COURSE FOR ADULTS

VIRTUAL INCLUSIVE EDUCATION PLATFORM

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COURSE FOR ADULTS

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INTRODUCTION

COURSE FOR ADULTS

This course offers its adult users the opportunity to acquire, update, complete, or expand their knowledge and skills for their personal and professional development through formal and non-formal education. We want to offer you the possibility of developing basic training, expanding and renewing your knowledge, skills, and abilities permanently.

Thus, the purpose of the course “TRAINING BASIC SKILLS” is to improve your professional qualification and develop your personal skills and participation in social, cultural, political, and economic life. We want to offer in particular a basic learning compatible with the learning of EPAS and other official adult training centers in Europe, which will facilitate you, once completed, to obtain official adult education certifications.

But this course will also help you develop tools for the critical analysis of your environment, and encourage you to directly participate in volunteering as a mechanism to build a more inclusive, diverse, and fair society.

This course proposes an innovative learning, not focused on memory or individual facts (like outdated education) but on the development of key competences through a virtual and personalized learning that you can conduct from home or even your smartphone. According to the European Parliament (the highest body of the European Union), through Recommendation 2006/962/EC, these competences are a combination of knowledge, skills, abilities, and attitudes appropriate to the context. This means that we do not only intend you to learn new things, but also learn how to do those things (skills) and how you face them (attitudes).

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DIDACTIC UNIT 1
WHAT IS THIS COURSE FOR?

COURSE FOR ADULTS

1.1 PURPOSE OF THE COURSE – LEVEL 1

The course you are going to start is intended to offer its adult users (like you) the possibility of acquiring, updating, completing, or expanding their knowledge and skills for their personal and professional development, through formal and non-formal education. By this, we mean that we offer you the possibility of developing a basic training, expanding and renewing your knowledge, skills, and abilities permanently.

This course matches the objectives and curricula defined in Order ECD/651/2017 of July 5th, which regulates basic education and its curriculum for adults for its on-site and on-line mode, by the Ministry of Education, Culture, and Sports of Spain, and its counterparts in the partner countries. This is especially useful for the Basic Initial Training (BIT) section for people who lack primary studies, to train them while contributing to their personal enrichment and providing the knowledge and skills necessary to access Basic Post-Initial Training, which leads to a Secondary Education Certificate.

Thus, the purpose of the "TRAINING BASIC SKILLS" course is to improve your professional qualification and develop your personal and participation skills for your social, cultural, political, and economic life. This will also help you develop tools to critically analyze your environment and encourage your direct participation in volunteering as a mechanism to build a more inclusive, diverse, and fair society.

This is why we offer you an educational offer adapted to your own needs, with lessons that will allow you to obtain the official Secondary Education Certificate offered by your country. This course will allow people like you, adults over 18 years old who could not get said certificate at the time, to learn in a way that is adapted to your previous knowledge, so the more you learn the more content is unlocked and the more opportunities you have to learn in the fields of your interest.

Thus, the course is planned in a modular structure that identifies your previous learning through a personalized teaching process with contents, tools, and resources adapted to offer adult students a comfortable and flexible learning experience. It is organized into three areas whose subjects offer creditable blocks that allow each user to advance at their own pace in each course, based on the initial assessment of the student (IAS), of his/her previous knowledge, and of their personal situation.

ABOVE ALL, WE WANT YOU NOT ONLY TO LEARN THINGS THAT HELP YOU TO CONTINUE YOUR STUDIES, BUT ALSO LEARN USEFUL THINGS THAT ALLOW YOU TO CRITICALLY ANALYZE YOUR ENVIRONMENT (WHEN YOU READ NEWS, WHEN SOMEONE MAKES A COMMENT, THE MOVIES YOU SEE…) MOTIVATE YOU TO PARTICIPATE IN IT TO HELP BUILDING A BETTER SOCIETY.

1.2 OBJECTIVES OF THE COURSE – LEVEL 1

The objectives of this course will be compatible with the curriculum of the Initial Education of each partner country, and will foster the development of the key competences necessary for adults to access Secondary Education, and to improve their knowledge, skills, and abilities for personal, work, and social development.

This course has the following OBJECTIVES:

• To acquire a basic training, expand and renew your knowledge, skills, and abilities permanently, and to facilitate your access to the different stages of the education system.

• To improve your professional qualification or acquire new training to carry out other jobs.

• To develop your personal abilities in the areas of expression, communication, interpersonal relationships, and knowledge building.

• To develop your capabilities and participation in social, cultural, political, and economic life, and acknowledge your rights to democratic citizenship.

• To develop a program that lessens the risks of social exclusion, especially of the most disadvantaged sectors.

• To adequately answer the challenges posed by the progressive aging of the population, providing older people the chance of increasing and updating their skills.

• To develop critical thinking and the ability of independent analysis, to build your own opinion of things.

• To be able to anticipate and solve peacefully any personal, family, and social conflict.

• To promote a real equality of rights and opportunities between men and women, and to critically analyze and assess the current inequalities between them.

In particular, the training provided by this course does not only focus on knowledge (such as education in the past), but also on the development of **key competences**. According to the European Parliament (the highest European Union organization) and the Recommendation 2006/962/EC, these competences **are defined as: a combination of knowledge, skills, abilities, and attitudes adequate to the context.** By this, we mean that the course is not only intended to teach new things, but also for you to learn how to do them (skills), and how to face them (attitudes).

We consider that key competences are "those that every person needs for their personal fulfillment and development, as well as for active citizenship, social inclusion, and employment".

There are **7** key competences, and all of them will be developed during this course:

1. Competence in linguistic communication - it refers to the ability to use language, express ideas, and interact with other people verbally or in written form.

2. Mathematical competence and basic competences in science and technology - the first one refers to the ability of applying mathematical reasoning to solve everyday life questions; the competence in science focuses on using scientific knowledge and methodology to explain the reality that surrounds us; and competence in technology applies this knowledge and methods to provide answers to human desires and needs.

3. Digital competence - it implies the safe and critical use of ICTs to obtain, analyze, produce, and exchange information.

4. Competence of learning to learn – it is one of the main competences, since it implies that the student develops his ability to start learning and to persist in it, to organize his/her tasks and time, and to work individually or collaboratively to achieve an objective.

5. Social and civic competences - they refer to the capabilities of relating to people and participate actively and democratically in social and civic life.

6. Sense of initiative and entrepreneurship - it involves the skills necessary to turn ideas into actions, such as creativity, the ability to take risks, and project planning and management.

7. Awareness and cultural expression - it refers to the ability of appreciating the importance of expression through music, visual, performing arts, and literature.

1.3 CHARACTERISTICS OF THIS COURSE – LEVEL 1

1.3.1 USERS OF THE COURSE – LEVEL 1

This course is aimed at adults who, having mastered reading (text comprehension in one of the proposed languages: Spanish, Catalan, English, and Arabic), written expression (expressing in ideas in written form or knowing how to summarize external ones in writing, also in Spanish, Catalan, English, or Arabic), verbal expression, iconic language, and having enough

mathematical knowledge, want to resume their studies, complete their knowledge, or get a basic qualification.

Users of the course can be any person over 18 years old, regardless of their nationality, with access to e-learning content (virtual learning through a website), who demonstrate interest in promoting inclusion (yours or of others) and getting involved in active volunteering.

Previous studies or knowledge are no requirement, because a survey will be conducted at the beginning of the course to adapt the contents and training itineraries to the user. This means that the topics selected to be studied will those that best suit what you already know, to not ask too much… but also not too little.

1.3.2 METHODOLOGY OF THE COURSE – LEVEL 1

Methodology is the way you learn and develop your skills - like using a book or, as in this case, you studying in computer or smartphone; also if you have a teacher and you just have to listen to learn, or if you need to actively seek materials and studies on your own. We have to use the latter for this course, because it requires an effort by the student that ultimately allows him to learn better and improve their skills and attitudes much more.

The course's methodology will be described in detail in the Didactic Unit 2. However, we can specify that it will be overall defined by Order ECD/651/2017 of July 5th, which regulates basic on-site and on-line education and its curriculum for adult people, so we can describe it as follows:

(a) The teaching methodology will be flexible, open, inclusive, based on self-learning, and taking into account the student's experience in a way that answers to their abilities, interests, and needs, paying special attention to the specific needs of educational support. You set when you study, how many hours you spend, and how you organize its contents.

(b) The course's methodology will aim to enhance the acquisition, consolidation, and expansion of the key competences for lifelong learning through meaningful learning processes for the student and through projects connected to the daily experiences of adults. It must be based on the cultural baggage that each student provides to their training activity. We'll try to teach useful things that you will need in your daily life, and the things you study will be put into practice in real life situations.

(c) The selected tasks facilitate self-learning and the development of autonomy and personal initiative, and will adapt to the students' previous experiences, so they answer to their

abilities, interests, and needs. You are the main focus and director of your learning, by selecting the contents you study, according to what you need the most.

(d) The approach of the activities must include the social component of the learning process and contribute to training in communication and cooperation skills. Your birthplace or the experiences you've had until now are not requirements to use this course, but they will be used to define what you will study. For example: if you were born in a foreign, Arabic-speaking country and you have learned English, French, and Spanish in your travels, it doesn't make sense to study these languages because you have already mastered them. Thus, the course will count these contents as completed.

(e) The teaching process is designed to provide adults with the basic instrumental learning to have certain guarantees of success in their current and future training itinerary. We intend to teach you how to improve your life, so you can find a job or undertake social projects that fulfill you.

(f) The curricular design of the course, in which knowledge is integrated in a globalized way and not just as a conglomeration of subjects, will also be used in the design of the activities and the educational project.

1.3.3 CONTENTS OF THE COURSE – LEVEL 1

The contents of the proposed are compatible with the curriculum of the Initial Teachings I and II defined by Order ECD/651/2017 of July 5th. In accordance with the proposed objectives, the contents of this course are not designed to be completed entirely by every student, but as a flexible system that can be incorporated to any of its levels, depending on the training and experience of each person. So, not everyone has to study all the Didactic Units; the contents that you have to study are adapted to what you already know or need to know.

Thus, the contents of this course are outlined in three levels:

- Level 1: Contents for the development of the most basic competences according to the three stipulated areas:

    a) Area of communication and mathematical competence.

    b) Area of science, technology, and society in today's world.

    c) Area of development and personal and work initiative.

- Level 2: Contents of medium difficulty, for users with a higher level of competence development in the three areas.

- Level 3: Contents of high difficulty, for users with a higher level of competence development than the previous ones in the three areas.

According to these levels, the flexible contents have been structured as follows:

COURSE CONTENTS	PRODUCED BY	DIFFICULTY
TOPIC 1: WHAT IS THE PURPOSE OF THIS COURSE?		
1.1. Objectives of the course	REDTREE	LEVEL 1
1.2. Characteristics of the course	REDTREE	LEVEL 1
1.3. Quality and certification systems of the course	REDTREE	LEVEL 1
TOPIC 2: WORK METHODOLOGY OF THE COURSE		
2.1. How does this training course work?	REDTREE	LEVEL 1
2.2. On e-learning: strengths and weaknesses	REDTREE	LEVEL 1
2.3. Stages of the e-learning study	REDTREE	LEVEL 1
2.4. Development of the course's timetable	REDTREE	LEVEL 1
TOPIC 3: DEVELOPMENT OF MATH AND DIGITAL SKILLS		
3.1. Description of the topic	REDTREE	LEVEL 1
3.1.1. The importance of math in daily life	REDTREE	LEVEL 1
3.1.2. An approach to the digital world	REDTREE	LEVEL 1
3.2. Objectives	REDTREE	LEVEL 2
3.3. Training contents	REDTREE	LEVEL 1
3.3.1 Math training contents	REDTREE	LEVEL 3
3.3.1.1. Numeracy skills for basic operations	REDTREE	LEVEL 3
3.3.1.2. Making a budget	REDTREE	LEVEL 3
3.3. Training digital contents	REDTREE	LEVEL 2
3.3.2.1. Internet	REDTREE	LEVEL 1
3.3.2.2. The e-learning platform	REDTREE	LEVEL 1
3.3.2.3. Office programs	REDTREE	LEVEL 2
3.4. Activities	REDTREE	LEVEL 1
3.4.1. Math activities	REDTREE	LEVEL 3
3.4.1.1. Numeracy skills for basic operations	REDTREE	LEVEL 3
3.4.1.2. Making a budget	REDTREE	LEVEL 3
3.4.2. Digital activities	REDTREE	LEVEL 2
3.4.2.1. Internet	REDTREE	LEVEL 1
3.4.2.2. The e-learning platform	REDTREE	LEVEL 1
3.4.2.3. Office programs	REDTREE	LEVEL 2
3.5. Resources	REDTREE	LEVEL 1

3.6. Evaluation	REDTREE	LEVEL 1
TOPIC 4: INTRODUCTION TO LANGUAGE LEARNING		
4.1. Description of the topic	ELEN	LEVEL 1
4.1.1. The value of language and culture as inclusion elements	ELEN	LEVEL 1
4.1.2 Language and multicultural diversity in Europe	ELEN	LEVEL 1
4.1.3. Languages: definition and characteristics	ELEN	LEVEL 1
4.2. Objectives	REDTREE	LEVEL 1
4.3. Training contents for the basic learning of languages for inclusion	REDTREE	LEVEL 1
4.3.1. Catalan	ELEN	LEVEL 1
4.3.2. English	REDTREE	LEVEL 1
4.3.4. Others	REDTREE	LEVEL 3
4.4. Specific activities for the basic learning of languages for inclusion	REDTREE	LEVEL 1
4.4.1. Catalan	ELEN	LEVEL 1
4.4.2. English	REDTREE	LEVEL 1
4.4.4. Others	REDTREE	LEVEL 3
4.5. Resources	REDTREE	LEVEL 1
4.6. Evaluation	REDTREE	LEVEL 1
TOPIC 5: DEVELOPMENT OF CRITICAL THINKING AND THE SKILL OF LEARNING TO LEARN		
5.1. Description of the topic	REDTREE	LEVEL 1
5.1.1. What is critical thinking?	REDTREE	LEVEL 1
5.1.3. Critical thinking and the skill of learning to learn	REDTREE	LEVEL 1
5.2. Objectives	REDTREE	LEVEL 1
5.3. Training contents for the development of critical thinking	REDTREE	LEVEL 1
5.3.1. Characteristics of a person with critical thinking	REDTREE	LEVEL 1
5.3.2. Processes to build your own opinion	REDTREE	LEVEL 2
5.3.3. Standards to evaluate reasoning	REDTREE	LEVEL 2
5.3.4. Getting information through information and communication technologies	REDTREE	LEVEL 2
5.3.5. Example case studies	REDTREE	LEVEL 3
5.4. Activities	REDTREE	LEVEL 1
5.4.1. Case studies	REDTREE	LEVEL 3
5.5. Resources	REDTREE	LEVEL 1
5.6. Evaluation	REDTREE	LEVEL 1
TOPIC 6: DEVELOPMENT OF LEADERSHIP, ENTREPRENEURSHIP AND SOCIAL AWARENESS		
6.1. Description of the topic	REDTREE	LEVEL 1
6.1.1. Leadership as a mechanism of overcoming barriers and building the own self	REDTREE	LEVEL 1
6.1.2. Entrepreneurship: The way to carry out action	REDTREE	LEVEL 1
6.1.3. Leadership and entrepreneurship in the social environment	REDTREE	LEVEL 1
6.2. Objectives	REDTREE	LEVEL 1

6.3. Training contents	REDTREE	LEVEL 1
6.3.1. Rights and duties of the citizen: participation	REDTREE	LEVEL 2
6.3.2. The importance of the individual on building the society	REDTREE	LEVEL 1
6.3.3. The welfare state and the social pact	REDTREE	LEVEL 3
6.3.4. Government and social institutions	REDTREE	LEVEL 2
6.4. Activities	REDTREE	LEVEL 1
6.4.1. Rights and duties of the citizen: participation	REDTREE	LEVEL 2
6.4.2. The importance of the individual on building the society	REDTREE	LEVEL 1
6.4.3. The welfare state and the social pact	REDTREE	LEVEL 3
6.4.4. Government and social institutions	REDTREE	LEVEL 2
6.5. Resources	REDTREE	LEVEL 1
6.6. Evaluation	REDTREE	LEVEL 1
TOPIC 7: THE ERASMUS PLUS PROGRAMME		
8. ANNEXES		

1.4 QUALITY AND CERTIFICATION SYSTEMS OF THE COURSE – LEVEL 1

1.4.1 EVALUATION – LEVEL 1

The evaluation of this course is part of the educational process of the student and will value both their development and learning outcomes to verify their evolution and identify the possible difficulties they have, to adopt the necessary measures to continue the teaching-learning process.

