^{vii}) and they elaborate their thoughts as part of the communication (Saab *et al.*, 2005^{viii}).
- **Distance Learning:** Institution-based, formal education where the learning group is separated, and where interactive telecommunications systems are used to connect learners, resources, and instructors (Simonson, 2012^{ix}). Learners are not physically present in a traditional setting/classroom
- **E-Learning:** The use of various ICT tools and other electronic means for learning. It includes all kinds of educational technology that electronically support the process of learning and instruction. It also includes other concepts such as technology-enhanced learning (TEL), computer-based training (CBT), internet-based training (IBT), web-based training (WBT), online education, virtual education, distance education, or digital educational collaboration (Sun *et al.*, 2008^x).
- **Face-to-face Learning:** Any learning activity in which all participants, i.e. learners, instructors, facilitators, peers, meet together in the same place at the same time. It may involve the use of technology but no remote communication technologies are required.

- **Learning by doing:** The process of learning from direct experience (e.g. by using technology for other functions, following tutorials in software, etc).
- **Mobile Learning:** Any activity that allows individuals to be more productive when consuming, interacting with, or creating information, mediated through a compact digital portable device that the individual carries on a regular basis (eLearning Guild, 2014^{xi}). It involves the use of mobile technology alone or in combination with other ICT to enable learning any time and anywhere (UNESCO, 2014^{xii}), in formal, non-formal and informal learning environments.
- **Open Learning:** An approach to learning which focuses on the needs of the learners as perceived by the learners (Coffey, 1988), and which gives them flexibility and choice over what, when, at what pace, where, and how they learn. Open learning activities, which often include aspects of e-learning^{xiii}, either enhance learning opportunities within formal education systems or broaden learning opportunities beyond formal education systems.
- **Peer-tutoring:** Learners receive support from peers. A representation of a microcosm of the traditional classroom (Gillies & Ashman, 2003^{xiv}); i.e. an unequal relationship between the tutor (teacher) and the tutee (learner), with high focus on curriculum content (Topping, 2005^{xv}).
- **Self-directed Learning:** A process by which learners take the initiative to pursue a learning experience and the responsibility to complete their learning, without necessarily excluding the involvement of other individuals. According to Knowles' (1975)^{xvi} general definition, in self-directed learning the learners organize their own learning by recognising their learning needs, setting learning objectives, identifying learning materials and resources, implementing learning strategies and evaluating their own learning outcomes.

Expected outcomes of learning

Non-mutually exclusive categories

Direct learning outcomes

- **Awareness:** Knowledge, information and concern about the necessity of reinforcing the digital competences of people with disabilities of all ages, in order to reduce the digital divide

- **Knowledge:** Facts, information, and skills acquired by a person through experience or education.
- **Learning skills:** The ability to search, construct and critically process knowledge and information, and develop skills and attitudes based on own interests and needs.
- **ICT-AT competence:** Skills and knowledge for using ICT-AT successfully.
- **ICT-AT competency:** The demonstration of the ability to perform a specific task or achieve specified criteria for ICT-AT.
- **ICT-AT skills:** The ability to use Assistive Technology based on ICT (ICT-AT) to successfully perform various tasks with digital technology. These may include:
 - **Computer control:** The ability to work efficiently and effectively using a computer. It requires familiarity with and understanding of the use of a computer and basic IT concepts (e.g. components of a PC and Operating Systems, files and file management, classifications to manage electronic files and folders, understanding of the common types of software, etc.)
 - **Internet use:** The ability to effectively use the internet. It requires essential internet skills such as efficient use of search engines to find information, use of e-mail to send and receive messages, use of the internet for online transactions (e.g. online banking, online purchases), etc. It also necessitates familiarity with safety considerations when using internet tools, and with internet ethics.
 - **Social media use:** The ability to use social media sites such as Facebook, Twitter, and Myspace to communicate with others, and to create and sustain relationships with others (Boyd & Ellison, 2007^{xvii}).

Indirect learning outcomes

- **Autonomy:** the perceived ability to control, cope with and make personal decisions about one's life on a day-to-day basis, according one's own rules and preferences^{xviii} (Malanowski, Özcivele& Cabrera 2008)

- **Employment opportunities:** Prospects and chances provided to people with disabilities to obtain a work position in any professional, academic, scientific or other field.
- **Further learning opportunities:** Prospects and chances provided to people with disabilities of all ages to get involved in formal or non-formal learning activities
- **Quality of life:** The individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns (WHO, 2014^{xix}).
- **Self-esteem:** A person's overall sense of self-worth or personal value.
- **Social participation:** A person's involvement and interaction with others

Assessment of the learned^{xx}

Non-mutually exclusive categories

- **Tools for Assessment**
 - **Assessment Rubric:** A scaled scoring or grading guide, which provides a set of criteria and standards for judging performance and distinguishing between different levels of achievement
 - **Criterion-Referenced Assessment:** An assessment where an individual's performance is compared to a specific pre-determined learning objective or performance (and not to the performance of other students).
 - **Direct Measures of Learning:** Processes used to provide direct evidence, in the form of student products or performances, of the actual learning that has occurred relating to a specific content or skill (e.g. objective tests, essays, portfolios, performances, projects, reflective essays, computer programs, and observations etc.)
 - **Portfolio/Dossier Assessment:** A type of performance assessment in which learners' work is systematically collected over a period of time, and is carefully reviewed and assessed for evidence of progress, effort, and achievement with respect to established learning outcomes and standards. In addition to examples of their work (e.g. samples of projects, exams, papers, presentations, videos of speeches

and performances, reflective journals, etc.), most portfolios include reflective statements prepared by learners.