This course will have two complementary evaluation systems:

a) A self-evaluation at the end of each Didactic Unit carried by the students, who will analyze the competences they have developed, and through their capability to adequately solve the Activities included in each TU. So, only you are going to evaluate yourself: you have to be honest with yourself because only that will help you improve your training.

b) A direct evaluation at the end of the course through a personalized test matching the chosen content itinerary (levels 1, 2 or 3). For the completion of this test, the student must have downloaded all the contents of each TU and he/she must complete it in less than 1 hour.

The direct evaluation will be carried out automatically by the e-learning platform, and the grades will be expressed in the following terms: Poor (less than 5), Sufficient (5), Good (6), Very Good (7 or 8), and Outstanding (9 or 10).

If necessary, the tutor coordinating the course of the entity REDTREE MAKING PROJECTS may record the most relevant aspects of the teaching-learning process, the agreements reached, and the decisions taken.

If a student does not pass the test, it will show his/her mistakes, as well as the TU to which the failed questions belong. In order to do test again, he/she will have to wait at least a week, time that should be used to review the contents related to the failed questions.

1.4.2 PROMOTION AND CERTIFICATES – LEVEL 1

This course does not have the capacity of official promotion, but it will train its students to access the Initial Teachings I of Adult Education Schools.

Students who do not pass the course should get a notion about their possibilities of obtaining the certificate of Initial Teachings I; they will have to repeat the level with a special educational reinforcement plan established by Initial Teaching's staff, which will be reflected in the final evaluation report.

After passing the final test of this course, students will receive a certificate (also stating its level) issued via PDF file sent directly to their personal email. If they complete the three offered courses (adult literacy, volunteer training, and training for migrants), the student will get the corresponding certificates for each one, and a new one combining the three of them.

This certificate will be signed by the partner entities of the project, and we intend it to be supported by various European public entities.

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DIDACTIC UNIT 2

WORKING METHODOLOGY OF THE COURSE

COURSE FOR ADULTS

2.1 HOW DOES THIS TRAINING COURSE WORK? – LEVEL 1

This course you are studying, intends to develop your basic educational competences through a system in which you are not just a spectator, but its main protagonist.

Nobody is going to explain the lesson to you, there is not going to be a teacher to repeat the contents or who demand your attention if you get distracted. The designed course is one that depends solely on your effort and your dedication: you decide if you want to study every day or try to rush everything at the last minute, you will have to look for the contents, download them and study them at your own pace. If you have doubts, you will always have a tutor to answer your questions, but he/she will not study for you.

Learning in this virtual course –meaning that it is studied through a webpage– is not only based on the information that you are going to study, but also on your education, on the very act of looking for information, and the attitude with which you face it.

This educational system and way of studying is called "e-learning", and it allows you to develop your digital competence very quickly.

But… how does this course work? Well, it is very simple, and you must already have taken many of the steps we are going to show you, if you have arrived here.

1. Access our learning platform: a website where all the courses we offer (many of them for free) are shown.
2. Insert your username and password to access a private website that is only for you. Here you will find the courses you have started, and tools to help you study (manuals to use the platform, a place to talk with tutors, send mails, etc.).
3. If you are accessing this course for the first time, you will see a test or survey with several questions. This is used to define how much you already know, and what you need to learn. The contents you will study will be defined through your answers.
4. You can enter the course once the test is completed; you will find each of the subjects that have been assigned to you in it.
5. You'll have to open the topics one at a time and read all the points they contain. Once you have read the general texts (in which we talk about the unit's objectives, what you will learn, etc.) you will find the sections of contents that you have to learn, and activities to do to evaluate your learning.
6. Once you have finished all the topics, you will have to complete a final test in one hour. This is the exam to evaluate if you have passed the course. If you complete it successfully, you will be sent a certificate stating it.

2.2 - WHAT ARE E-LEARNING AND VIRTUAL LEARNING? – LEVEL 1

If you are reading this, you've already had to find our virtual education platform, signed up for it, and started attending your first online course… Meaning that, even if you were not aware, you've already had your first contact with e-Learning education!

But what exactly is e-Learning education? E-Learning or virtual training basically means education and training conducted via the internet. This type of online teaching allows the student to access all the training materials through computers, smartphones, or tablet devices. A more specific definition was given by Rubio M. "e-learning can also be understood as online education, virtual education, or telematic teaching, although in a literal sense it refers to electronic learning, that is, learning mediated by digital technology" (Rubio MJ, 2003), or by Rosenberg "The use of internet-based technologies to provide a wide range of solutions to improve the acquisition of knowledge and skills" (Rubio MJ, 2003).

In short, virtual education can be defined as "a non-on-site training that makes the access and time of the teaching-learning process more flexible and adaptable to the skills, needs, and availability of each student, through technological platforms" - the student finds specific educational materials adapted to their own characteristics - "besides providing collaborative learning environments through the use of communication tools" - when using emails, blogs, or social networks, this virtual learning facilitates the joint work of people (even if they are in different places and have never met) – "synchronous and asynchronous" - these two concepts are simpler than they seem: synchronous means that the communication between teacher and student is simultaneous (when speaking through a forum), and asynchronous when communication is not in real time (via email for example) – "enhancing, in short, the management process based on competences" (García, 2005) - We talk about competences when we not only want the student to memorize contents, but also to achieve a full learning that includes skills, knowledge, and attitude.

For a more official definition, we can refer to the General Directorate of Education and Training of the European Commission, which defined e-learning in 2001 as "the use of new media and internet technologies to improve the quality of learning by facilitating the access to resources, services, exchanges, and long-distance collaboration".

This is a revolutionary learning methodology developed in recent years thanks to the growth and expansion of the internet, that is today positioned as the main form of training in the future.

The full and proper application of e-learning must meet three criteria:

- Learning must happen in an online space, which allows the training materials to be updated continuously, and to be immediately available to users, as well as to facilitate their permanence, recovery, and distribution without extra economic and environmental costs (these materials do not have a great economic cost, nor require the paper and harmful inks).

- That the student receives their training through new technologies (the internet through PC, tablet devices, or smartphones), which makes the training materials more accessible and develops their digital competence at the same time.

- It has to break the paradigms of traditional education: it has to create new things leaving aside the old process of master training (the teacher speaking and the student just listening), creating new solutions more in tune with the current times, and improving the learning processes.

The quick pace of our era makes necessary to incorporate ICTs to the educational context, in order to create new paradigms that develop cognitive and metacognitive skills in students, based on the design of techniques that favor the construction of an active, participatory, and constructive learning, capable of allowing students to answer to problems and situations in their real lives.

The internet has become a facilitator of knowledge, since it makes available to society information that, under a logical, sequenced, and adequately analyzed structure, can lead to the design of socially meaningful educational programs, giving birth to what is known as e-learning, generating new teaching and learning models, and allowing ICTs to contribute to the improvement of results in the educational field (Rubio MJ, 2003).

In short, we can conclude that this type of online education allows us to improve the quality of learning thanks to more dynamic and appealing resources and materials (audiovisual, interactive, and innovative ones) that allow the student to actively participate in the learning process, achieving the proper development of specific skills, attitudes, and competences, while facilitating the access to education and training to all people regardless of their location, their job, or their availability, thanks to the flexibility this provides.

This makes us think that the future of education is aimed towards the fact that educational centers in all systems and levels will have to adapt to virtualization to close the digital breach that separates our society.

2.3 - BASIC FEATURES OF VIRTUAL EDUCATION – LEVEL 1

One of the basic features of e-learning (virtual education) is that students do not have to go to a classroom or any specific space; just by connecting to the internet through any device (PC, tablet, smartphone) they can start studying.

This essential characteristic of virtual education implies that students do not physically have their teacher present to directly transmit them the knowledge and skills to be acquired. E-learning is missing the immediate retroactivity that on-site training has, in which the teacher can see if the participants understand the ideas taught and, depending on this, adapt their speech or provide examples to solve the doubts that may arise.

Thus, the figure the teacher disappears in e-learning, and it is assumed between the student and the creator of educational materials. It is the student himself who has to look for knowledge, becoming more involved in the learning processes, and having an active attitude to solve doubts or do their tasks.

It is the developer of the materials -the person who directs the course and who we will call "tutor"- who is responsible for guiding the student in the learning process, solving doubts, proposing activities, and motivating the group to participate in active learning.

The teaching methodology of e-learning must have didactic contents different than on-site learning to solve the lack of physical contact between teacher and students, as well as communication tools to ensure contact between students, encouraging the access to the internet to look for the extra information they need. This is why the capacity for critical thinking and analysis is essential in this type of training, since the student must analyze the credibility and truthfulness of the information or materials found.

The functions of virtual education are then structured in:

Functions of the student:

- PLAN THEIR OWN LEARNING.
- UNDERSTAND, NOT JUST MEMORIZE, THE EDUCATIONAL CONTENTS.
- DEFINE THEIR DOUBTS: WHAT DID YOU THINK YOU UNDERSTOOD, BUT LATER TURNS OUT THAT YOU DIDN'T?
- DO THE EXERCISES AND TASKS.
- LOOK FOR THE COMPLEMENTARY INFORMATION THEY NEED.
- DEVELOP CRITICAL THINKING.

Functions of the tutor towards the participants:

- STRUCTURE THE LEARNING PROCESSES.
- DEVELOP TRAINING MATERIALS.
- PROVIDE AND PASS ON KNOWLEDGE.
- MOTIVATE.
- PROVIDE GUIDANCE.

Virtual learning is an unstoppable trend nowadays, as all studies point out, and opposite to what it was thought, it can be even more effective than the on-site training we are used to. This applies to both college students and those at lower levels, and is an excellent way to adapt the pace and depth of the content to the most capable students (and others) who are, in general, are not adequately attended to in conventional education, while providing a quality education to many students, that otherwise would be beyond their reach.

2.4 - DEVELOPMENT: STRENGTHS AND RISKS OF VIRTUAL EDUCATION – LEVEL 1

STRENGTHS OF VIRTUAL EDUCATION

Some of the possible advantages of virtual learning can be:

1. **It is an active learning:** the student builds him/herself and learns to take responsibility for their training on his own.
2. **A comprehensive monitoring of the training process:** the tutor is able to control the interaction of the students with each part of the platform, keeping track of their activity at all times: their participation in forums, activity in the platform, when do they log-in, their level of satisfaction with the course…
3. **Flexibility:** a flexible schedule is one of the main advantages of e-learning; the student decides when to study, when to download the program, etc.
4. **24/7 access:** the student just needs to have an internet connection to access the contents of the course, contact his/her tutors, or do the exams.
5. **No trips, no geographical barriers:** usually the first day of class we are all lost, looking for our classroom, the teacher's office, teachers' rooms… but, e-learning eliminates these barriers, since the student has all the information they need with just a click, with the savings all of this implies.
6. **It is adapted to your pace:** online courses are long enough for the student to be able to advance at the pace they want. Despite this, some studies even claim that learning times in online training are reduced by 40 to 60%.

7. **The course starts whenever you want:** has your summer been too long and you are late for the call in September? Don't worry, the e-learning course starts when you sign up, so you can start in September, October, January, or July.
8. **Unlimited virtual resources:** most on-line courses require the use of the Internet, which can provide you with materials for any subject and from a wide variety of training levels. It is an infinite library of educational content, to contact tutors, peers, upload your work… all of this added to social networks makes the synergies between these platforms and social profiles more and more frequent.
9. **Updated content:** virtual materials in the platform or the cloud can be modified at any time, with no printing costs and just a few clicks.
10. **Cost reduction:** since materials don't have to be edited or printed, there is a huge cost reduction, both for the school and for the student, up to a 30% less than in on-site training.
11. **Ease of access:** provided by the fact that the students can join any e-learning course, generally only requiring a device with an internet connection and an internet browser.
12. **Increase in retention rates:** according to experimental studies, the information assimilated in e-learning processes is retained a 25% more than in conventional training processes.
13. **Compatibility of activities:** e-learning is compatible with many other activities, almost simultaneously (work, leisure, etc.), since you can access the computer at any time and also stop learning when you want.
14. **Comfort:** e-learning saves many trips, which translates into a greater comfort for the users, since they would otherwise have to frequently drive far from their workplace, even having to spend the night outside their homes.
15. **Personalized training:** e-learning offers the advantage of being customized to the user, so each student will see all the information on the screen (course offer, progress tracking, etc.) that is specific for him/her.

RISKS OF VIRTUAL EDUCATION

E-learning is not risk-free, and if this is not taken into account when developing educational courses, it can cause certain disadvantages when compared to traditional education:

1. **There are no interpersonal relationships:** one of the best things about going to attending any (on-site) class is that you develop relationships with other people, both professional and personal. This can be a problem in virtual education, because these relationships cannot be created, since a physical space is not shared.
2. **Solving this requires integrating communication tools** (blogs, chats, mail ...) into the e-learning platform, and generating specific activities that foster communication between

students. This is not always easy, because virtual contact is not as close or creates as strong ties as personal contact, and is even more difficult when connection times are defined by the students themselves.

3. **On-line training requires the student to perform better:** the ease of skipping classes requires monitoring the progress of students with periodic task deliveries, which requires a constant commitment to their studies. E-learning requires a lot of effort from the students, since they don't have to attend their classes.
4. **It requires self-discipline:** due to its flexibility, the involvement of the student in the study processes, and not having a programmed study routine, students may lose control of the schedules for other activities.
5. **Virtual courses require computer skills:** virtual courses are designed to be easy to use, and most platforms are very intuitive, but they require a small degree of digital competence, some knowledge of office automation and of the internet. Students will most likely just need basic word processing skills to be successful; in fact, online courses often allow you to build your skill-set in other programs.
6. **It requires developing critical thinking:** the student is no longer a mere recipient of information, but a protagonist in its search and sometimes its development, so it is essential for them to know if the materials found are truthful and objective, or fake and trying to bias your opinion. Critical thinking is not developed quickly, so both the tutor and the student should work intensively on it while completing the course.
7. **The student can cheat more easily:** one of the main concerns about e-learning, especially from the educator, is the integrity of the educational experience. Since students work on their own for the most part, there is real concern that they may try to cheat or trick the system. This is a concern in any educational environment, and developers of online courses have implemented many solutions to combat fraud. However, you are the one responsible for your learning in this course, so if you need to cheat, you will only harm yourself and your learning.
8. **It may seem that online classes are just reading:** since online students can log-in to complete tasks at any time, some believe that taking online courses is little more than reading written lectures and book sections. E-learning does involve reading, but most classes also include discussions, multimedia presentations, projects, and assignments, all intended to develop your learning, making it very similar to a traditional class.
9. **You can "hide" in an online class:** when you attend online classes, you are not face-to-face with your classmates or the instructor, so you might think that it is possible to hide in the virtual back of the class and do only the minimum work, but this is hardly useful. Debates are a very important element of the online educational experience, and they fully depend on your degree of participation, so staying anonymous will not be of any advantage.

2.5 - INCLUSION THROUGH VIRTUAL EDUCATION – LEVEL 1

Virtual education is not only a revolutionary tool because it develops many skills, especially digital skills, in an incredible way, it is also wonderful because it facilitates inclusion and access to education for people who could not normally have it.

The more complicated a person's life is, and more obstacles they have to overcome in his day-to-day life, the more difficult it is for them to find the time to use for studying. If this study must also be compatible with personally attending classes (in schools or academies…) and requires a lot of money for buy books or materials, the whole thing becomes an impossible task.

Imagine -or maybe you already are- being a woman raised in a male-predominant family with several people to care for (maybe children, elderly relatives, or even her husband, his parents or siblings) that spends every moment of her long day in household activities, and attending classes would spark displeasure among her family members, who see this as a waste of time. E-Learning can be the solution for her to have a first approach to education, to develop her basic skills, and even get to know a whole new world. It can be something she can resort to in the few moments she has, perhaps at night, perhaps some short times throughout the day, from her own dining room and using just her smartphone.

If this imagined person suffered from a disability (either cognitive, visual, mobile…) in addition to her educational, cultural, or economic barriers, e-learning would be even more useful because it has a very high degree of adaptation. It only requires a device with internet access, it can easily be adapted (you don't need to go anywhere, just stay at home), and it is comprised of virtual materials that can be adapted to any needs (with speech recognition systems, increasing the size of the characters, etc…). Virtual education, even with its risks and mistakes, makes education accessible for people who never had that possibility before. A simple curb (not wheelchair-adapted) will not stop the access to your place of study, and your blindness won't prevent you from finding people with whom to talk even if it is on-line.

E-learning overcomes all these problems and allows people to access the study materials whenever and how they want; they just need a smartphone and some time each day to improve their chances of employability and social inclusion. Also, many of the virtual courses, as this one, are free, so overcoming barriers to study is now easier.