- **Formal tests:** Tests in which the directions of administration are clear cut and allow little, if any, discretion on the part of the teacher (e.g. university entrance examinations). Formal tests are scored in a carefully prescribed manner.
- **Standardized assessment:** An assessment designed to assist schools or other academic institutions in sorting out student performance along a continuum of ability and/or achievement. It is administered and scored in a predetermined, standard manner, so that the assessment results can be used to compare individuals or groups, and highlight differences in achievement levels.
- **Summative assessment:** Accountability-oriented assessment, usually high-stakes, which is employed at the completion of a particular sequence of learning activities to provide a macro view of teaching and learning. It includes marks or grades against an expected standard that sum-up or summarise the performance for individual learners, and/or statistics about the program as a whole for internal or external accountability purposes.

- **Format of Assessment**

- **Diagnostic assessment/Pre-assessment:** Assessment that occurs at the beginning of a unit of study, and which deliberately seeks to identify where learners' prior, or current, understandings and competencies are, in order to inform instruction accordingly.
- **Formative assessment:** Ongoing, improvement-oriented assessment which is interwoven with the learning process, and which is intended to provide regular feedback that can be used to guide improvements in teaching and learning. Assessment activities are usually low-stakes or no-stakes.
- **Performance Assessment:** The process of using student activities or products, as opposed to tests or surveys, to evaluate students' knowledge, skills, and development. In performance assessment learners either do something in front of an audience (e.g. the whole

class) or make a product (such as a piece of artwork, a device that solves a problem, a working model, etc.).

- **Program Level Assessment:** Assessment interested in the cumulative effects of the education process; it does not focus on an individual learner, but rather on what and how an academic program is contributing to the learning, growth and development of students as a group.
 - **Self-Assessment:** Assessment undertaken by the student herself or himself, on her or his own criteria, or using a shared rubric (e.g. use of a reflective journal).
-
- **Feedback:** Information that the student gives the teacher or the teacher gives the student about learning processes and progress towards learning goals. Feedback can help students shape their learning approaches, and help educators shape their teaching programs.

 - **Evaluation:** A value judgment about quality. When used in reference to educational settings, evaluation means to measure, compare, and judge the quality of student work, schools, or a specific educational program.

Formal output of learning (What will certify the learning process?)

Mutually exclusive categories

- **Award:** A mark of recognition (e.g. a prize, an official document) provided to individuals in honour of achievement.
- **Certificate of attendance:** A document provided to individuals that have attended a particular course, lecture or seminar which officially confirms the attendance of the course.
- **Certificate:** A document provided to individuals that have completed a particular course which officially confirms participation in the course and completion of the requirements.
- **Degree:** A diploma awarded in recognition of satisfactory completion of tertiary education programs, academic or professional, in undergraduate or (post)graduate studies.
- **Diploma:** A certificate awarded by an educational institution as evidence of an individual's successful completion of a course of study.

Part II CONTROLLED VOCABULARY

The glossary is divided in four sections:

Terminology related to Lifelong Learning

ICT and ICT-AT specific learning

Design of curriculum and learning programmes

Actors/Stakeholders involved in the learning process

Terminology related to Lifelong Learning

- **Continuing professional development (CPD):** Learning activities through which professionals maintain and enhance their knowledge and skills related to their profession. CPD necessitates commitment of professionals to lifelong learning, i.e. to the continued updating of their skills and knowledge in order to remain professionally competent and achieve their true potential. It can combine different methodologies to learning (e. g training workshops, conferences, e-learning programs, etc.) all focused for an individual to improve and have effective professional development.
- **Digital/ Information society:** The modern society where new technologies (ICT) are utilized in every spectrum of social, political and economical sectors
- **Initial education:** Formal education of individuals before their first entrance to the labour market.
- **Lifelong learning:** According to the European Commission (2001)^{xxi}, "Lifelong learning is all learning activity undertaken throughout life, with the aim of improving knowledge, skills and competence, within a personal, civic, social and/or employment-related perspective." (p.10). Lifelong learning crosses sectors, promotes learning beyond traditional schooling and throughout adult life. It is flexible, diverse and available at different times and in different places.
- **Vocational education:** Educational programmes that prepare learners for specific occupations in industry, crafts, technical careers or other professional positions in various fields, traditionally non-academic. Curricula of vocational education

include learning objectives and strategies for the development of expertise in particular skills and techniques.

- **Vocational in-service training:** Educational programmes delivered during an individual's employment, often organised by the employer, which provide learners with additional skills and expertise specific to their occupation.

ICT and ICT-AT specific learning^{xxii}

- **Accessibility (WHO, 2011):** Accessibility describes the degree to which an environment, service, or product allows access by as many people as possible, in particular people with disabilities^{xxiii}.
- **Assistive Technology (AT) Learning:** The acquisition of knowledge and skills, and the development of attitudes or values for the use of assistive technology, through practicing, studying, teaching and/or experiencing, in every aspect of life.
- **Digital Divide:** A term that refers financial, educational and social inequalities and expresses the difference between different people or groups of people (eg persons with disabilities, older adults, persons in different geographical regions, etc) in accessing and utilizing the possibilities and benefits of technology (Mossberger, 2003; Hilbert, 2013; Jaeger et al, 2014)
- **Digital Inclusion:** The development policy for the reduction of the digital divide and the promotion of digital literacy. It includes the design and implementation of strategies for education, services and opportunities provision in order to respond to challenges of digitally included persons (Jaeger et al, 2014)
- **Digital Literacy:** The acquisition of knowledge and skills, and the development of attitudes or values for effectively choosing and using ICT and ICT-AT. It is a blend of information, communication and technology literacy, including the basic knowledge and skills for using technology, acknowledging the possibilities it offers, and developing critical thinking for uses and resources.
- **Information and Communication Technology (ICT) Learning:** The acquisition of knowledge and skills, and the development of attitudes or values for the use of ICT, through practicing, studying, teaching and/or experiencing, in every aspect of life.

- **ICT-AT Learning:** The acquisition of knowledge and skills, and the development of attitudes or values about digital competences (i.e. the use Assistive Technology based on ICT – ICT-AT) by people with disabilities of all ages, through practicing, studying, teaching and/or experiencing, in every aspect of life.
- **Learning with ICT-AT:** The acquisition of knowledge and skills, and the development of attitudes or values, through using digital technologies (ICT-AT) by people with disabilities of all ages.
- **ICT-AT for access:** The use of ICT-AT by people with disabilities of all ages in order to effectively approach, enter, obtain, retrieve and/or utilize a building, a service, a product, an interface, a system or a device and benefit from the use.
- **ICT-AT for communication:** The use of ICT-AT by people with disabilities of all ages in order to participate in a bidirectional exchange of messages through any type of language system and/or mediator, for personal, social or other purposes.
- **ICT-AT for learning:** The use of ICT-AT by people with disabilities of all ages in order to receive, construct and process knowledge and develop skills and attitudes based on their individual needs and abilities.

Design of curriculum and learning programmes

- **Assessment:** A general term that describes the process of collecting, analyzing, and interpreting information in order to measure the extent of achieving the intended outcomes for student learning, program effectiveness, institutional effectiveness, etc.
 - **Assessment as learning:** Assessment as learning occurs when learners are actively engaged in the assessment process; by reflecting on and monitoring their own progress to inform their future learning goals.
 - **Assessment for learning:** Assessment for learning involves the employment of formal and informal assessment activities at the beginning of instruction (diagnostic assessment), and throughout the teaching and learning process (formative assessment) in order to obtain evidence about students' knowledge, understanding and skills and to inform the planning of future teaching learning

- **Assessment of learning.** The process of collecting, analyzing and interpreting evidence for the purpose of making judgments about a student’s level of achievement in regards to specific learning expectations and standards. A synonym for “summative assessment”, it usually occurs at defined key points during a unit of work or at the end of a unit, term or semester, and may be used to rank or grade students.
- **Accreditation:** A process through which official recognition of meeting all formal official requirements of academic excellence, curriculum, facilities, etc. is presented.
- **Certification:** Formal procedure by which an accredited or authorized person or agency assesses, in accordance with established requirements or standards, and verifies (through the issuing of an official certificate) the attributes, characteristics, quality, qualification, or status of individuals or organizations, or procedures or processes,
 - **Certified / Accredited ICT-AT course:** A course in which learners are involved in activities for developing ICT-AT competences towards the acquisition of a particular certification (e.g. ECDL).
- **Competence framework:** a structured overview of learning outcomes describing levels of competence and allowing the definition of progression in learning.
- **Content:** generally the term content refers the knowledge elements provided in a course or learning programme on which the learning is based.
- **Course:** A learning event developed and implemented with a particular set of learning objectives and activities for the acquisition of specific knowledge and skills.
 - **ICT competences course:** A formal or non-formal education course during which learners are engaged in learning activities for the acquisition of knowledge and skills, to use ICT, through practicing and studying.
 - **ICT-AT specific course:** A formal or non-formal education course during which learners are engaged in learning activities for the

acquisition of knowledge and skills, to use digital technology for people with disabilities of all ages, through practicing and studying.