The courses you are studying also have another social aspect because they are not only accessible to people with obstacles, but also promote social action in their users so they can help others and themselves, to improve their skills and inclusion. These courses train people through volunteering by showing you that the biggest excuse to learn is how useful it will be to improve our society.

Thus, in a capitalist society like the one we live in, the arrival of virtual education is applauded as a means of maximizing learning outcomes, spending less money, having a better education, or encouraging new businesses. Its social dimension is NOT taken into account, nor its great capabilities as social engine, its cultural dimension, or its role in shaping a new social justice that allows facing, with and through education, the growing challenges and inequalities of our society.

Before the excessively publicizing and triumphalist speech of the possibilities opened by educational technologies, it is good to take into consideration their social dimension. We need to collect an important set of practices, examples, and realities capable of articulating a common sense on the suitability of e-learning to raise the awareness among all people that their voice is important, their rights have to be taken into account, and the need to commit to the transformation of society.

This is why here we defend the social dimension of e-learning, because behind it are the faces of people who, with hope and utopias, believe in the possibility of improving their lives and their relationships, and transform the issues of their environment. All this improvement with the real possibility of transforming society can be made by incorporating what we have called social e-learning into practices, reflections, policies, and research.

2.6 - STAGES OF E-LEARNING – LEVEL 1

The study in virtual courses is usually comprised by four stages that you will find in the course you're doing now:

1. INFORMATION AND WELCOME STAGE

The initial stage of the course is intended to set you in a new course, so you become fond of a virtual methodology that you have never seen before. It includes all the information you need for it: what will you find in the course, what the methodology is like, the help you will have, etc.

The first two Didactic Units will help us tell you about these general questions:

- TOPIC 1: "WHAT IS THIS COURSE FOR?" Has all the teaching information of the course.

- TOPIC 2: "WORKING METHODOLOGY OF THE COURSE" Is about how we want you to structure your learning, and the good things e-learning provides.

You will also find the following materials in the storage space for general documents of your private site (where you access with a password before getting into a course):

- **Introduction of the teacher, welcome to the students and contact information**. These are materials to introduce the e-learning platform to your, and to show you the tools at your disposal, especially the group communication area, in which debates on topics of interest will take place, and any person of the course will be able to participate.
- **Contact details of the tutoring team**. This includes the name of the tutor, schedule of his/her tutoring sessions, and contact info. This will be as visible as possible, so it is recommended to include it on the course's starting page, and will also be repeated in the teacher's welcome message.

2. LEARNING CONTENT

This stage contains all the topics that you must study, that will also show up in the evaluation test. This course will have 5 more topics:

- TOPIC 3: DEVELOPMENT OF MATHEMATICAL AND DIGITAL COMPETENCES.

- TOPIC 4: DEVELOPMENT OF LANGUAGE COMPETENCES.

- TOPIC 5: DEVELOPMENT OF CRITICAL THINKING AND THE COMPETENCE OF LEARNING TO LEARN.

- TOPIC 6: DEVELOPMENT OF INITIATIVE, ENTREPRENEURSHIP, AND SOCIAL AWARENESS.

- TOPIC 7: THE ERASMUS PLUS PROGRAMME.

3. LEARNING AND REINFORCEMENT

- **Complementary documents and links to web pages of interest**. During the development of the course, we will provide resources of interest, according to the needs that arise. These will be additional documentation to be included in the complementary documents to download.
- **Optional activities**. In order to customize the learning to each student, you will find optional activities that allow you, if you need it, to delve deeper into the subject of the course. These materials must be e-mailed to the teacher to be reviewed.

4. MONITORING AND SUPERVISION OF THE COURSE

General forum for doubts: we must keep debate threads alive in the different forums (the general and the specific ones for each module). Try to answer questions so these are not only answered by teachers; we must create a space for interaction, to provide new links and resources to solve issues. If this is done correctly, we will have to moderate and encourage research and "learning by doing".

Evaluation test feedback: this is usually automatized, however, it is recommended to send a message to each student when he/she completes all tests.

Task correction: practical activities become a tool to evaluate the course, so we must correct them (both mandatory and optional) within a maximum of 72 hours upon reception.

Monitoring the progress and achievement of objectives: a message will be sent to each participant with their degree of progress, including which concepts he/she has successfully mastered, and those that should be reinforced, once a week via internal mail.

2.7 - SCHEDULE OF THE COURSE – LEVEL 1

The course you are doing is nominally 252 hours long, but you can take less or longer to complete it if you need. As a schedule proposal we suggest:

- Dedicate 1 hour each day to study part of a topic.

- You should finish a Teaching Unit or topic every 5 weeks.

- You should have completed the full course in 9 months, so you can do the evaluation test.

VIRTUAL
INCLUSIVE
EDUCATION
PLATFORM

DIDACTIC UNIT 3

DEVELOPMENT OF MATHEMATICAL AND DIGITAL COMPETENCES

COURSE FOR ADULTS

3.1 DESCRIPTION OF THE TOPIC – LEVEL 1

There is a direct relationship between educational level and the human and social economic levels, both individually and collectively. Therefore, the acquisition of different skills and competences by individuals is paramount for them to know their rights and be able to defend themselves while contributing to the welfare and social progress of a country. The learning of basic competences should be achieved in Primary and Secondary education; however, on many occasions and especially for working people, it is essential to recycle and exercise those competences, developing lifelong learning.

Throughout this third didactic unit, we will work on the development of mathematical and digital competences. Far from wanting to turn it into an in-depth essay, making it too of a complex and cumbersome material, this unit is intended to be a basic but wide document that uses the common sense that awakens by knowing how things work, without necessarily starting from a higher prior knowledge or from sensitivities already developed. Thus, it aims to serve as a material for the general public as a support resource for self-training, based on a simple and dynamic reading.

On the one hand we ask ourselves: what is mathematics? and we analyze and explain what makes science appealing, since it studies through logical reasoning the properties and relationships between abstract entities such as numbers, geometric figures, or symbols. Practically, as is the case with sciences such as physics and chemistry, mathematics can be found in daily activities and in the most complex actions of daily life. The study of mathematics has the structure of its four main fields: arithmetic (the study of numbers), algebra (the study of structures), geometry (the study of segments and figures), and statistics (the analysis of data collected).

On the other hand, following the Freirean approach to adult literacy[1], we want people to be able to read the (digital) world we live in and invite us to take action, to write our own history. What we mean by this is that it is necessary to approach the digital world with a global map, an overview that contains a technical base, a historical-economic-political context, and an anthropological reflection of the subject. Thus, when asked for example about the life cycle of technology, the economic, labor, and environmental aspects related to it will be addressed.

[1] To know more about Paulo Freire's methodology and the teaching of literacy, go to: https://www.dvv-international.de/en/adult-education-and-development/editions/aed-692007/10th-anniversary-of-paulo-freirersquos-death/paulo-freirersquos-literacy-teaching-methodology/?no_cache=1

3.1.1 THE IMPORTANCE OF MATHEMATICS IN OUR DAILY LIFE – LEVEL 1

When it comes to interpreting reality and expressing the social, technical, and scientific phenomena of the world around us, mathematics turns out to be an indispensable tool. It contributes in a special way, developing the abilities for reflection and reasoning, the understanding of social reality phenomena of economic, historical, geographical, artistic, political, and sociological nature by providing adequate tools to display, model, and contrast hypotheses on their behavior. As such, mathematics nowadays is the main tool to turn observable facts into knowledge and information. "Furthermore, the use of a formal language, such as mathematics, facilitates the argumentation and explanation of these phenomena and the communication of knowledge with precision." (OSB, Royal Decree 1105/2014, page 381).

As a basis for progress in the acquisition of contents from other disciplines, mathematics has an instrumental character. For example, "in economics, the Economic Theory explains economic phenomena with a mathematical basis. Game Theory or Decision Theory is another example of applications in this field. In sociology and political sciences, the analysis of surveys is used more and more frequently, among other applications; nor should we forget the contribution of mathematics to areas such as geography, history, or art, where mathematics has had a notable influence."(OSB, Royal Decree 1105/2014, page 381).

On the other hand, it is necessary to point out that mathematics also contributes to the intellectual formation of people, allowing them to function better in both their individual and social spheres. Mathematics develops the personal and social skills that contribute to the growth of autonomous, self-confident citizens with decisiveness and critical capabilities, capable of facing challenges and tackling problems with more chances of success. But the teaching of this subject should not be dissociated from its application to the interpretation of social phenomena, so in addition to focusing on the acquisition of knowledge in mathematics and its calculation, analysis, measurement, and estimation procedures, we must also acquire the abilities to interpret data, identify relevant elements, analyze them, reach reasonable conclusions, and argue in a rigorous manner.

And, in fact, mathematics is present every moments and aspect of our daily life. Some examples are the management of personal savings, calculating distances for a trip, the communication by mobile phones, the use of ATMs, weather prediction, the functioning of the electoral system, the architecture and design of cities, all existing technology, or Big Data[2]. However, mathematics also shows, although not so easily identifiable, in art, advertising, movies, music, or in reading a book. On many other occasions, the role played by mathematics

[2] Big Data is considered as all data sets or combinations of data sets whose size (volume), complexity (variability), and growth speed (speed) make it difficult to capture, manage, process or analyze using conventional technologies and tools, such as as relational databases and conventional statistics or visualization packages, in the time necessary for it to be useful.

in our daily lives is that it serves as a tool to identify possible cheating or fraud that can happen in bills, in the regulations of rents or financial loans, or in the adaptation of salaries and pensions to the loss of purchase power.

In this line, we can say that reality is related to the predominant opinion/perception among citizens, in which mathematics plays an important role in society. However, even with the premise that mathematics is an irreplaceable element to develop intuition, reasoning, and critical thinking, this subject is perceived by many people with some aversion and apathy.

Zózima González Martino (IBERCIENCIA) commented on this: "the rejection of mathematics is a direct consequence of the influence of cognitive and emotional variables: on the one hand, the objective difficulty of mathematics as a subject and, on the other hand, the way each individual faces this difficulty". In this sense, Yuriana Raquel Cárdenas and Diego Alejandro Muñoz add that this situation may very well be caused by "the generalized traditional teaching and learning model for mathematical knowledge that is implemented during the first school years, which only encourages learning by imitation and repetition of the main or basic ideas of arithmetic, algebra, and geometry, which in turn constitute the basic notions on which other contents are then developed" (Critical mathematics education and didactic analysis, page 15).

In our opinion, this situation can also be linked to the lack of didactic or teaching models able to give a sense to mathematics throughout different educational processes. We mean by this that we need new, innovative educational models, while considering traditional aspects in the development of concepts and problems, and that also map out the development of competences based on the acknowledgement of some of the mathematical elements linked to the environment or the context of its people.

Lastly, we should highlight what we consider the basic reasons or utilities to teach Mathematics. First: its ability to develop thought; Luis Vives (XVI century), already pointed out that "it is a subject to heighten the acuity of the mind". This skill becomes important when making decisions, training us for a proper evaluation.

Second: its usefulness, both for everyday life and to learn other subjects necessary for personal and professional development. "Mathematics seems to possess the amazing power to explain how things work, why they are the way they are, and what the universe would reveal if we were able to listen" (Cole, 1999, p.11). Thus, it establishes itself as a very useful mechanism to predict, explain, and depict everything that surrounds us, while providing us with logical tools that help us in problem solving.

And third: its potential as a means of communication. Carl Sagan said in 1982 that "there is a common language for all technical civilizations, however different they may be, and this is science and Mathematics. The reason is that the laws of Nature are identical everywhere".

3.1.2 APPROACH TO THE DIGITAL WORLD – LEVEL 1

Mobile phones, computers, digital cameras, internet, social networks, Wi-Fi connections, databases, and a many more items around us make the usual landscape that surrounds us in our daily lives, at home, in the street, in our pockets, and even in our imagination. These are the so-called Information and Communication Technologies (ICTs).

How they work and which role must technology fulfill within society are not new questions, but these are still things that make us worry about the way in which we coexist with them. In this sense, we know that there are many manuals and tutorials to learn how to use digital tools, on-site and on-line courses, and even some subjects in different levels of formal education. On the other hand, we also know that there are a lot of articles and theses on how we behave in social networks, resources that denounce the harsh conditions of exploitation suffered the workers that extract the raw materials to manufacture mobile phones, and awareness campaigns on the importance of release the code. But in our opinion, there is a lack of relation from one to another most of the time.

We mean by this, that it is necessary to approach the digital world with a global map, an overview that contains a technical base, a historical-economic-political context, and an anthropological reflection on the subject.

In words of Inés Bebea, author of the *Critical Digital Literacy* guide, and as with every human creation, these technologies are not neutral: “It is exciting to see that humanity has been capable of such a degree of technique development; and at the same time, its invention and existence are explained by a historical path involving economic, political, cultural, and religious processes. Where do we come from and where are we now? We live today in what has been called the Society of Information or the Society of Knowledge. This society understands that its own progress is closely linked to the advancement of science and technology, to the point of considering them the reference indicator for social development.
We are thus immersed in a technological race that has lasted for centuries, living in a moment when there is no longer a discussion about whether or not we want digital tools, or whether they are good or not; they just are there. What is in our hands now is how we approach them”.

This is why we will call digital literacy to acquiring the competences necessary to handle digital tools, and the mastery of skills focused on the use of information and communication.

We believe that this process of digital literacy should start from the acceptance of technology in its entirety, not to meekly adapt ourselves to the guidelines of effectiveness, but to include and involve ourselves in the transformation of its use to provoke critical, creative, and ethical thinking to explore ways to humanize ourselves in a digitalized world.

According to the literacy model of Area and Pessoa (2012) “there are six dimensions in the web 2.0, in which subjects must be literate to safely use the internet as: (1) a universal library,

(2) a market of services, (3) a puzzle of intertwined micro-contents, (4) a public communication space in social networks, (5) a space for multimedia and audiovisual expression, and (6) a domain of interactive virtual experiences". Also, based on what Gionés-Valls and Serrat-Brustenga developed (2010), digital literacy is addressed as the process of teaching how to use the internet securely, through an adequate configuration of individual identity in the digital world, understanding this identity as the ability to successfully manage one's visibility, reputation, and privacy in the network. Both of these definitions of what digital literacy is have an impact in one of the basic aspects of ICTs: the one related to their use as communication and information management tools (Blasco and Durban, 2012; Gutiérrez, 2010).

To finish with this topic, and also in terms of digital literacy, we must keep in mind the role that adults play regarding children. It is undeniable that, in order to face these challenges, adults must have a certain level of digital competences, which can be considered through three main aspects: (1) as trainers, directly responsible for their digital literacy; (2) as companions, referents to which children can ask for help; and (3) as behavior examples (Peñalva et al., 2017).

3.2 OBJECTIVES – LEVEL 2

The guidelines of the European Union insist on the need for the acquisition of key competences by its citizens as an essential condition to ensure that individuals achieve a full personal, social, and professional development that can meet the demands of a globalized world and makes economic development possible, linked to knowledge. Both the mathematical and the digital competences are considered in this sense paramount for lifelong learning, serving as transfer tools for all other forms of learning and education.

Next, we will describe and define each of them:

Mathematical competence for adults is defined as "*the ability to access, use, understand, and communicate mathematical information and ideas to associate and manage mathematical situations in adult life. This implies the management of situations or the resolution of problems in real contexts, responding to ideas, information, or mathematical contents displayed in different ways*" (National Institute for Educational Evaluation, 2013).

It is important for to us to adhere to this definition, since it is also the one that references the Program for the International Assessment of Adult Competencies (PIAAC). This international program is implemented by the Organization for Economic Cooperation and Development (OECD), which "*measures the cognitive skills and competences related to the labor world necessary for individuals to properly participate in society and for the economy to prosper*"(OECD, 2013).

The descriptors for adult mathematical competences are the following (OECD, 2012):

• Creation and understanding different types of information:
  - To express oneself and communicate in mathematical language.
  - To express and understand information, data, and statements with clarity and precision.
  - To follow chains of statements identifying the main ideas.
  - To estimate and judge the logic and validity of statements and information.
  - To identify the validity of reasoning processes.
  - To identify everyday situations requiring problem solving strategies.
  - To choose the appropriate techniques to calculate, depict, and understand reality based on the information available.

• Expansion of knowledge about quantitative and spatial aspects of reality:
  - To know the basic mathematical elements (different types of numbers, measurements, symbols, geometric elements, etc.).
  - To understand mathematical statements.
  - To follow certain thought processes (such as induction and deduction among others).
  - To integrate mathematical knowledge with other types of knowledge.