- **Needs based course:** A course designed, implemented and assessed according to the needs of the learners it is addressed to. A learning needs assessment process precedes the design and development of the course.
 - **Non-certified ICT-AT course:** A course in which learners are involved in activities for developing ICT-AT competences without the acquisition of a certification.
- **Curriculum:** According to Hilda Taba (1962)^{xxiv} "all curricula, no matter what their particular design, are composed of certain elements. A curriculum usually contains a statement of aims and of specific objectives; it indicates some selection and organization of content; it either implies or manifests certain patterns of learning and teaching, whether because the objectives demand them or because the content organization requires them. Finally, it includes a program of evaluation of the outcomes."
- **Structured curriculum:** A plan for interaction with learners which involves instructional objectives, content, materials and process for evaluating learning. Content is organized in specific units/sessions and corresponds to objectives and evaluation strategies.
 - **Humanistic curriculum (model for ICT):** A curriculum where ICT-AT are considered as cross-curricular tools. It regards the computer (and technology), not as an isolated course but as a tool which empowers learners with knowledge, thinking skills and problem solving alternatives (Karagiorgi, 2013^{xxv}). Focus shifts from learning about computers to using computers in learning. Emphasis is placed on the learner as a constructor of knowledge, while traditional curriculum areas are approached in independent and flexible pathways (Nicholson, 1995^{xxvi}).
 - **Technocentric curriculum (model for ICT):** A curriculum where ICT-AT competencies are considered as a discrete curricular subject. It aims to equip learners with the necessary skills deemed important for their

future (Nicholson, 1995), considering ICT literacy as the acquisition of basic digital skills (Karagiorgi, 2013).

- **Inclusive curriculum:** A common curriculum for all learners where the general aims are universal, but the programme objectives and teaching strategies can and should differ, whereas areas of learning can be either common or different (Norwich & Lewis, 2007^{xxvii})
- **Learning goals or Goals for Learning:** Broad statements used to express intended results in general terms (e.g. problem solving, ethical awareness, etc.)
- **Learning needs:** The gap between a learner's current level and the desired level of knowledge, skills, or attitudes
- **Learning Objectives:** Clear, concise statements that are used to express intended learning outcomes in precise terms. Refer to specific tasks needed to accomplish the goals of the program, and serve as a guide in selecting appropriate assessment tools.
- **Learning Outcomes (Outcome Behaviours):** Operational statements that identify the specific student behaviours that evidence the attainment of the intended learning objectives, e.g. the acquisition of desired knowledge, skills, abilities, capacities, attitudes or dispositions for ICT-AT.
- **Learning programmes:** Learning programmes are intentionally designed and properly described educational interventions that aim at obtaining well specified learning outcomes.
- **Measures of learning:** A general term to describe how we know if learners have learned what we wanted them to learn or have achieved the skills we wanted them to achieve.
- **Individualized Educational Programme (IEP):** A learning plan with individualised learning objectives, proposed learning/teaching methodology and evaluation strategies for the needs of an individual learner with disabilities.
- **Universal Design for Learning:** Universal Design for Learning refers to a process by which a curriculum (goals, methods, materials, and assessment) is intentionally and systematically designed from the beginning to address individual differences (CAST 2011, 9^{xxviii}).

People involved in the learning process

- **Assistive Technology Team:** A multidisciplinary team including various professionals in education, rehabilitation and technology (e.g. assistive technology specialist, teacher/educator, special education teacher, occupational therapist, speech and language therapist, provider, designer, etc), family members/carers and the end-user that collaborate for the assessment of needs, selection of solutions, implementation and follow-up for the effective use of AT by a person with disabilities (end-user).
- **Assistive Technology Service/Provider:** Any service that directly assists an individual with a disability in the selection, acquisition or use of an assistive technology device^{xxix}.
- **Carer/caregiver:** A family member or a paid or volunteer individual that regularly supports a person with disabilities of any age.
- **Educator / Teacher:** A person who provides instruction and supports learning process in educational environments of a person with disabilities.
- **End-User:** A person with disabilities of any age that uses or will use any ICT-AT product or service.
- **Instructor:** A person who provides instruction and supports the learner's learning process.
- **Family members:** The group of people (e.g. parents, siblings, spouse, husband, children or other relatives) that support and have close interaction with a person with disabilities of any age and who are involved in the person's daily life.
- **Learner:** A person with disabilities of any age who is involved in learning, in any learning setting.
- **Peer:** a person who interacts in any way with a person with disabilities of all ages in the learning process and/or its implementation.
- **Pupil:** A person with disabilities of school age (around 3-18 years) that attends a formal educational setting/school up to secondary education.
- **Student:** A person with disabilities of all ages that attends any formal or non-formal educational setting/school.



- **Trainee:** A person with disabilities of all ages who receives training (for ICT-AT competences).
- **Trainer:** An instructor who delivers courses on ICT-AT skills for people with disabilities of all ages.
- **User:** The end-user or any person who is close to the end-user (e.g. family member, educator, carer etc) and is involved in the use of any ICT-AT product or service.

Glossary Alphabetically

- **Accessibility (WHO, 2011):** Accessibility describes the degree to which an environment, service, or product allows access by as many people as possible, in particular people with disabilities.
- **Adult Education:** A formal or non-formal learning situation where adults engage in systematic learning activities for acquiring skills, knowledge, attitudes or values (in this case relevant to digital competences).
- **Assessment *as* learning:** *Assessment as learning* occurs when learners are actively engaged in the assessment process; by reflecting on and monitoring their own progress to inform their future learning goals.
- **Assessment *for* learning:** *Assessment for learning* involves the employment of formal and informal assessment activities at the beginning of instruction (diagnostic assessment), and throughout the teaching and learning process (formative assessment) in order to obtain evidence about students' knowledge, understanding and skills and to inform the planning of future teaching learning
- **Assessment *of* Learning.** The process of collecting, analyzing and interpreting evidence for the purpose of making judgments about a student's level of achievement in regards to specific learning expectations and standards. A synonym for "summative assessment", it usually occurs at defined key points during a unit of work or at the end of a unit, term or semester, and may be used to rank or grade students.
- **Assessment Rubric:** A scaled scoring or grading guide, which provides a set of criteria and standards for judging performance and distinguishing between different levels of achievement
- **Assessment:** A general term that describes the process of collecting, analyzing, and interpreting information in order to measure the extent of achieving the intended outcomes for student learning, program effectiveness, institutional effectiveness, etc.
- **Assistive Technology (AT) Learning:** The acquisition of knowledge and skills, and the development of attitudes or values for the use of assistive technology, through practicing, studying, teaching and/or experiencing, in every aspect of life.

- **Assistive Technology Centre:** An institution that supports the development of assistive technology learning, through various activities of education, assessment and implementation of AT for people with disabilities of all ages, families and professionals.
- **Assistive Technology Service/Provider:** Any service that directly assists an individual with a disability in the selection, acquisition or use of an assistive technology device.
- **Assistive Technology team:** A multidisciplinary team including various professionals in education, rehabilitation and technology (e.g. assistive technology specialist, teacher/educator, special education teacher, occupational therapist, speech and language therapist, provider, designer, etc), family members/carers and the end-user that collaborate for the assessment of needs, selection of solutions, implementation and follow-up for the effective use of AT by a person with disabilities (end-user).
- **Autonomy:** The ability to perform or decide upon an activity independently with the effective use of ICT-AT
- **Award:** A mark of recognition (e.g. a prize, an official document) provided to individuals in honour of achievement (in this case ICT-AT related).
- **Awareness:** Knowledge, information and concern about the necessity of reinforcing the digital competences of people with disabilities of all ages, in order to reduce the digital divide
- **Blended Learning:** A learning approach that combines face-to-face and computer mediated learning and instruction (Duhaney, 2004). It is also referred to as hybrid learning, and it is a mixture of real time and space and virtual (online) setting that involves both synchronous and asynchronous learning.
- **Capstone Project:** A culminating learning experience which provides an opportunity for the learner to integrate and apply competencies acquired through coursework, knowledge, skills and experiential learning and to demonstrate a broad mastery of learning across an ICT-AT curriculum.
- **Career:** Opportunities to progress through an occupation and ongoing professional development.
- **Carer:** A family member or a paid or volunteer individual that regularly supports a person with disabilities of any age.

- **Certificate:** A document provided to individuals that have completed a particular course (in this case ICT-AT related) which officially confirms the attendance of the course.
- **Certified / Accredited ICT-AT course:** A course in which learners are involved in activities for developing ICT-AT competences towards the acquisition of a particular certification (e.g. ECDL).
- **Collaborative Learning:** Learning environments in which small groups of learners work together, in a joint commitment to a shared goal (Littleton and Häkkinen, 1999). It is about mutual engagement in a single unified task with shared conceptions of a problem (Roschelle & Teasley, 1995), taking into consideration the social effects of working together. Collaborative learning represents a philosophy of interaction whereby learners are given more power over their own learning (McWhaw *et al.*, 2003) and they elaborate their thoughts as part of the communication (Saab *et al.*, 2005).
- **Community:** A social unit of any size where persons with disabilities of all ages may belong and share values and experiences. It can be a face-to-face (e.g. village, neighbourhood, club, region) or a remote community (e.g. digital community, social network).
- **Computer control:** The ability to work efficiently and effectively using a computer. It requires familiarity with and understanding of the use of a computer and basic IT concepts (e.g. components of a PC and Operating Systems, files and file management, classifications to manage electronic files and folders, understanding of the common types of software, etc.)
- **Continuing professional development (CPD):** Learning activities through which professionals maintain and enhance their knowledge and skills related to their profession. CPD necessitates commitment of professionals to lifelong learning, i.e. to the continued updating of their skills and knowledge in order to remain professionally competent and achieve their true potential. It can combine different methodologies to learning (e.g. training workshops, conferences, e-learning programs, etc.) all focused for an individual to improve and have effective professional development.
- **Criterion-Referenced Assessment:** An assessment where an individual's performance in ICT-AT competences is compared to a specific pre-determined

learning objective or performance (and not to the performance of other students).

- **Daily life:** According to ICF (WHO, 2014) daily life is a set of activities for mobility, personal care, home activities, learning and applying knowledge, communication, interpersonal relations and interaction, education, employment, economic life, community and civic life, participation in political life and citizenship, recreation and leisure.
- **Day care centre:** An institution that provides care, rehabilitation and other facilities for people with disabilities of all ages.
- **Degree:** A diploma awarded in recognition of satisfactory completion of tertiary education programs, academic or professional, in **undergraduate or (post)graduate** studies.
- **Diagnostic assessment/Pre-assessment:** Assessment that occurs at the beginning of a unit of study, and which deliberately seeks to identify where learners' prior, or current, understandings and competencies are, in order to inform instruction accordingly.
- **Digital Literacy:** The acquisition of knowledge and skills, and the development of attitudes or values for effectively choosing and using ICT-AT. It is a blend of information, communication and technology literacy, including the basic knowledge and skills for using technology, acknowledging the possibilities it offers, and developing critical thinking for uses and resources.
- **Digital/ Information society:** The modern society where new technologies (ICT) are utilized in every spectrums of social, political and economical sectors
- **Diploma:** A certificate awarded by an educational institution as evidence of an individuals' successful completion of a course of study.
- **Direct Measures of Learning:** Processes used to provide direct evidence, in the form of student products or performances, of the actual learning that has occurred relating to a specific content or skill (e.g. objective tests, essays, portfolios, performances, projects, reflective essays, computer programs, and observations etc.)
- **Distance Learning:** Institution-based, formal education where the learning group is separated, and where interactive telecommunications systems are used to