• Resolution of problems related to everyday life and the labor world:
  - To handle basic mathematical elements (different types of numbers, measurements, symbols, geometric elements, etc.) in real or simulated situations of daily life.
  - To apply calculation algorithms or logic elements.
  - To apply mathematical knowledge to a wide variety of situations coming from other fields of knowledge and everyday life.
  - To use reasoning processes that lead to obtaining information or problem solving.
  - To apply those skills and attitudes that enable mathematical reasoning.
  - To use the mathematical elements and reasoning to face everyday situations that require them.

Digital competences, as defined by the Ministry of Education, Culture, and Sport, is that which: "implies the creative, critical, and safe use of ICTs to achieve the objectives related to work, employability, learning, the use of leisure time, inclusion, and participation in society. This competence involves, in addition to the adaptation to the changes introduced by new technologies in literacy, reading, and writing, a new set of knowledge, skills, and attitudes needed to be competent in a digital environment. It requires knowledge related to the specific basic textual, numerical, iconic, visual, graphic, and sound languages, as well as their decoding and transfer patterns, which includes knowledge of the main computer applications. It also involves access to the sources and processing of information, and knowledge of the rights and freedoms that people have in the digital world.

It also requires the development of various skills related to information access, its processing, and its use for communication, content creation, security, and problem solving, both in formal, non-formal, and informal contexts. People must be able to make regular use of the available technological resources in order to solve real problems in an efficient way, as well as to evaluate and select new sources of information and technological innovations as they appear, depending on of their usefulness, to undertake specific tasks or objectives. The acquisition of this competence also requires attitudes and values that allow the user to adapt to the needs established by new technologies, to use and adapt them to his/her own purposes, and to be able to interact socially around them. The key is to develop an active, critical, and realistic attitude towards new technologies and technological means, while assessing their strengths and weaknesses, and sticking to ethical principles in their use. Digital competence also includes participation and collaborative work, as well as motivation and curiosity towards learning, and improvement in the use of technologies".

3.3.1 MATH TRAINING CONTENTS – LEVEL 1

This material is the result of a process of development and research in the search for didactic and methodological solutions and innovations to help in adult inclusive learning. It is a curricular concretion designed to answer to the needs and interests of the adult population that wishes to acquire self-learning tools to develop their mathematical skills and abilities.

The didactic material for this subject consists of a textbook and an activity notebook. The contents distributed in six units have been grouped under two headings, which makes them better related to their use to the daily application.

What you will learn in this topic:

Heading 1: Basic calculations for making accounts

• Numbers and basic operations:

- Numbering systems and their evolution.
- The different types of numbers and their use in basic operations.
- Approach to the meaning of operations with powers and roots.

• Mathematical aspects related to daily use:

- Introduction to the monetary system.
- Multiples and divisors.
- Fractions and percentages.

• Proportionality:

- Basic notions.
- Percentages and distributions.

Heading 2: Making budgets

• Definition, concepts and elements:

- What is a budget?
- Income and expenses.

• Statistics and probability:

- Identify and interpret statistical information.
- Quantify uncertainty.

• Algebraic language:

- Translation of everyday situations to algebraic language.
- Systems of first-degree equations.

3.3.1.1 BASIC CALCULATIONS FOR ACCOUNTING - LEVEL 1

Numbers and basic operations:

- Numbering systems and their evolution.

Numbers base their origin on the need to count, measure, identify, etc. The set of signs and rules to combine them that make up the numbering systems have not always been as we know them today. These have evolved through different civilizations (Egyptian hieroglyphic numbering, Roman numerals...), until the currently known as decimal numbering system.

We will focus on the Roman and decimal numbering systems, as both of them are used nowadays, although the first one has been reduced to certain contexts. For example, if we take a book, we will note that Roman numerals are generally used for chapters, tomes, or editions, and Arabic numerals are used for paging. In the case of chronology, Roman numerals are used to indicate centuries, while Arabic numerals are used for years and days.

Roman numeral system:

Symbols and value:

I	**V**	**X**	**L**	**C**	**D**	**M**
1	5	10	50	100	500	1,000

This numbering system shows an additive or summative nature. This means, for example, that Romans wrote “XXX” to signify 30.

Regarding its rules:

Any number equal to or smaller than the one to its left adds its value to it: XXII = 22, XXXV = 35

With the same logic, any number equal to or smaller than the one to its right subtracts its value from it: IX = 9, XC = 90

If there is a figure between two others with higher value, it is substracted from the one to its right: LIX = 59

Another rule is that no figure can be written more than three times in a row. I, X, C and M can be written up to three times, whereas V, L and D, cannot be repeated in a row.

Finally, you should not forget that simple units can become thousands by placing a horizontal line on them: $\overline{\text{IV}}$DCXXV = 4625

Decimal numbering system

Symbols of Arabic origin: **0, 1, 2, 3, 4, 5, 6, 7, 8, 9**

Its character is positional, that is, the same figure acquires a different value according to the position or order it occupies.

As for its rules, each place or order is worth 10 times more than its predecessor: 10 units form a tenth –or first order unit-, 10 tens form a hundred -or second order unit-, 10 hundred form a thousand -or third order unit-, etc.

We can say, therefore, that the number 0 expresses the absence of units of some order: 706 indicates 7 hundreds, 0 tens, and 6 units.

On the other hand, each of the parts that result from dividing the unit into ten, one hundred, one thousand,(…) equal parts is called a decimal unit: 0'1 is a first order decimal unit or “tenth”, 0'001 is a third order decimal unit “thousandth”, etc.

Decimal numbers consist of a whole part and a decimal part, the whole part is the one previous to the comma, and the decimal part is the one to the right of the comma, substituting the whole part for a zero.

whole part ' decimal part

28 ' 67

You read the decimal number as: 28 units and 67 hundredths.

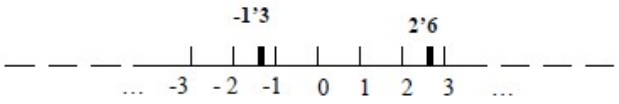
Example: 0'5349 is read as 0 units and 5349 ten thousandths.

Do the supplementary exercises from the activity notebook to reinforce your learning.

- The different kinds of numbers and their use in basic operations.

When counting the inhabitants of a city, we use positive or natural numbers "N", but there are times in which we have to resort to the use of negative numbers, and therefore we need to expand the set of natural numbers. This happens when indicating temperatures below zero, in the balance of a savings account, in the underground levels of a building, etc.

We call "whole numbers" or "integers" the set of these that extend natural numbers by including negative numbers, and we represent them with the letter "Z".
But not only whole numbers can be positive or negative, decimal numbers can too.



We can explain the following criteria based on the previous picture:

- The greater of two integers is always on the right in the number line.
- Any positive number is greater than any negative number.
- Zero is greater than any negative number, and smaller than any positive number.

Performing operations:

Regarding basic operations, we can say that numbers receive different names according to the operation in which they intervene:

- Sum: addend.
- Subtraction: subtracting, minuend.
- Multiplication: factor.
- Division: dividend, divisor, quotient, or rest.

In the case of additions and linked multiplications, their solving order can be altered to facilitate calculation. This is due to the so-called associative and commutative properties.

Associative property of the sum: when adding three or more addends, we can associate (add) any two of them and replace them with the result of their sum:

56 + (70 + 30) = 56 + 100 = 156

Associative property of the product: when multiplying three or more factors, we can associate (multiply) any two of them and replace them with the result of their product:

$(6 \cdot 50) \cdot 3 = 300 \cdot 3 = 900$

Commutative property of the sum: The order of the addends does not alter the result of the sum: $a + b = b + a$

Commutative property of the product: The order of the factors does not alter the result of the product: $a \cdot b = b \cdot a$

The neutral element of the sum is 0, because if added to any number, this will not change:

$$b + 0 = b.$$

The neutral element of the product is 1, because if any number is multiplied byt it, it will not change: $a \cdot 1 = a$

* **Subtractions and divisions do not have these properties, so it is necessary to maintain the order in which they appear.**

However, it is also necessary to follow certain rules for additions and multiplications if there are several chained operations, or even parentheses:

- If the something appears between parentheses, you have to calculate that first.
- After thata, you must solve any multiplication and division.
- Lastly, solve additions and subtractions.

Example: $7 + 8 - 2 \cdot (10 - 3) = 7 + 8 - 2 \cdot 7 = 7 + 8 - 14 = 15 - 14 = 1$

In combined operations -this is, to multiply a number by the result of an addition or subtraction- you can apply the **distributive** property.

In this example: $5 \cdot (4 + 2)$ the distributive property tells us that the same result will be obtained by first calculating the parenthesis and then the product, $5 \cdot 6 = 30$ or by multiplying the factor by each sum, and adding the results $5 \cdot 4 + 5 \cdot 2 = 20 + 10 = 30$

This property, if applied in the reverse order, is what we know as the "**common factor**". This means that, if the same factor appears in two different addends, we can first add the other numbers and then multiply the result by that common factor: $6 \cdot 4 - 6 \cdot 3 = 6 \cdot (4 - 3) = 6$

Do the supplementary exercises from the activity notebook to reinforce your learning.

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Operations with negative numbers:

It is important to keep in mind that two signs can never go together, that is, when we have to add or subtract a negative number, we must translate the set of both signs into one of them:

6 + (-3) = 6 – 3 = 3 ; 6 - (-3) = 6 + 3 = 9

Sometimes it is convenient to imagine some real situation to better understand operations with negative numbers. One that can be useful:

- Add = Give
- Subtraction = Remove
- Positive number = Cash
- Negative number = Debt

In multiplications and divisions with integers, multiply or divide their absolute values, and the result will have the + or – sign according to that of the factors:

4 · (-3) = - 12 ; - 4 · (-3) = 12

When multiplying or dividing more than two integers, we can observe the sign rules:

- If the number of negative signs is even, they become self-balanced and the result is positive:

(-6) · 4 · (-2) = 48 ; (-18) : 2 : (-3) = 3

- If the number of negative signs is odd, the result will be negative:

(-6) · (-4) · (-2) = - 48 ; (-18) : (-2) : (-3) = -3

As we saw with the natural numbers, the product of a whole number also fulfills the associative, commutative, and neutral element properties.

Do the supplementary exercises from the activity notebook to reinforce your learning.

- Approach to the meaning of operations with powers and roots.

Powers:

Just as a multiplication is the abbreviated expression of a repeated sum of addends, we must understand that **a product of equal factors** is called a **power**. Example: $3 \cdot 3 \cdot 3 \cdot 3 = 3^4$

As you can see in the example, a power is composed of two elements:

The base: the number that multiplies itself repeatedly (3 in this example).
And the exponent: the number of times the multiplication is repeated (4).

If the exponents are 2 and 3, they are named "squared" and "cubed" respectively. However, the rest of the numbers (n) as exponent are read as "to the n power".

For powers whose base is a negative number, it is interesting to know that the sign of the final result will be determined by the number of negative signs of the factors, so it will depend on the exponent: if it is even, the result will be positive $(-3)^4 = 81$; if it is odd, the result will be negative $(-3)^5 = -243$

Powers also allow us to simplify how to write very big numbers: 100 = 10^2, 1000 = 10^3, 1000 = 10^4, and so on.

Do the supplementary exercises from the activity notebook to reinforce your learning.

Roots:

Notice how most operations are usually associated in pairs: addition with subtraction, multiplication with division, and with powers come roots ($\sqrt{X}$).

In fact, we can say that roots are the opposite operation to powers, so, there is one root for each power: square and square root, cube and cube root, 4th power and index root 4...

To calculate the square root of a number (for example 25), you must get the base whose square gives that result. For example, in this case $\sqrt{25}$ = 5 , since 5^2 = 25

But note that the result can be 5 or -5, since -5^2= 25 and therefore both figures are valid. However, we must be very aware that **square roots of negative numbers do not exist**.

Cubic roots follow the same calculation procedure, but there are some particular differences: The most significant of them being that **cubic roots of negative numbers are also negative**, so they do exist ($\sqrt{-25}$ does not exist because there is no number that, if squared = - 25; but -2^3 = $\sqrt[3]{-8}$).

Do the supplementary exercises from the activity notebook to reinforce your learning.

Mathematical aspects related to daily use:

- Introduction to the monetary system.

From a general point of view, a monetary system can be anything that is accepted as currency or as a measure of wealth in a particular place. However, in practice and nowadays, the monetary system is based on "fiduciary" money -that depends on credit-, which is regulated by the Law of a Central Bank and the Governments, establishing a currency of legal tender, valid for transactions, purchases and sales.

In our case, with the approval of the Maastricht Treaty in 1992, the foundations were laid for the establishment of a single currency in the European Union, the Euro, as a sign for unification and economic integration.

Euros were put into circulation in January 2002, and it is the only currency in circulation in the countries inside the monetary economic union since March of that year. In the Eurozone, the European Central Bank is responsible for establishing rules and regulations regarding the creation, regulation and circulation of money.

This coin is subdivided into one hundred parts, each of them named cents. There are 8 different coins for it (1 cent, 2 cents, 5 cents, 10 cents, 20 cents, 50 cents, 1 euro and 2 euros), and 7 bills (5 euros, 10 euros, 20 euros, 50 euros, 100 euros, 200 euros and 500 euros).

- Multiples and divisors.

First of all, we need to remember which relationships exist between the following numbers:
$6 : 2 = 3$
$2 \cdot 3 = 6$
$6 : 3 = 2$

So:
6 is a multiple of 3 and 2.
2 and 3 are divisors of 6.
6 is divisible by 3 and by 2.

The multiples of a number are obtained by multiplying it by any other non-zero natural number. Example of multiples of 4:
$4 = 4 \cdot 1$
$8 = 4 \cdot 2$
$12 = 4 \cdot 3$
$16 = 4 \cdot 4$
...

60 = 4 · 15
...
1400 = 4 · 350

The divisors of a number are the numbers that divide it exactly, this is, with no rest after the division. Example of dividers of 16:
1 (16 : 1 = 16)
2 (16 : 2 = 8)
4 (16 : 4 = 4)
8 (16 : 8 = 2)
16 (16 : 16 = 1)

However, we must know that there are numbers that have **only two divisors**, itself and the unit (one). This numbers are those known as **primes**. Example of a prime number:
Dividers of 11
1 (11 : 1 = 11)
11 (11 : 11 = 1)

* Numbers with more than two divisors, as was the case of 16, are called **compound numbers**.

There are certain occasions in day-to-day life in which we must calculate multiples or divisors for several numbers and, among these, the largest divisor or the smallest multiple. This is what we know as the **greatest common divisor** (m.c.d.) or **least common multiple** (m.c.m).

The least common multiple (m.c.m.): of two numbers is the smallest of all the multiples common to both.
To calculate the least common multiple, follow this procedure: decompose each of the given numbers into prime factors and take the common and non-common prime factors with their greatest exponent.

Example: m.c.m. from 30 and 40
Multiples of 30: 30, 60, 90, **120**, 150, 180...
Multiples of 40: 40, 80, **120**, 160, 200, 240...
m.c.m. (30, 40) = 120

The greatest common divisor (m.c.d.): of two numbers is the greatest of all the divisors common to both of them.
We can use different procedures to find it: (1) Find all the divisors of each of them and see which is the largest of the common ones; (2) Use the Euclid procedure; (3) Decompose each of the numbers into prime factors and take only the common ones with the lowest exponent.

Example: m.c.d. of 56 and 32
Divisors of 56: 1, 2, 4, 7, **8**, 14, 28, 56.
Divisors of 32: 1, 2, 4, **8**, 16, 32.
m.c.d. (56, 32) = 8.

* There are times in which there is no common divisor to both numbers (other than 1). We say then that both numbers are prime to eachother.

Do the supplementary exercises from the activity notebook to reinforce your learning.

- Fractions and percentages.

We use fractions to express the parts of a unit; these are represented by two numbers separated by a horizontal line: $\frac{a}{b}$, where both *a* and *b* are natural numbers. *a* is called "numerator" and *b* "denominator". The denominator indicates in how many parts the unit is divided, and the numerator stands for how many of these units we are considering.

The numerator is read with the same name as the number it represents, but the denominator, for 2, 3, 4, 5, 6 etc is read as: halves, thirds, quarters, fifths, sixths etc.

According to all this we can say that fractions are different ways of expressing quantities, especially if these are not exact.

For example, the example amount (a quarter of salary) can be expressed as:
A fraction: $\frac{1}{4}$ of the salary.
A decimal: 0.25 of each euro.
A percentage: 25% of the salary.
So, from this example, we see that the amount shown in **a fraction can also be expressed as a percentage or a decimal number**.The percentage indicates the amount considered for each 100 units of it, and is represented by the symbol %. On the other hand, the decimal form expresses the quantity referred to each unit.

When dividing the numerator by the denominator, the result is the decimal expression, which we can multiply by 100 to obtain the percentage form.

In cases when the numerator is greater than the denominator, the quantity expressed is greater than 100%, this is, greater than the unit that we want to divide. We call these fractions

"improper" ones; so "proper" fractions are the ones with a smaller numerator than denominator.

In addition to this classification in proper and improper fractions, we can also qualify them as "equivalent" or not. Two fractions $\frac{a}{b}$ and $\frac{c}{d}$ are equivalent if they meet one of these conditions:
(1) They have the same numerical value, or
(2) They verify the following equality $\frac{a}{b} = \frac{c}{d} \longrightarrow a \cdot d = b \cdot c$

An easy way to obtainin equivalent fractions is to multiply or divide both the numerator and denominator by the same number. For example: $\frac{2}{10} = \frac{4}{20} = \frac{8}{40} = \frac{12}{60}$ …

Another of their characteristics is the simplification of a fraction, this is, to write it easily. This is achieved by decomposing and simplifying the numerator and denominator, so the fraction resulting is irreducible and equivalent to the initial fraction.

Do the supplementary exercises from the activity notebook to reinforce your learning.

When performing operations with fractional numbers, a simple way to do it is to express them previously in decimal form. However, you can also operate directly with the fractions. Let's see the following cases:

- Addition and subtraction:
  If the fractions have the same denominator, you can just add or subtract the numerators. But if they have different denominators, you must look for equivalent fractions. Choose a common multiple as a denominator, usually the m.c.m. of the denominators that we have to add or subtract.
  Example: $\frac{1}{3} + \frac{2}{4} = \frac{4}{12} + \frac{6}{12}$

- Organization:
  To compare, sort, or order several fractions, in addition to doing it by their decimal expression, we also need to do it by writing a fraction equivalent to each one with the same denominator.

- Multiplication:
  These operations don't need to have the same denominator. When multiplying fractions we get another fraction whose numerator is the result of multiplying their

numerators, and whose denominator is also the result of multiplying their denominators.

Example: $\frac{2}{3} \cdot \frac{3}{4} = \frac{6}{12} = \frac{1}{2}$

- Division:

It is again not necessary to have the same denominator to do this operation, but the result of a fraction division is another fraction, with its numbers obtained by cross-multiplications: the numerator is the result of multiplying the numerator of the dividend by the denominator of the divisor, and the denominator is the result of multiplying the denominator of the dividend by the numerator of the divisor.

Example: $\frac{2}{3} : \frac{3}{4} = \frac{2 \cdot 4}{3 \cdot 3} = \frac{8}{9}$

Do the supplementary exercises from the activity notebook to reinforce your learning.

Proportionality:

- Basic notions

Mathematics establishes the relationship between the measurements of two objects as an equality of fractions. First of all, we must remember that, given two numbers (a and b), we say that the **ratio** between them is the fraction $\frac{a}{b}$ or its result.

Example: the ratio between 3 and 6 is $\frac{3}{6}$ or 0.5.

When there is an equality between two ratios, ensues what we call a **proportion**. With the previous example $\frac{3}{6}$ we can say that $\frac{9}{18}$ is equal to it. In this case there is a proportion, since we can say that **3 is to 6 what 9 is to 18**.

This equality between ratios is therefore an equivalence between two fractions $\frac{a}{b} = \frac{c}{d}$, and in this case we can assure that $a \cdot d = c \cdot b$.

This characteristic allows us to calculate one of the amounts interveneing in a proportion if we know the other three components. Example: $d = \frac{c \cdot b}{a}$

When their terms of the fractions of two magnitudes keep the same proportion between them, we call them **directly proportional** magnitudes. Generally, for two magnitudes with this characteristic, the ratio between them is constant (constant of proportionality).

Not all magnitudes are directly proportional in real life. In fact, there are many situations in which the ratio between two magnitudes increases for one of them while decreasing in the other. These situations are **inversely proportional**.

When solving proportionality problems, the first thing to do is to know the different magnitudes involved (kg, liters, apples, bicycles, etc). The next step is to know if the magnitudes are directly proportional. Once identified, both in proportionality and in magnitude, there are two possible methods to find the value:

- Reduction to the unit:
  Calculate the correspondence to a unit of the magnitude that we have data of, and then multiply by the number of units that you are asked for.

- Direct rule of three:
  Consists of constructing the ratio $\frac{a}{b} = \frac{c}{d}$ and, after checking that they are magnitudes in direct proportion, apply that $a \cdot x = b \cdot c$
  (d being the unknown in this case).

We can also use any of the two previous methods to solve inverse proportionality cases. Simply invert the fraction corresponding to one of the magnitudes to establish the proportions.

Do the supplementary exercises from the activity notebook to reinforce your learning.

- Percentages and distributions.

The percentages, as we saw in the previous section, can also be expressed as a ratio between two directly proportional magnitudes. In this case, express the quantity of one of the magnitudes corresponding to 100 of the other one.
Example: the ratio 2 to 5 is exactly equivalent to 40 to 100, that is $\frac{2}{5} = \frac{40}{100} = 40\%$

Finally, the per thousand or "promille" is the number of units of one magnitude that correspond to 1000 units of another. We encounter these examples often in the real world, so we must know how to use them and how to change from one to the other.

With proportionality, other problems appear frequently in everyday life: when making proportional distributions or prorates. These situations appear when an amount has to be properly distributed, while considering the amounts initially imposed by each person who receives the distribution.

In order to perform these operations, there are two possible work methods:

- Finding the ratio of each one to the total in the amounts initially imposed or,
- Calculating the decimal or percentage that corresponds to each amount.

Do the supplementary exercises from the activity notebook to reinforce your learning.

3.3.1.2 CREATING BUDGETS – LEVEL 3

Definition, concepts and elements:

- What is a budget?

We call budget to **the anticipated calculation and negotiation of the income and expenses** foreseen for any economic activity. These can be personal, family, business, or public related. As a general rule, it usually contains the expenses and income corresponding to a given period.

Its purpose is to serve as an action plan aimed at fulfilling an expected goal; it is expressed in financial terms, and depending on its scope of action must be met in a certain time and under certain conditions.

In general, creating a budget allows companies, governments, private entities, or families to establish priorities and evaluate the achievement of their objectives. In order to do this, it may be necessary to incur a deficit (if expenses exceed income) or the opposite: the possibility of generate savings, in which case the budget will show a surplus (income exceeds expenses).

* In the field of commerce, the document or report that details the expected costs a service will have if provided is also known as the budget.

- Income and expenses

We will focus on addressing both the concept and elements of in the fields of personal or family budget, given the purpose of the course and the target audience.

As we saw previously, the two main items or parts that make up a budget are income and expenses:

- The concept of **income** refers to all those earnings that enter the budget as a whole. In more general terms, income is all monetary and non-monetary elements that are accumulated and generate as a consequence a circle of consumption-profit. As you can see then, the term income is related to multiple economic aspects but also social ones, since its existence usually determines the quality of life of a family or individual.

If we refer to the concept of family income, this designates all economic income that a family has. This obviously includes the salary of all members who work and who therefore receive a payment for it, plus all other income that can be considered extras (revenue, participations, etc). This family income will be what the family will have to cover their basic needs and the usual expenses a family has to face.

The family income as an economic indicator is of great relevance when it comes to compiling statistics on the living standards of different countries, because it directly allows us to know the standards of life in said countries.
It also turns out to be very important for loan requests, since every financial institution will study the level of family income before deciding if they will grant the loan.
And family income is also transcendant for companies that produce goods and services, because they will know through this value who their target audience is (what kind of person will buy their products or pay for their services).

- We call **expense** to all spending that reduces the benefit or directly increases the loss of income, if this money item leaves a personal account or a company one.

In the case useful to us, expenses can take the form of the payment of very common services such as electricity, gas, phone bills, the purchase of personal items, or any other need or pleasure that implies disbursement of money in any of its current forms.

Regarding the case of the expenses of a company there are some more considerations to have, since some expenses of a company can be translated or converted into profits over time, even higher than the expense first faced.

Do the supplementary exercises from the activity notebook to reinforce your learning.

Statistic and probability:

- Identifying and understanding statistical information.

Statistics is one of the mathematical aspects most present in our daily lives. Its relationship with the information is seen daily in the media in the form of data tables, graphs, voting intentions, variations in the CPI throughout the year, etc.

The origin of the word comes from a Greek word whose meaning is *state science*, since it was used originally to get data on topics such as tax collection and census. Despite its evolution, it continues to serve as a tool to make decisions regarding different situations after studying the appropriate data.

Basic notions:

- Population: set of elements subject to the statistical study conducted.

- Individual: each one of the elements of the population.

- Sample: a subset extracted from the population, whose results are subsequently extended to the entire population. The reliability of the conclusions will largely depend on the sample considered, which is ideally randomly selected.

The use of surveys is a frequent tool to collect information. However, it is a statistical process very vulnerable to bias, especially when collecting data on opinions. Thus, it is necessary to keep in mind where, how, and when the survey is conducted. Another important factor is how the questions are asked, these having to be clear, precise, unbiased, etc.

- Variable: the characteristic of the population to be studied. It can be of two types:
Qualitative: not expressed in numerical values, it is unmeasurable.
Quantitative: numerical, therefore measurable. If it can only have isolated values it is called discrete, and if it can have all values of an interval it is called continuous.

- Absolute frequency: or frequency (Fi) of a value is the number of times it appears in the total number of observations.

- Relative frequency: (fi) is the quotient between absolute frequency and the total number of individuals (N). It is expressed as a decimal.

- Percentage frequency or percentage: it is obtained by multiplying the relative frequency by one hundred. It is expressed as a percentage.

Thus, when facing a certain situation in which it is required to obtain information, a statistical study is conducted. For this, a survey is first designed to collect all the data, then, after the collection of results, statistical charts can be created to facilitate the interpretation and management of the data obtained.

You can identify in these charts the possible values for the variable Xi, the times each of the variables appear (absolute frequency Fi), and calculate the relative frequency (fi) and percentage (%) for each value of the variable. In addition, a last row is added with the total sum of each of the columns.

The next step is to select and create the appropriate graphs for the statistical study we are conducting. However, since this is not a subject of study in this course, we will only name the different types of graphics that can be used:

- Bar diagram: can be applied to discrete and/or qualitative variables.
- Frequency polygon: applied in the same cases as the previous one.
- Sector diagram: can be applied in any case in which the variable does not take too many values.
- Histograms: made as bar diagrams, but applied to continuous or discrete variables organized into intervals.
- Pictograms: data is represented by drawings alluding to the subject studied.

Other statistical graphs:

- Cartograms: used when the data refers to the study of geographical areas.
- Population pyramids: two histograms to indicate the evolution of a population.
- Climograms: superposition of a bar chart and a frequency polygon, to show rain and temperatures corresponding to an area during a given time.

Once the chart is completed, we can and must calculate measures that provide summarized and global information of the data set. This information yields to two types of statistical parameters, depending on the aspect to which it refers:

Central parameters or measurements:

- Average or arithmetic mean ($\overline{X}$): All data is added and divided by the total number of these. It can only be applied to quantitative variable studies, since it requires arithmetic operations to be calculated. In the case of values grouped into intervals, the central value (class midpoint) of each interval will be taken for the calculation. On the other hand, if the data is grouped by frequencies, each value will be multiplied by its frequency and the results will be added. To facilitate this work, a new column is usually added to the statistical table (Xi · Fi).

- Median (Me): it is the value in the central position once all the values have been ordered. As in the mean, this parameter can only be applied for quantitative variables.

- Mode (Mo): this is the value most repeated throughout the entire sample. It is the only central measure that can be calculated if the varialbe is qualitative.

Dispersion parameters or measurements:

These measurements or parameters are used to quantify the degree of concentration or separation of the data among the sets of values. These are:

- Distance: known as the difference between the largest and the smallest value. Its calculation is easy, but it only tells us between which values the varialbe moves.

- Mean deviation (MD): it is the arithmetic mean of the different deviations, separations, or differences in absolute value compared to the previously calculated mean (central).

- Variance and standard deviation: these values also provide information on the degree of separation of the data regarding to the mean.
  The variance is the average of all these deviations, and the deviation of each data can be measured using the square of the distance $(Xi - \overline{X})^2$. From this formula, if we add all the data, we get the following expression:

Sample Variance	Sample Standard Deviation
$s^2 = \frac{\sum(x - \bar{x})^2}{n - 1}$	$s = \sqrt{\frac{\sum(x - \bar{x})^2}{n - 1}}$

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As we can see in the calculation of the variance (sample variance in the image), the units are squared. It is now when the standard deviation becomes very useful as a new parameter, it being the result of the square root of the variance.

At this point, and to complete the statistical studies, it is necessary to analyze the results, conclusions, and make decisions.

* The mistakes in graph drawing are sometimes intentional to create a bias in the viewer, and can lead to wrong conclusions.

Do the supplementary exercises from the activity notebook to reinforce your learning.

- Quantifying uncertainty.

In this second subject of section 2, we are going to study probabilistics. This subject, linked to chance and uncertainty, aims to quantify or measure the possibility of each of the possible outcomes of a specific experience to happen, and, consequently, make one decision or another.

The origins of probabilistics are set in the 17th century, linked to the appearance of gambling. However, with the mathematical development of the theory since the end of the 18th century, it has been applied to other sciences and fields, being frequently used nowadays in health and medical areas, insurance, business, etc.

Basic notions:

Any experiment, depending on whether its result can vary or not, is random or deterministic. Rolling a die and writing down the number obtained, or measuring a room, are two illustrative examples for each of the experiments described. We will focus on the analysis of randomized experiments to explain this section.

First, we need to know that each of the results we can obtain in this type of experiment is called basic event. In the previous example with the die, we would have 6 different basic events: to get a 1, 2, 3, 4, 5, or 6. Events can also be composite events, when dealing with a group of several basic events. In our example, a composite event would be “to roll even” (rolling a 2, 4, or 6).

Thus, we also find other types of events in the classification that we should know:
- Opposite event: from the previous example, “to roll even”.
- Impossible event: to roll a 7 on the die.
- Guaranteed event: includes all basic events, and therefore will always happen.

The **probability** of an event is known as the value closest to the relative frequency of the event happening. For example, if we toss a coin 1000 times we will see that the absolute frequencies of “heads” will approach 500 and so will “tails”, therefore the relative frequencies of each event will be 0.5 or 50%.

With this approach, we could think that it is necessary to do all the calculations every time to determine the relative frequency of each possibility, but in some cases all basic events have the same chance of happening (these are equiprobable events), so we can apply the Laplace rule. This states that the probability of an event is the quotient of the number of favorable cases and the number of possible cases. Returning to the example example of the die, we can see that:

$$P(1) = P(2) = P(3) = P(4) = P(5) = P(6) = \mathbf{\frac{1}{6}}$$

In cases with a compound event, we must add the basic events comprising it to calculate the probability. Example for “rolling even”: $P(2) = P(4) = P(6) = 3 \cdot \frac{1}{6} = \frac{3}{6} = \frac{1}{2}$

Thus we can see that the addition of the probabilities of an event and its opposite is always equal to 1, so we can use the possibility of an opposite event to calculate the one we need, if that calculation is easier.

Lastly, you have to know that the rule of Laplace cannot be always applied: the basic events must be equiprobable.

Do the supplementary exercises from the activity notebook to reinforce your learning.

Algebraic language:

- Translation of everyday situations into the algebraic language.

Algebraic language is a very special type of language that uses the branch of mathematics known as algebra. It expresses situations that have some variable aspect in common, by means of letters and numbers, and according to fixed parameters that are expressed by numbers and

operations. Thus, algebra allows us to see the resolution of problems from a new point of view. On the one hand it simplifies the approach, and on the other it uses equations (the basic algebraic tool) to reach the solution. We will study first degree equations given their usefulness to plenty of everyday situations.

Basic algebra skills:

First you have to remember that an algebraic expression is a combination of numbers and letters, with at least one operation related to them. For example, if we want to express the price of a liter of gasoline with the letter "a":

- Price of 4 liters of gasoline: 4a
- Price of a liter of diesel if it is worth 0.23€ more than gasoline: a + 0.23
- Price of two liters of gasoline, regarding the price of diesel: 2 · (a + 0.23)

If these expressions are linked by the equal sign (=), we obtain **algebraic equalities**.

- The price of 4 liters of gasoline is 4.68€, therefore: 4a = 4.68
- The price of 1 liter of diesel is 1.4€, which is 0.23€ higher than gasoline: a + 0.23 = 1.4

When the algebraic equalities are only true for a certain value of the letter or "unknown", we have an equation. Thus, solving an equation is finding the value of said unknown, so that the conditions that determine equality are met. This value is the solution to the equation.

- First degree equation systems.

The unknown in an equation, as we already know, is the value we do not know in the equality, and is usually written as x. The simplest equations are first degree equations, since the exponent of the unknown is always 1. You should also know that **equations with the same solution are called equivalent equations**.