connect learners, resources, and instructors (Simonson, 2012). Learners are not physically present in a traditional setting/classroom

- **Early childhood/Pre-school education:** Educational programs and strategies geared toward young children up until the age of about eight, with a particular focus in the period before the commencement of compulsory education at primary school.
- **Educator / Teacher:** A person who provides instruction and supports the learner's learning process in educational environments
- **E-Learning:** The use of various ICT tools and other electronic means for learning. It includes all kinds of educational technology that electronically support the process of learning and instruction. It also includes other concepts such as technology-enhanced learning (TEL), computer-based training (CBT), internet-based training (IBT), web-based training (WBT), online education, virtual education, distance education, or digital educational collaboration (Sun *et al*, 2008).
- **Employment opportunities:** Prospects and chances provided to people with disabilities to obtain/maintain a work position in any professional, academic, scientific or other field.
- **End-User:** A person with disabilities of any age that uses or will use any ICT-AT product or service.
- **Evaluation:** A value judgment about quality. When used in reference to educational settings, evaluation means to measure, compare, and judge the quality of student work, schools, or a specific educational program.
- **External/Extrinsic motivation:** Reasons to learn which are driven or rely on external factors and pressures or a desire for reward.
- **Face-to-face Learning:** Any learning activity in which all participants, i.e. learners, instructors, facilitators, peers, meet together in the same place at the same time. It may involve the use of technology but no remote communication technologies are required.
- **Family members:** The group of people (e.g. parents, siblings, spouse, husband, children or other relatives) that support and have close interaction with a person with disabilities of any age and who are involved in the person's daily life.

- **Feedback:** Information that the student gives the teacher or the teacher gives the student about learning processes and progress towards learning goals. Feedback can help students shape their learning approaches, and help educators shape their teaching programs.
- **Formal education:** Institutionalized school systems of teaching and learning based on a curriculum with predetermined purposes. Official school systems.
- **Formal tests:** Tests in which the directions of administration are clear cut and allow little, if any, discretion on the part of the teacher (e.g. university entrance examinations). Formal tests are scored in a carefully prescribed manner.
- **Formative assessment:** Ongoing, improvement-oriented assessment which is interwoven with the learning process, and which is intended to provide regular feedback that can be used to guide improvements in teaching and learning. Assessment activities are usually low-stakes or no-stakes.
- **Goals for Learning:** Broad statements used to express intended results in general terms (e.g. problem solving, ethical awareness, etc.)
- **Graduate/Post Graduate:** Academic or professional programs following undergraduate education
- **Home education:** Structured and organised learning activities that take place in the home environment.
- **Humanistic curriculum (model):** A curriculum where ICT-AT is considered as cross-curricular tools. It regards the computer (and technology), not as an isolated course but as a tool which empowers learners with knowledge, thinking skills and problem solving alternatives (Karagiorgi, 2013). Focus shifts from learning about computers to using computers in learning. Emphasis is placed on the learner as a constructor of knowledge, while traditional curriculum areas are approached in independent and flexible pathways (Nicholson, 1995).
- **ICT competences course:** A formal or non-formal education course during which learners are engaged in learning activities for the acquisition of knowledge and skills, to use ICT, through practicing and studying.
- **ICT-AT competence:** Skills and knowledge for using ICT-AT successfully.
- **ICT-AT competency:** The demonstration of the ability to perform a specific task or achieve specified criteria for ICT-AT.

- **ICT-AT for access:** The use of ICT-AT by people with disabilities of all ages in order to effectively approach, enter, obtain, retrieve and/or utilize a building, a service, a product, an interface, a system or a device and benefit from the use.
- **ICT-AT for communication:** The use of ICT-AT by people with disabilities of all ages in order to participate in a bidirectional exchange of messages through any type of language system and/or mediator, for personal, social or other purposes.
- **ICT-AT for learning:** The use of ICT-AT by people with disabilities of all ages in order to receive, construct and process knowledge and develop skills and attitudes based on their individual needs and abilities.
- **ICT-AT Learning:** The acquisition of knowledge and skills, and the development of attitudes or values about digital competences (i.e. the use Assistive Technology based on ICT – ICT-AT) by people with disabilities of all ages, through practicing, studying, teaching and/or experiencing, in every aspect of life.
- **ICT-AT skills:** The ability to use Assistive Technology based on ICT (ICT-AT) to successfully perform various tasks with digital technology. These may include:
- **ICT-AT specific course:** A formal or non-formal education course during which learners are engaged in learning activities for the acquisition of knowledge and skills, to use digital technology for people with disabilities of all ages, through practicing and studying.
- **Incentives:** Any encouragement or motivation - external or internal – for learning.
- **Inclusive curriculum:** A common curriculum for all learners where the general aims are universal, but the programme objectives and teaching strategies can and should differ, whereas areas of learning can be either common or different (Norwich & Lewis, 2007)
- **Inclusive school:** A formal education school designed to accommodate all learners’ needs regardless disability, language, gender, religion or ethnicity, based on the philosophy of differentiation and equality of education by providing accessibility in physical and learning environment (Booth & Ainscow, 1998; Symeonidou & Phtiaka, 2014)
- **Individualized Educational Programme (IEP):** A learning plan with individualised learning objectives, proposed learning/teaching methodology and evaluation strategies for the needs of an individual learner with disabilities.