When dealing with an equality in an equation, it functions like a balance in equilibrium. In order for the balance to be kept equal, the weight on both sides has to be the same.
Thus, if we add or subtract the same number or algebraic expression the two sides of an equation, the equality will be kept and we will still have an equivalent equation. In the same way, if we multiply or divide by the same number or algebraic expression in both sides od the equation, the same thing will happen.

With these summarized rules, we can go through the different equivalent equations to isolate the unknown, which is ultimately the way to solve the equation. In our examples:

- $4a = 4{,}68 \longrightarrow \frac{4a}{4} = \frac{4{,}68}{4} \longrightarrow a = 1{,}17$
- $a + 0{,}23 = 1{,}4 \longrightarrow a + 0{,}23 - 0{,}23 = 1{,}4 - 0{,}23 \longrightarrow a = 1{,}17$

In order to simplify the resolution of equations, the followings steps are usually followed:

1. If the equation has a parenthesis, solve it first.
2. Group the terms that contain the unknown on one side of the equation, and independent terms on the other side.
3. Solve the unknown by isolating it in one side of the equation.

Do the supplementary exercises from the activity notebook to reinforce your learning.

3.3.2 DIGITAL TRAINING CONTENTS – LEVEL 1

This material is the result of a development and research process in the search for didactic and methodological solutions and innovations that help in the inclusive learning of adults. It is a curricular concretion designed to respond to the needs and interests of the adult population that wishes to acquire self-learning tools in the development of skills and abilities of digital skills.

The teaching material of this topic consists of a textbook and an activity booklet. The contents distributed in six units have been grouped under three headings, which allow us to make them better to relate their use to daily application. As an attachment and additional resource, we'll be including the complete "Critical Literacy Digital Guide", made by Inés Bebea (2015) with the BioCoRe publishing house. S. Coop, Madrid; distributed under a Creative Commons license. It is from this material that the content shown below has been extracted.

In this topic you will learn:

Heading 1. Internet - Level 1

- What's out there? The infrastructure
- The web browser
- Resources:
  - PDF - Internet Tutorial

- PDF - Gmail Manual

Heading 2. Office automation - Level 2

- Personal computer
- The operating system
- Word processor
- Resources:
  - PDF - Basic computer manual
  - PDF - Windows Tutorial
  - PDF - Basic Word Manual

Heading 3. The E-learning Platform - Level 2

- E-learning and its other perspectives: a social perspective.

Resources - Level 1

- PDF - Critical Digital Literacy Guide.

3.3.2.1 THE INTERNET – LEVEL 1

What is out there? The infrastructure.

1. Introduction

Throughout history, each society has organized to live in a certain place. This coexistence had implicit among other issues, the management of material goods (natural resources, technology) and intangible assets (culture, language, religion). Information and Communication Technologies (ICT) are today another resource of our society which, due to its high economic value, has a large deployment of media. In Spain, since 2012, access to 1Mbps broadband is considered a **universal right**, such as water or electricity. Access to information and freedom of expression are considered fundamental rights. This is why cities have hospitals, schools, water pipes, roads, trains, electricity network infrastructure, and now also telecommunications networks.

The communication of messages over great distances is as old as humanity, using fire, smoke, mirror reflections, drum rumbles, and flags.

The transport of written messages is as old as the writing itself. Generally, the messenger carried out this important task by carrying the message himself: either memorizing it at the starting point and telling it to the final recipient, or carrying a letter or package. The oldest

examples recorded today are from Ancient Egypt, Persia or Rome; in the latter, the network infrastructure of cobbled roads and bridges developed meant an advance in the speed at which people, goods and also communications could move: letters and paper documents. In the 19th century post mail was established as state monopoly services, including a form of payment with stamps.

The first electronic communications come from experiments carried out by various people, from the scientific, artistic or religious field, in the 19th century.

The telegraph transmitted the electricity generated by a voltaic battery (newly invented) through wires. Text messages were encoded in electrical pulses using the Morse code. In that century, some companies began selling telegraphs and installing cables between various cities in the United States and in Europe, including submarine cables that crossed the ocean.

Soon the telegraph gave way to the newly created telephone, which allowed to transmit the human voice also by means of electrical signals. A prototype telephone arrived at the hands of Graham Bell, who had money to patent it and finance cable lines from one point to another to communicate the voice. In just a couple of years, Bell created the monopoly company in the United States, which sold the phones but also owned all the call switching centers (first manuals, then automated) as well as the cable and machine infrastructure for the that phone calls traveled from one end of the country to the other. A similar story happened in other countries, where the state-owned postal, telegraph, telephone and other telecommunications companies were linked.

As it happened before in history, the Information Society has developed its own imaginary: Internet is the cloud. At the end of the 20th century, telephone networks were modernized incorporating technology to transmit data and connect computers, not just phones. The infrastructure that supports the Internet, mobile communications and Web platforms such as social networks consists of thousands of kilometers of underground and submarine cables, millions of antennas placed on the roofs of buildings, hundreds of buildings without windows with rows of servers. These tons of metals and plastics exist on earth, not in the clouds. They are in our cities. And they have an owner. We know the names of some of them: Telefónica, Vodafone, Orange, ONO, and many other intermediaries whose names do not reach our ears.

In this chapter we will talk about what telecommunications infrastructure is like, what its origins are, in whose hands they are and how we can open roads to recover sovereignty over these resources.

2. How does the telecommunications infrastructure work?

Similar to the electricity network, the telecommunications network has a large wiring under the asphalt. The cables have a certain length, since when they pass through them, the electric signal loses power. These cables go from one place to another: from warehouses that contain

data and software (servers), passing through the cores that order communications (switching centers) to residential buildings, offices, schools, hospitals, etc. This is the fixed network, which constitutes the main infrastructure. Some of the companies that keep this entire system in operation are telecommunications operators.

On earth

• **The fixed network has old copper cables and newer fiber optic (FTTH) cabling**, two very different technologies currently operating at the same time.

Copper, as the metal it is, allows communication by transmiting electric signals, while optic fiber transmits light. Telephone calls are channeled from our telephone through copper wires and are sorted in telephone exchanges. These switchboards are currently digital, so both voice and data sent over the Internet are sent as small data packages between computers that do so by using software. The switching centers have ADSL equipment to send Internet data through the same copper cable, covering a distance of 1.5km from the switchboard to homes without much weakening of the signal. These switching centers increasingly consist of fiber optic technology instead of ADSL.

• The telecommunication cables that go from one city to another are often located next to train tracks: in Spain, “Adif” has 16000km of optic fiber along railway lines, linking the main Spanish cities. The cables that connect countries or continents are installed under the sea at some distance from the coast, and across the ocean.

• **Switching centers** are buildings that house hundreds of communication machines like routers. These in turn connect with others forming the nodes of a network that covers many points of the planet. Each telecommunications operator has its own switching centers, which are connected to each other in a place called **Internet Neutral Point**. In Spain, this Neutral Point is “Espanix”, where operators negotiate their interconnection conditions, located in a building in Madrid.

• **Servers** are very powerful computers connected to the telecomm network. They have specific software appropriate to this role, for example, a Web server stores and sends Web pages. They work 24 hours a day, which is why we can “use the Internet” at any time. To keep their temperature low, these machines are stacked in refrigerated cabinets.

Through air

• The **mobile network** is the structure that allows communications via smartphones, using second generation voice technology (2G) and 3G/4G data for Internet connection. It consists of **base stations with medium power antennas** that provide coverage. These are located in high places such as towers or building roofs, and emit electromagnetic signals in an area around them covering streets, highways or small towns. There are also indoor mobile network facilities, such as in suburban transport stations that place small antennas on platforms and

corridors, since street level coverage does not reach. Logically, the mobile network is linked to the fixed network directly by means of cables in cities or indirectly high-power wireless links in rural areas to other mobile stations closer to the fixed network in cities.

• Our smartphone connects to mobile coverage antennas via wireless links.

Through space

• The **satellite network** is an international structure that connects ground stations with large satellite dishes, communications satellites that orbit the planet, and small satellite dishes that can be placed in buildings or even vehicles. There are also satellite smartphones. Like the previous one, the satellite network is connected to the fixed network through cables that reach the ground stations.

• When we have a small satellite receiving station, usually for television or the Internet, it connects wirelessly with the satellite antennas in its orbit kilometers from here.

In addition to the traditional communication devices such as telephones, there are currently many other devices that are connected to this infrastructure. These devices are controlled and send the information to their owners: video surveillance cameras, environmental sensor networks, traffic, telemedicine sensors, drones, etc.

On the other side are the people, who use the networks from our terminals: the landline at home, the smartphone or the computer. When we say that we have coverage or that we are connected to the Internet, it is because there is a physical link (wireless or wired) with one of the fixed, mobile or satellite networks. There is no magic, physics must exist even when there are no wires: waves are emitted through the air through objects, buildings and our own bodies.

3. Lifecycle of telecommunications infrastructure

In most countries, the state created a statewide public telephone network infrastructure in the 20th century. In the 90s, after the end of the Cold War, European states adopted neoliberal policies that forced the liberalization of the telecommunications market, which meant breaking the state monopoly and opening up the competition of private companies that offered the services. Then, the state sold the entire infrastructure to the new companies that were created. Today, Telecommunication networks are owned by these multinationals.

Business

Telecommunication companies have a business model initially based on charging: they sell access to the infrastructure through mobile, fixed telephony, broadband Internet access, and

more recently digital television. The operators pay for the construction or expansion of the telecommunications network, or rent it to others.

In the construction of sections of the telecommunications network, civil engineering and manufacturing companies of the specific machines used for switching centers or mobile base stations such as Huawei, Siemens or Ericsson participate. Operators hire engineering personnel to control, supervise and technically configure the operation of the machines: they measure the number of connected users, the amount, duration, and place of the calls, the amount of data downloaded, etc.

Contracts

People who want to use the network only have the option of choosing a certain paid service package designed by one of the telecommunications operators. Then, one must accept a contract that includes terms and conditions of use described by the company. These offers, rates and contracts are regulated in each country by a given institution. However, according to the Organization of Consumers and Users (OCU), the telecommunications sector is the one with the largest number of claims. Although access to the network can be a resource shared by many people, companies offer and disseminate individual services, which revert to greater benefit. For example, sharing an ADSL connection is legal and yet some operators forbid it in the clauses of their contracts.

Use

When a person begins to use the access to the network they have hired, usually individually, they can verify that the service works in a very basic way: calling and receiving calls that are heard clearly, or seeing how fast or slow it loads a page when you access the Internet.

The operating company has this information about the quality of the service, but does not share it with the users. They can use external tools such as speed tests (for ADSL, mobile) or coverage meters. The operators only offer limited information through a customer service or an online profile: the price of your invoice, a list of calls you have made, including the dialed numbers (but not the incoming ones), a list of SMS you have sent that includes dialed numbers, and a summary of the amount of data downloaded.

Telecommunications operators use usage statistics to make personalized offers and also as a source of revenue selling massive anonymous statistics (or Big Data), of great value to the advertising industry.

If a person using the network decides to stop doing so, or accessing through another company, they can terminate the service contract. However, in recent years, one of the most widespread and abusive conditions is the permanence clause, which obliges us to fulfill a service contract with the company between 1 and 2 years. If the user does not comply, the company will ask for compensation. Companies often make special counter offers to keep their customers using

their Big Data analysis, offering a gift such as a cheaper smartphone. What they will not neglect is the signing of a new permanence clause. The motivation to act in this way is that companies want to continue having many customers at all costs.

Experiences Pro-common networks

Given this reality, citizen initiatives have emerged that manage the ownership of these resources as part of a common good. This is the case of Guifi.net: a telecommunications network that is defined as free, open and neutral. In Guifi, the users own the network under an internal regulation: the Procommun License.

Each person installs their network access node, which can consist of a simple wireless router. Each user is the owner of their node and at the same time acquires the commitment of facilitating others to connect to their node.

Thus, the network is growing and all people in the community share ownership of the infrastructure.

At the local level, professionals and small businesses can offer additional services such as Internet telephony. Among the people in the network with greater and lesser knowledge in technologies, mutual support or service exchange relationships can be established.

In Catalonia, the Guifi network has 20,000 places connected between houses, offices, schools, public buildings.

4. Technology as a means, the person as an end.

Communication is an essential need of humans, as social beings. People have always looked for ways to communicate orally or in written form, through art, by making long trips, by means of pigeons, or letters sent by ship when distance was an impediment. We are amazed that we are nowadays able to talk with other people thousands of kilometers away from where we are, of the wonder that this entails in the advancement of humanity, and ask us, how does this (technically) work? But we can also ask ourselves about the people and institutions that make it work. What does it mean to want *more speed*? What does it mean to want to *store more data*? And coherently, is it necessary?

In the 21st century there are numerous technical means that allow communication between people throughout the planet. However, large companies and government institutions have taken ownership of these means, sometimes considering them as private property or strategic defense instruments. This reality is usually hidden under the myth that technology advances

and this is good in itself, or in the imaginary of *the cloud* or *coverage* as magical solutions. When we do not govern technology, a few are operating them for their own interest.

Sovereignty

The common good is an ancient philosophical concept that refers to the good that people require as soon as they are part of a community and the good of the community as long as it is made up of people. Plato and Aristotle agreed that the common good transcends private goods, and that it contemplates good deeds, not just what is necessary for life in common. To translate it into our current world, the common good has an ethical dimension that permeates the management and use of the resources available to us. The option we have over the sovereignty of means of telecommunications can be built from the base of the common good, never on particular interests.

Then the media and infrastructures that are part of the common good, are currently in the hands of multinational companies that seek to obtain the maximum economic benefit for themselves. Such an objective requires increasing production and consumption at all costs: more speed, more data, etc. That's what advertising and marketing are for. And it works, because we want it. We want more and better technology, more speed, more data… This implies making large capital investments that only large companies can address and users finance by agreeing to spend more for internet access or mobile rates. Our heart is conquered by desire. We want to have more and that makes us accomplices. We have been educated in a consumerist society and consider this normal. The challenge is great but one can start with small exercises: in the face of the desire to consume what is offered to the fullest, desire only what is necessary. The one who is most free is the one who needs the least.

There are cooperative learning experiences that work from practice to consolidate values such as responsibility, self-management, respect, solidarity… all of them necessary in a learning of telecommunication infrastructures from the culture of common good. We must look at what has already been done in areas apparently different from this: experiences of struggle for food sovereignty, with structures and methods of self-management of land and orchards; collective management initiatives of water resources in an area, including wells, canals or irrigation; self-managed community radio projects…

We can investigate and test creatively about these models, and thus start by building collectives that share the management of their network section such as neighbor communities in the same building or in the same neighborhood sharing a single internet connection, and slowly continue advancing from there: the recovery of the media will take time, but it is more important to consolidate a culture and a mindset ready to embrace them.

Do the supplementary exercises from the activity notebook to reinforce your learning.

The web browser

1. Introduction

Internet is a global network of computers that connects millions of devices. The origins of the Internet date back to the 1960s, when the United States government organized a commission of inquiry to build a robust and flawless form of communication through computer networks. In 1965, the Massachusetts Institute of Technology (MIT) began using email as a system in which users connect to machines that store emails. Later, in the 80s, the National Foundation of American Science built the first powerful infrastructure (*backbone*) and began to be used by various universities in the country.

It is common to talk interchangeably about the *internet* and the *web*, but they are not the same. The web is just one of the many services that work on the internet, like email, FTP file transfer, P2P, etc. The web refers to a set of interconnected documents (web pages) and other resources (images, files), linked by hyperlinks. The machines use the HTTP (Hypertext Transfer Protocol) to access these resources and send them on the web. This defines the steps in which each message is sent and received as well as the form of these messages (how many bits, sender address, content, etc.) between machines.

The origins of the web: In 1989 Tim Berners-Lee worked as a computer engineer at CERN, the particle physics laboratory in Switzerland. There he observed that scientists from all over the world who used the laboratory for their research had difficulties in exchanging data. He began to work joining the hypertext language and the existing communications protocols, and from that combination the World Wide Web was born. In October 1990 he presented the three fundamental elements that still make it up today: HTML [3], URLs and HTTP. Also in 1999 he programmed the first ever web browser and web server.

In 1993, CERN made the Web available to anyone, free of property rights. Today this web technology are free and Berners-Lee continues to run the W3C Consortium that creates and updates web standards as programming recommendations for web browsers.