- **Informal Learning:** Learning experiences outside formal or non-formal education settings.
- **Information and Communication Technology (ICT) Learning:** The acquisition of knowledge and skills, and the development of attitudes or values for the use of ICT, through practicing, studying, teaching and/or experiencing, in every aspect of life.
- **Institution:** An educational organization that offers organized learning courses and activities. For the purposes of this project institutions are considered those establishments that may directly or indirectly provide opportunities and activities for the development of ICT-AT competences for people with disabilities of all ages.
- **Instructor:** A person who provides instruction and supports the learner's learning process in ICT-AT skills (for the purposes on this project)
- **Internet use:** The ability to effectively use the internet. It requires essential internet skills such as the efficient use of search engines to find information, the use of e-mail to send and receive messages, the use of the internet for online transactions (e.g. online banking, online purchases), etc. It also necessitates familiarity with safety considerations when using internet tools and of internet ethics.
- **Learner:** A person with disabilities of any age who is involved in ICT-AT learning, in any learning setting.
- **Learning Objectives:** Clear, concise statements that are used to express intended learning outcomes in precise terms for ICT-AT competences. Refer to specific tasks needed to accomplish the goals of the program, and serve as a guide in selecting appropriate assessment tools.
- **Learning Outcomes (Outcome Behaviours):** Operational statements that identify the specific student behaviours that evidence the attainment of the intended learning objectives, i.e. the acquisition of desired knowledge, skills, abilities, capacities, attitudes or dispositions for ICT-AT.
- **Learning skills:** The ability to search, construct and critically process knowledge and information, and develop skills and attitudes based on own interests and needs.

- **Learning with ICT-AT:** The acquisition of knowledge and skills, and the development of attitudes or values, through using digital technologies (ICT-AT) by people with disabilities of all ages.
- **Lifelong learning:** According to the European Commission (2001), "Lifelong learning is all learning activity undertaken throughout life, with the aim of improving knowledge, skills and competence, within a personal, civic, social and/or employment-related perspective." (p. 10). Lifelong learning crosses sectors, promotes learning beyond traditional schooling and throughout adult life. It is flexible, diverse and available at different times and in different places.
- **Mainstream school:** A general formal education school for all learners, which integrates learners with disabilities
- **Measures of learning:** A general term to describe how we know if learners have learned what we wanted them to learn or have achieved the ICT-AT skills we wanted them to achieve.
- **Mobile Learning:** Any activity that allows individuals to be more productive when consuming, interacting with, or creating information, mediated through a compact digital portable device that the individual carries on a regular basis (eLearning Guild, 2014). It involves the use of mobile technology alone or in combination with other ICT to enable learning any time and anywhere (UNESCO, 2014), in formal, non-formal and informal learning environments.
- **Needs based course:** A course designed, implemented and assessed according to the needs of the learners it is addressed to. A learning needs assessment process precedes the design and development of the course.
- **Non-certified ICT-AT course:** A course in which learners are involved in activities for developing ICT-AT competences without the acquisition of a certification.
- **Non-Formal Learning:** Organized educational activities that take place outside the formal educational system.
- **Open Learning:** An approach to learning which focuses on the needs of the learners as perceived by the learners (Coffey, 1988), and which gives them flexibility and choice over what, when, at what pace, where, and how they learn. Open learning activities, which often include aspects of e-learning^{xxx}, either enhance learning opportunities within formal education systems or broaden learning opportunities beyond formal education systems.