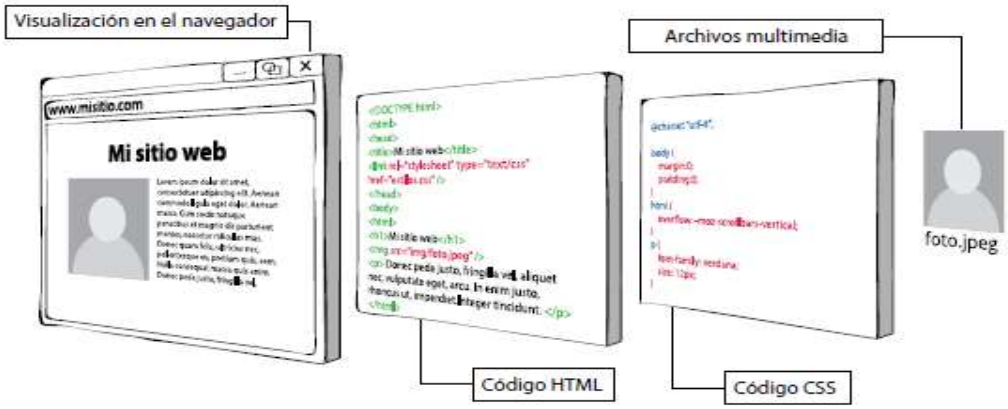
Since then, multiple software programs have been created to navigate the web, called **browsers**. These are programs installed on computers, which **allow accessing the web**, **interpreting HTML language, and displaying web pages** on screen. The browser establishes the HTTP connection to the server that contains the web page located at a URL address, for example http://www.unsiteweb.com. Netscape Navigator, Microsoft Internet Explorer, Opera, Mozilla Firefox, Apple Safari and Google Chrome are examples of current web browsers.

This chapter will delve on how the web works, and how to download contents from web browsers.

2. What does a web browser do?

The main function of a web browser is to download documents in HTML format and display them on screen along with their images, sound and video. These documents can be stored on any computer we have access to: saved on the hard drive of our own computer, on a computer connected to a local network or on a web server on the Internet.

The browser interprets the HTML tagging language, CSS style language and multimedia files (image, video, audio, etc.) to show us a complete web page on the screen.



When we access web pages on the Internet, the browser installed on our computer connects to a web server on the Internet, which is a powerful machine capable of maintaining thousands of connections at the same time for all users who want to download that page. This connection is made using a communication protocol called HTTP. If we have a fast Internet connection it may seem that this happens instantly, but several steps are taken:

1. When we enter a URL address in the address bar, or when we click on a link, the web browser sends a request to the server for the contents of that URL. It is important to know that the web browser also provides information on the type of browser, device, and operating system we use (eg Google Chrome, Windows 7), our location, and even what other websites we have been to before.

2. The request travels through the telecommunications infrastructure and reaches the server where the website is hosted.

3. The web server searches the hard disk for the requested files and begins to send the content to the browser, adapting it to the type of browser and device that will display it.

4. When the browser has received large parts of the content or the entire page (depending on how it was programmed), it displays it on the screen.

Each time we click on a link while browsing the web, these steps happen, so we download what is on the web server to our own computer. Generally, **these contents are stored in a temporary memory or cache** that the browser keeps while it is not full. For this reason, if we access a page frequently, the web browser shows it without even connecting: it is showing what it had cached.

At the same time, **our browser sends information about us** to web servers even if we don't realize it. If we want to connect to the Web anonymously or by limiting some of this information, we must properly adjust the preferences or options in the web browser.

On our screen we see only the interface, the visible face, of a web browser:

• **Navigation bar**: a large blank bar to write the URL of the web page we want to go to.

• **Search bar**: a smaller blank bar where we write words to find information we are looking for. These words are sent to the search engine that we have configured in the browser (Google, Bing, Yahoo, etc.).

• **Browsing history**: stores and displays a list of web pages that we have consulted recently.

• **Window**: we can have several windows open in the browser, so we are connected to several servers at the same time. It is not necessary to close a connection to open another. A similar element is the tabs, which allow different open pages in sections of the same window.

• **Main screen**: it occupies almost the entire screen and is the space where the web page is displayed. When there is a connection error, messages such as “Website not found” or “No connection” are displayed. When a web page is displayed correctly, we can see the text it contains, plus images and/or other files. We say that the text or an image has a ***link*** usually when colored blue or underlined. By clicking on this link, we open a connection to another web page or file from the same or a different server, depending on the URL.

• **Preferences and options**: all browsers include configuration options where we can indicate where we want to download files, whether or not we want to save the history, what size of cache memory, whether to store cookies or not.

• **Developer options**: browsers generally allow you to view the HTML source code of the page, as well as other options such as the console for those who program web pages and use this software to check their operation.

3. Web servers and navigation; use recommendations.

Frequently, when social science scholars ask about internet freedom, they look at the number of computers or smartphones (not people) that have access to the Web. However, few wonder who and where the web pages are made, who tells the stories on the Web. There are almost

one thousand million web pages. Almost half of the most visited web pages are found on web servers in the United States: Pinterest, Facebook, Dropbox, Google…

The process of creating a web page comes from an individual, a collective, an organization, or an institution that develops a website with the help of designers or programmers. In order for people connected at any point to the internet to access this page, it must be stored on a web server. A web server is software on a very powerful computer, which receives requests from web browsers and sends said page and its contents.

These machines work as apartment blocks, with each apartment hosting a different web page. To host the pages, companies that provide web hosting services charge a fee. Every day these servers send millions of pages to web browsers of people who visit them.

There are browsers that are proprietary software such as Microsoft Internet Explorer, Apple Safari, Google Chrome. The proprietary companies install these browsers in the operating system on which they have ownership rights (Microsoft Windows, Mac, or Android). There is also free software such as Mozilla Firefox, and all can also be downloaded from the Internet.

Although in all cases the browser is free for users, the companies that develop them usually obtain other benefits, such as usage information about which pages are visited. At first glance it may seem strange to us that companies find this interesting, but the point is that by collecting mass data and analyzing it statistically, they obtain very useful information for their own marketing, or to sell to third parties. Internet Explorer is pre-installed in Windows, and therefore many people use it without ever trying others. Since 2011 Google Chrome is the most used browser worldwide.

Once installed on our computer, the web browser contains many keys to use it securely, although these options are not pre-configured. One example is cookies: they are text files stored in the web browser when we visit a web page; they may contain passwords, usage preferences, previous searches… Cookies serve to adapt the web pages to our liking, but above all, they configure the ads shown to us, which makes marketing much more effective for companies. Some websites may even leave third-party cookies, which we usually see as annoying ads and windows that mysteriously open by themselves. We can block or delete unnecessary cookies in “preferences” of the browser. Another example is the browsing history, which can be sent when we access a malicious web page. We can also choose private browsing in the preferences of the browser to disable saving pages visited in the history, cookies, etc.

As new web technologies such as HTML5 and CSS3 arise, and security flaws are resolved, companies or development projects release new versions of web pages incorporating these new languages. These frequent changes contribute to the obsolescence of previous versions of web browsing software, which are unable to properly decode these files. Therefore, it is recommended to update the web browsing software to the latest version.

4. Technology as a means, the person as an end.

Hypertext allows doing a non-sequential reading, jumping from one page to another. As in Julio Cortázar's famous novel, *Rayuela*, there are multiple paths and endings through which we move, deciding what our next step will be… but, in a finite novel, already written. On the one side are the servers on the internet and those who have written them, and on the other side are we, who observe, read, and comment.

Democratization?

It has been said that the Web democratizes information. The same was said of the telegraph, however, those who do not a voice do not have it on the web either. It is true that everyone can have a simple web page, but nobody will find it in the ocean of millions of pages and millions of daily news. Actually, the news are not so many, but the are multiplied and repeated endlessly, turning "ones" as speakers for "others", who told their version. It is common to find repeated news from a single original source that is a news agency, such as Europa Press.

In general, the more available version is the one that suits the powers and structures sustaining it. This happens through official channels of governments, institutions, companies, and related organizations, but also through users who are educated in the system. We find examples of this in what is known as citizen journalism, which mainly uses blogs to then disseminate on social networks.

Users frequently publish content on the web believing that it is their own voice and not the transmission belt of the values and principles of the established system. Although the web is the greatest means for spreading information, it is frequently presented as the achievement of the (western) dream of gathering all the knowledge accumulated by mankind through the Library of Alexandria or the Rousseau and Diderot Encyclopedia. Knowledge, as Socrates said, cannot be stored in writings. The global library could store part of the knowledge of humanity, but it should then be built again from its foundations. To assume that the current Web is a source of knowledge leaves us at the mercy of the cultural colonization of the victors, those who write history, those who tell the news, those who build how we see at reality.

Although technically the Web is a horizontal and distributed platform, where "we can all participate", the truth is that it is under the influence of powerful institutions and the information follows a hierarchical structure. Even before examples like Wikipedia, the participation of all people is limited due to lack of technical skills and active participation culture; a culture that must be educated.

The search for knowledge

If knowledge is not something that can be stored or saved in one place, what is the way to achieve knowledge? Knowledge is not static, conclusive, or storable words and concepts. This is what Freire criticized when he talked about banking education, where people are mere

deposits of information. Knowledge is life, practice, culture. The best approach to what we mean is in the proposal that Socrates made in ~400b.c. Maieutics or the Socratic methode proposed by Socrates is more than a science, it is an art based on dialogue. The truth is reached through questions, answers, debate, and conclusions. It goes from one idea to advance to another, and thus, clashing with the thought experience itself, discovers in depth the coherence of truth. In this approach, knowledge is latent in human consciousness and it is necessary to "give birth to it" somehow. Contrasting points of view, questioning our own beliefs, and verificating sources of information are all part of this process; all are points that can be supported in the review and creation of web contents.

Consider this reflection for the contents of web pages we use and the creation of web content. If we want to verify the quality of that information; or before our intention to collaborate in a blog or publish in a social network, previously review what you want to communicate:

Text Socratic Dialogue

One day an acquaintance met the great philosopher and told him:
- Do you know what I heard about your friend?
- Wait a minute -Socrates replied- Before telling me anything else, I would like you to pass a small test. I call it the triple filter exam.
- Triple filter?
- Yes, -Socrates continued- Before telling me about my friend, it may be a good idea to filter what you are going to say, three times. That's why I call it the triple filter test. The first filter is Truth. Are you absolutely sure that what you are going to tell me is true?
- No, -said the man- I really only heard about it and…
- Good -Socrates said- So, you do not really know if is true.
Now let me apply the second filter, Goodness. Is what you're going to tell me about my friend a good thing?
- No, on the contrary…
- So, you want to tell me something bad about him, but you're not sure if it's true.
I still might want to hear it, because there is one filter left: Usefulness. Will it help me to know what you are going to tell me about my friend?
- No, not really.
- Well, -Socrates concluded- if what you want to tell me is not true, nor good, and even not useful, why would I want to know?

ADDITIONAL RESOURCES:

- **PDF – Internet tutorial (13 pages)**
- **PDF – Gmail Manual (16 pages)**

3.3.2.2 OFFICE AUTOMATION – LEVEL 2

The personal computer (PC)

1. Introduction

How did the personal computer came to be?

All technology we know today is the result of the scientific advances achieved by humanity throughout its history. In the Western world (Renaissance, Enlightment and Industrial Revolution), intense research on mechanics was developed: moving parts systems that have utility when joined. Thus, some work processes could be mechanized, as the printing press did for the copy of documents. However, until the 19th century barely none elementary mathematical operations had been mechanized. Then, Charles Babbage wanted to build an advanced calculator because people who filled in tables of numbers used to find it a tedious and boring task and ended up making mistakes. In 1822, Babbage devised a machine capable of performing complex calculations by means of a calculation processor, a control unit that indicated which task to be performed, and perforated cards that could be recorded or read imitating the functioning of a loom.

Later, in the 1930s, Alan Turing made the theoretical design of a mechanical device capable of solving any mathematical problem that could be represented with an algorithm. Turing designed a machine that took several steps following an algorithm: each step was a state in which an operation was performed. In each state, the machine would read symbols from a code strip or tape, and its operation is determined entirely by something like: "in 'state 23', if the symbol seen is '0', write '2', and if the symbol seen is '1', change to 'state 17'; in 'state 17', if the symbol seen is a '0', write '1' and go to 'state 8', etc". We can think of it as a machine with many small switches that may be on (1) or off (0): elementary coding. The number of possible states is related to memory capacity.

Thus the Turing machine could theoretically solve all kinds of automatic tasks, and not only act as a calculator. Although Turing failed to build and test the design, his research soon served to develop the *Colossus* computer, which automatically deciphered the messages sent by the German side in WWII. In essence, a computer is a Turing machine built to mimic the calculations that a skilled person could do, but at a faster rate.

Turing dreamed of a computer that could mimic the human brain, and perhaps think. This simile still survives today, and conditions the current research around artificial intelligence. Like Hobbes and other materialist philosophers, Turing considered that thinking is essentially computation, and that the number of realizable calculations depends basically on how many states the machine incorporates. For Turing, a computer with a great memory would work like a human brain.

Co-funded by the Erasmus+ Programme of the European Union

What is a personal computer?

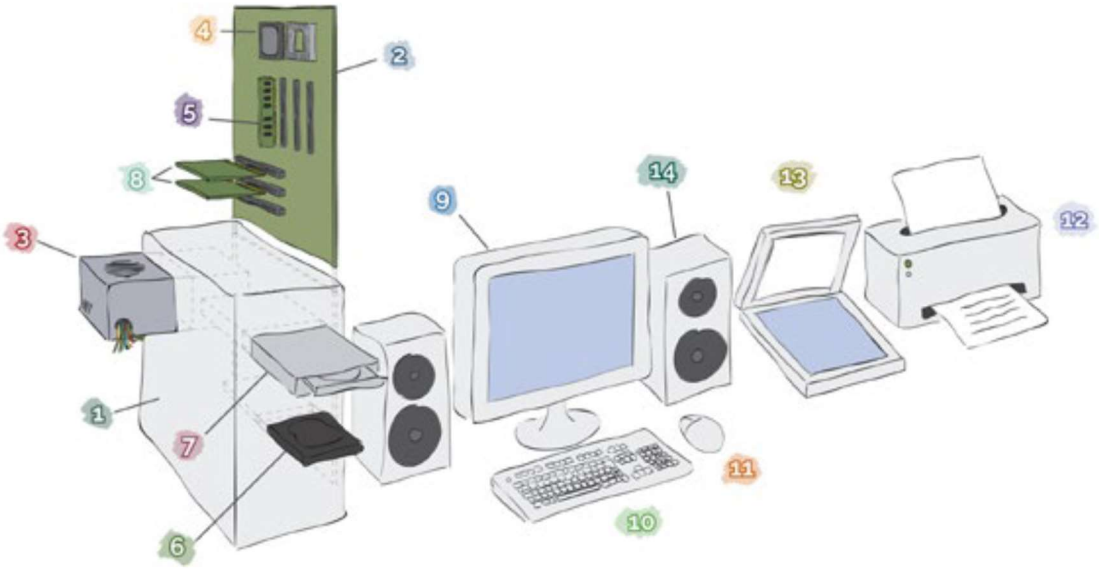
Today, the personal computer (PC) is a tool of everyday use for millions of people. There are tremendously powerful computers such as those integrated into the navigation box of a spaceship, and much simpler ones, PCs, designed to be used by a single person.

The computer is a complex system consisting of several elements related to each other. When the system is activated, internally, these elements are put into operation and electrical impulses are sent between each other. The minimum expression of these electrical impulses is what is defined as ***bit***. A bit has two possible values: 1 (on), 0 (off).

The computer is an object formed in turn by small pieces, which are the material part of the computer (hardware). The tasks performed by the computer, based on mathematical functions, are written in these elements: this is the intangible part (software).

2. Parts of a personal computer.

In order to understand how a personal computer works, we will start with the parts that make up the machine. It is the physical qualities of these pieces that allow the computer to operate at a greater or lesser speed, which can store more or less information. Among these pieces, we distinguish *passive elements*: the casing, usually metal (eg aluminum) or plastic, and other assets, the buttons or switches, generally of plastic, which are activated mechanically when the user presses them. The *elements that perform computing tasks* are electronic: made up of even smaller pieces of plastic and metal (copper, silicon), and work with electricity. The following are the most common elements, in the order in which a PC is built:



1. External casing / 2. Motherboard / 3. Power supply / 4. CPU / 5. RAM / 6. Hard disk / 7. Optical reader / 8. Video-, sound card etc. / 9. Screen / 10. Keyboard / 11. Mouse / 12. Printer / 13. Scanner / 14. Speakers

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External casing: a metal box inside which all other elements are located. The size of the box is designed for the size of the motherboard, which has no major implications. In the case of a laptop, the casing also integrates the keyboard, mouse and screen.