- **Opportunities:** Targeting a set of circumstances that make it possible for an individual to accomplish a target or do something. For learning ICT-AT learning, opportunities as a motivation may also include any **outcome of learning** (defined elsewhere).
- **Peer:** a person who interacts in any way with a person with disabilities of all ages in the learning process (in this case of ICT-AT) and/or its implementation.
- **Peer-tutoring:** Learners receive support from peers. A representation of a microcosm of the traditional classroom (Gillies & Ashman, 2003); i.e. an unequal relationship between the tutor (teacher) and the tutee (learner), with high focus on curriculum content (Topping, 2005).
- **Performance Assessment:** The process of using student activities or products, as opposed to tests or surveys, to evaluate students' knowledge, skills, and development. In performance assessment learners either do something in front of an audience (e.g. the whole class) or make a product (such as a piece of artwork, a device that solves a problem, a working model, etc.).
- **Personal goals:** The aims set by an individual as desired results of effort and actions
- **Personal interest:** An individual's feeling to want to learn and know about a subject (in this case ICT-AT)
- **Personal success:** An individual's belief to accomplish personal goals.
- **Personal/Intrinsic motivation:** Reasons to learn which are driven by an interest or enjoyment in learning (ICT-AT), which exist within the individual
- **Portfolio/Dossier Assessment:** A type of performance assessment in which learners' work is systematically collected over a period of time, and is carefully reviewed and assessed for evidence of progress, effort, and achievement with respect to established learning outcomes and standards. In addition to examples of their work (e.g. samples of projects, exams, papers, presentations, videos of speeches and performances, reflective journals, etc.), most portfolios include reflective statements prepared by learners.
- **Primary education:** Compulsory educational programmes following pre-school/early childhood education, aiming at basic literacy of all levels and aspects. Curricula of primary education include objectives, content and methodologies for establishing foundations for all scientific fields.

- **Program Level Assessment:** Assessment interested in the cumulative effects of the education process; it does not focus on an individual learner, but rather on what and how an academic program is contributing to the learning, growth and development of students as a group.
- **Pupil:** A person with disabilities of school age (around 3-18 years) that attends a formal educational setting/school up to secondary education.
- **Quality of life:** The individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns (WHO, 2014^{xxxi}).
- **Reward:** Anything (e.g. object, certification, grade, etc) provided in recognition of the completion of a course, or an achievement, or effort.
- **Secondary education:** Educational programmes usually in compulsory education following primary education. Curricula of secondary education may have academic or vocational content and objectives.
- **Self-Assessment:** Assessment undertaken by the student herself or himself, on her or his own criteria, or using a shared rubric (e.g. use of a reflective journal).
- **Self-directed Learning:** A process by which learners take the initiative to pursue a learning experience and the responsibility to complete their learning, without however excluding the involvement of other individuals. According to Knowles' (1975) general definition, in self-directed learning the learners organize their own learning by recognising their learning needs, setting learning objectives, identifying learning materials and resources, implementing learning strategies and evaluating their own learning outcomes.
- **Self-esteem:** A person's overall sense of self-worth or personal value.
- **Self-fulfilment:** The fulfilment of an individual's hopes and ambitions
- **Self-worth:** Confidence in an individual's own abilities
- **Social media use:** The ability to use social media sites such as Facebook, Twitter, and Myspace to communicate with others, and to create and sustain relationships with others (Boyd & Ellison, 2007).
- **Special School:** A formal education school only for learners with disabilities. A special school may be specific to certain type of disability (e.g. for learners with visual disabilities) or not. It is connected to the philosophy of segregating

education in contrast to inclusive education (Booth & Ainscow, 1998; Symeonidou & Phtiaka, 2014).

- **Standardized assessment:** An assessment designed to assist schools or other academic institutions in sorting out student performance along a continuum of ability and/or achievement. It is administered and scored in a predetermined, standard manner, so that the assessment results can be used to compare individuals or groups, and highlight differences in achievement levels.
- **Structured curriculum:** A plan for interaction with learners which involves instructional objectives, content, materials and process for evaluating learning. Content is organized in specific units/sessions and corresponds to objectives and evaluation strategies.
- **Student:** A person with disabilities of all ages that attends any formal or non-formal educational setting/school.
- **Summative assessment:** Accountability-oriented assessment, usually high-stakes, which is employed at the completion of a particular sequence of learning activities to provide a macro view of teaching and learning. It includes marks or grades against an expected standard that sum-up or summarise the performance for individual learners, and/or statistics about the program as a whole for internal or external accountability purposes.
- **Technocentric curriculum (model):** A curriculum where ICT-AT competencies are considered as a discrete curricular subject. It aims to equip learners with the necessary skills deemed important for their future (Nicholson, 1995), considering ICT literacy as the acquisition of basic digital skills (Karagiorgi, 2013).
- **Tertiary Education/Higher Education:** The educational level following the completion of secondary education, for the acquisition of an academic or professional degree, including both universities and institutions that provide qualifications for higher learning degrees
- **Trainee:** A person with disabilities of all ages who receives training for ICT-AT competences
- **Trainer:** An instructor who delivers courses on ICT-AT skills for people with disabilities of all ages.
- **Undergraduate:** Academic programs up to the level of a bachelor's degree, following secondary education

- **Universal Design for Learning:** Universal Design for Learning refers to a process by which a curriculum (goals, methods, materials, and assessment) is intentionally and systematically designed from the beginning to address individual differences (CAST 2011, 9).
- **User:** The end-user or any person who is close to the end-user (e.g. family member, educator, carer etc) and is involved in the use of any ICT-AT product or service.
- **Vocational education:** Educational programmes that prepare learners for specific occupations in industry, crafts, technical careers or other professional positions in various fields, traditionally non-academic. Curricula of vocational education include learning objectives and strategies for the development of expertise in particular skills and techniques.
- **Vocational in-service training:** Educational programmes delivered during an individual's employment, often organised by the employer, which provide learners additional skills and expertise specific to their occupation.

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