Motherboard: the main electronic circuit board inside the computer. All internal or external elements connect to each other directly or indirectly through this board. The motherboard has a built-in part called CMOS, which allows certain limited information to be stored while the computer is turned off, such as the system clock. There are motherboards of different types and sizes, the most common being ATX or MicroATX.

Power supply: All the electronic elements of the computer work with electricity. In the desktop computers the power supply incorporates a transformer from alternating current to direct current, which is connected with a plug in the housing, and in laptops it is connected to the battery. Internally, the power supply is connected directly to power the motherboard and some elements such as hard drives and optical readers.

CPU or *Central Processing Unit*, contains the microprocessor, which is the electronic circuit that performs the calculations and tasks indicated by the software. This controls both hardware and software. At each moment, the microprocessor takes a piece of information that has been passed to it as an input, performs a task (a calculation) and returns a result. The more process speed the microprocessor has, the faster the computer works. The speed of the microprocessor is measured in Gigahertz (Ghz), that is, it fits a billion moments in a second. The common CPU architectures in personal computers are 32-bit and 64-bit, which refers to the smallest size of information that the microprocessor can use for its calculations.

RAM: a temporary store of the data that the microprocessor uses for its calculations. The type of microprocessor and motherboard that the computer carries indicate how much RAM they can handle. Memory storage is usually measured in Megabytes (MB) or Gigabytes (GB).

Hard disk: the device that stores data while it is not being used. The hard drive saves the operating system software, other software programs and personal files. Depending on the technology used to connect to the motherboard, you can follow the IDE or SATA standard. The storage capacity of a hard disk is usually measured in Gigabytes (GB) or Terabytes (TB).

Optical reader: It is a device that extracts or copies the data recorded on a CD or DVD disc. The reader has a maximum access speed to the CD or DVD disc, which if exceeded could make the CD excessively hot and/or explode.

Fans: As the computer works it warms up, but the microprocessor and other elements can withstand a certain temperature without burning. For this reason, computers include some cooling element such as a small fan, whose sound we can identify when we turn it on.

Video and sound cards: they have a small processor, which helps the CPU process and display audiovisual material. Many computers have a video card built into the motherboard. Software

programs for video editing and 3D image simulation require great capacity in these cards; for everyday use, an integrated card is enough.

Ethernet network and WiFi wireless cards: a device that transmits and receives data from devices. The Ethernet card is physically connected with a cable to another device, and the WiFi card contains an antenna for wireless communication (sending waves at a frequency of 2.4Ghz or 5.8Ghz).

Cables: all elements are connected to each other by cables, either to transmit data or energy.

There are also pieces of hardware not included in the computer case: peripherals. Here we find input elements (through which we tell the computer what to do) and output (through which we see, hear or output a result from the computer). The most basic ones are the monitor, the keyboard and the mouse. But there can also be printers, speakers, microphones, webcams and pendrives, among others. Peripherals connect to the computer through what we call ports, either directly or through cables:

USB ports: to connect any kind of devices, from pendrives, to digital cameras, the mouse, etc.

Network ports: such as Ethernet, which allow us to connect the computer to a local area network (LAN), and from there to the internet.

Video ports: such as VGA, that allows us to connect the computer's video card to a monitor or projector, or the HDMI port to connect both video and sound to a TV.

Sound ports, as the *mini-jacks* to connect speakers, earbuds, or a microphone.

Current tablet devices and smartphones are small replicas of PCs in a more compact assembly. They therefore have many of the aforementioned elements: external housing, motherboard, CPU, RAM, to which are added the memory of the phone, touch screen with keyboard and connection card to the mobile network (3G / 4G).

In short, computers are complex objects formed by smaller elements, which in turn contain even smaller ones. We usually do not think how they are built and how they arrive to us.

3. Life cycle of a computer

Millions of computers like the one dreamed by Turing are manufactured every year: 315 million PCs were sold in 2013. As in other industrial and economic processes, engineers design a model and then the computer production chain consists of several stages based on the Work of millions of people.

Extraction of raw materials from a computer

A PC has pieces of glass, plastic and can have about 30 different metals, so millions of small amounts of metals such as aluminum, copper, silicon, palladium, cobalt, gallium, lead, tantalum, silver or gold are necessary. Plastics are manufactured by chemical processes using oil as raw material. Metals are raw materials that are obtained in mining extractions.

In the manufacture of computers, competent companies have tried to lower the price of computers by reducing the cost of manufacturing. An example of the serious consequences that this has come to have is the extraction of coltan, a mineral with superconductor properties, which withstands very high temperatures, resistant to corrosion and a special ability to store electrical charges and release them when necessary. This is precisely the function of electrolytic capacitors, present on the motherboard and many other computer elements. Democratic Republic of Congo owns 80% of the estimated world's Coltan, an oxide mineral composed of tantalum and niobium. Congo is followed by Brazil with 10% of reserves, and other countries such as Canada or Sierra Leone in smaller percentages. In 2001, the UN denounced that the mining exploitation in Congo for Coltan and its illegal exportation were leading to an armed looting of the area, which registered about 6 million deaths, and to the exploitation of mining workers in abusive conditions. This reality is still maintained today, although the demand for Coltan has been reduced in recent years, replaced by ceramic, graphene or aluminum solids condensers, now cheaper.

Fabrication process

Companies that build hardware for computers, tablet devices, or smartphones have engineers who design their circuits and devices. To protect their competitiveness in the market and their profit possibilities, most companies keep their designs secret. Although they feed on very diverse ideas and knowledge, they consider these designs to be their property and protect them with patents and proprietary licenses.

Computer manufacturing is a complex process, which no company does in its entirety. That is, there are companies that manufacture some hardware elements and companies that build computers from these parts. Generally we know only the names of some of the companies that carry out the final assembly: *Lenovo*, *Hewlett Packard*, *Dell* and *Acer*, sell half of the total figure. *Lenovo* is a Chinese company, although other American companies like *Dell* also have factories in this country; *Intel* and *AMD* manufacture microprocessors; *Gigabyte* and *ASUS*, based in Taiwan, manufacture motherboards; *Kingston* manufactures RAM memories; *NVIDIA* manufactures video cards…

The work in the production chains of these factories consists in carrying out assembly, welding, evaluation and other functions related to the quality control of the components. These are processes that must be carried out quickly and are extremely repetitive, with cycles ranging

between two and 32 movements per minute. Personnel must meet a specific volume of work that determines what each team should produce per minute, day and week. In 2013, a DanWatch report revealed the existence of exploitation and serious violations of Chinese labor legislation, international conventions and human rights in the four *Dell* supplier factories established in Guangdong and Jiangsu provinces (China).

In periods of peak work the days reach 73 hours per week or 30 consecutive days without rest. In the electronic manufacturing sector, the concept of peak periods is common: they are times when production is forced to increase greatly, for example, following the launch of a new product. These periods can last from two to seven months.

Marketing and sales

Rarely do these companies have direct outlets, but they distribute and store computers and peripherals in intermediary companies. There are places of wholesale, which then sell to small businesses. It is common to find department stores selling technology and basic electronics, such as *Media Markt* or *FNAC*. Generally, these are the places and companies we know, and to which we go to buy a personal computer. People who buy a computer do so with a purpose, so they pay attention to the elements that make up the computer according to their needs, adjusting the hardware to the software he intends to use.

In this last stage of sales, department stores and manufacturers of well-known brands, strive to publicize their products: then marketing comes into play. Marketing strategies seek to attract people to buy computers. Traditionally, this has been achieved because companies presented products that met the needs of these people. However, when companies seek to maximize their profits, marketing becomes a way to conquer people's desire to buy things even if they don't need them.

A well-known example of this is the American company Apple, which bases a large part of its sales in the design of computers as objects that captivate the senses: beauty, luminosity and brightness in sight, softness and lightness to the touch, and good quality sound. It is easy to see that this is not directly related to the quality of the computer hardware, and yet they are outstanding qualities through advertising and that come to be imposed as fashions or social status.

The use we make of computers as consumers

When we have a computer, we wonder how to take care of it physically. The electronic elements are sensitive to the accumulation of dust (which makes it difficult to dissipate heat), humidity (which can condense and oxidize some metals), and exposure to high temperatures (which can burn the circuits), so it is preferable to keep it in a cool and dry place.

Although its external appearance is robust, the computer has little protection against bumps or falls, since the case is a simple metal structure without cushioning or padding. That is, a blow in a corner reverberates in all the pieces in a similar way.

The screens are delicate since a scratch or small blow with a sharp object can initiate a crack that will open up through the screen from side to side.

The computer is usually turned on using the power button, but turning it off gently is crucial to keep the hardware in good condition; This implies among other things: do not let the battery drain completely while it is on, use an electrical protection if the local power grid is unstable or has voltage spikes, and turn off the computer using the software without using the power switch.

So, **how long computer does a computer last?** The case, keyboard, and other passive elements of the computer have a long life, since they hardly suffer wear or corrosion. The most delicate elements are the electronic circuits found on the motherboard, the hard drive or the removable disk reader (CD/DVD). Some metals that make them up can wear out and rarely rust. Then, the computer or some of its parts stops working.

However, the most frequent cause to get rid of a computer is not its physical durability, but the incompatibility with newer hardware or software elements that are not prepared to connect to it, making the computer obsolete. The desire to obtain a newer, faster computer with more capacity is also frequent, without considering the real need for these features.

These causes can be understood with an example. Imagine a company that manufactures hard drives. This company has manufactured millions of these devices in recent years, so that millions of people already have a hard drive in their computer. Then, the market need that this company covered is already satisfied. This company has several options: close the company; use your knowledge and experience to make something else; or continue manufacturing hard drives.

Let's say that the company's management team decides not to close to maintain its workforce, and that it believes that manufacturing something different would involve numerous and costly changes in the production chain. He then decides to continue manufacturing hard drives and sell them to the same people who are already his clients. Perhaps these people reconsider their position, and find it necessary to buy or renew their hard drives for larger and faster ones. The company decides to invite its customers to this new perspective through a careful marketing and advertising strategy. Additionally, the company decides to limit the life of the hard drives to stop working in a period not too short (the law requires a minimum warranty period) or manufacture another product that makes the previous one obsolete (eg duplicate storage capacity). This is what has been called ***programmed obsolescence***, a sort of expiration date for machines. In this way, the company ensures that the time to buy a new hard drive will arrive soon for its customers, and that way, it will continue recording sales and economic benefits.

What happens to the computers we discard? Electronic waste.

Each year, more than 50 million tons of electronic waste is generated. In many cities, there are recycling points for electronic waste; the corresponding recycling company will subject discarded computers to various parts separation processes to recover the elements that can be reused in other machines, paying special attention to recover precious metals (gold, silver and platinum) and other rare metals to sell them later.

However, many used computers are sent to other places, sometimes as a donation, and then this process is carried out by people trying to make a living in China, Ghana, Colombia, and other countries with large dumps of electronic waste. In the dump of Agbogbloshie, a neighborhood on the outskirts of Accra (Ghana), about three thousand youth scavenge for metals, exposing themselves to materials such as cadmium or lead, which can cause cancer or respiratory diseases. In the town of Guiyu, in the Chinese province of Canton, there is a dump where 190000 people work daily, and their waste has already contaminated all water resources in 50 kilometers.

Experiences Free Hardware and fair trade

Since the 70s, there are experiences that have sought to build electronics from the base, not just consume it. Some of the most recent include initiatives motivated by free hardware: electronic circuits whose designs, plans and programming language are published so that anyone can adapt them and work on them.

This is the case of Arduino [1], an electronic plate with a microprocessor with which very diverse projects have been carried out such as the construction of 3D printers, small computers or automatic irrigation systems.

Other initiatives go beyond licensing and have sought to break the production chain that generates these jobs in conditions close to slavery. This is the case of the Fairphone project [2], which requires conditions in the mineral extraction process and the manufacture of components for this smartphone.

1. Video-documentary about the Arduino project: http://vimeo.com/18390711

2. Fairphone project website: http://www.fairphone.com

4. Technology as a means, the person as an end.

The hardware from computers, gives us clues about its potential. The elements that compose it and the functions that it can perform are very powerful for calculation, given the high speed at which it can perform these processes. Current computers can store a huge number of instructions and data since they have the capacity to do so. Immediately, we can imagine using the computer to maintain a certain order, to plan, to record data. That is, it serves as a crutch in the operational, the calculable, and the mechanics of our thoughts and actions.

Everything the computer does are instructions that previously a person (the programmer) has written following an algorithm. If we want to go further, one can also register instructions while using it (words written using the keyboard, pictures stored on the hard disk, pages visited on the internet) and then use this data to perform operations. This is what is called ***machine learning***, as Turing himself defined it: learning by imitation and repetition. In the previous example, machine learning allows a computer to record millions of poems, choose verses that include the same word (for example, “sun”) and build a poem by mixing twelve of those phrases. Imitate and repeat. The result could hardly be beautiful and the process has very little to do with the original. This is because the capacity for lyric is not based on computable functions, while the best known example of the great potential of machines, chess, is. This is the foundation of current research on artificial intelligence, applied to the creation of robots.

But there are certain actions that a computer cannot perform. Following the example of the lyric, we can use the computer to write poetry. There is a person who is inspired, who scrutinizes his sensibility, who looks at the world, who remembers, who imagines, and with all this creates a poem. Then that person can write poetry on the computer and achieve a page with very precise lines of symmetry and parallelism, using uniform and well-readable letters; and that page can be copied and sent to any part of the world for others to read. The writing contains a mechanical act while a hand moves a pencil on a sheet; exactly that did the printing press and the typewriter in their respective moments of history. The computer does the same, but with a translation: moving from the mechanical act to the mathematical function.

So our thinking, human thinking, counts with itself and its peers to continue existing and to humanize us. Only people can develop skills for creativity, judgment, awareness, listening, dialogue, or love. Meanwhile, we can use computers to support specific, operational tasks. But life is not just homework. If much of what we do at the end of the day is with a computer, what do we put aside in life?

There are multiple examples of people who explore attitudes and ways of life that want to get out of the consumerism of technologies, the immediacy of efficiency or the attachment of the material, betting on giving up certain comforts. It is what we generally understand by austerity. Given what consumerism intends to fill, we managed to escape when we do without it. It is a first step, although sometimes difficult to maintain without considering how to fill that void again. People long for, seek and pursue throughout life a sense that brings us a basis of happiness. We can understand that we live a material, operational reality, but not as the exclusive axis of life. The search for meaning is the deepest dynamism that moves the person, and this opens us to an existential dimension that gives depth to the option for austerity. A realistic and reasonable happiness integrates good and bad moments, situations of calm and conflict, experiences of limitation and creativity. Happiness depends largely on developing with seriousness and joy the abilities that humanize us and are already in our own nature.

Lastly, if we contrast this message of austerity with what we have seen about hardware, we can do an interesting exercise to expand this last reflection.

Do the supplementary exercises from the activity notebook to reinforce your learning.

The operating system

1. Introduction

The **operating system** is the angular piece of software. It can do many things; without it, it is not even possible to run a computer. The operating system has the essential tasks that the computer can perform. Similar to the Turing machine, computers are manufactured to perform mathematical calculations and functions. As with solving a complex calculation problem, mathematics expresses the problem and its solution with logic (a series of functions and equations) in mathematical language, which uses certain symbols. With this inheritance, computer programs, also called software, perform the tasks to operate the computer.

The first personal computers were built in the 1970s. The American company IBM designed and manufactured a computer that could perform tasks written in a code that the machines interpreted as instructions, and began selling computers with the MS-DOS operating system installed in their hard drive. MS-DOS was the first operating system marketed by *Microsoft*, which had been recently founded by Bill Gates, who bought DOS from two programmers, changed the name of the product to MSDOS, and through its contacts reached an agreement with IBM. Since then, it is almost impossible to buy a (non-*Apple*) computer that does not have a Microsoft operating system already installed.

This operating system turned the computer on and off, controlled its memory, processor, keyboard, and screen. However, what it showed on the screen was a black background image with lines for writing instructions. Thus, the person who used a computer with MS-DOS had to know computer instructions to indicate to the computer the tasks to be performed.

In 1983, *Apple*, founded by Steve Jobs, took a leap and manufactured a computer designed for people with little computer experience to use it: an operating system with a graphical user interface (windows, icons, drawings), to which it added a key hardware piece: the mouse.

Licenses: property or common good

The companies founded by Bill Gates and Steve Jobs created software to manage computers, and protected their code with intellectual property rights, so that the law prevents any other person or organization from sharing, copying, distributing or selling their software. Gates and Jobs became millionaires thanks to this protection and the commercial agreements of their companies.

At the same time, Richard Stallman worked as a programmer on a project in the Masachussets Institute of Technology (MIT) and a company offered confidential contracts to the majority of the project's workers. The group in which Stallman worked could not continue, and he faced a moral dilemma: work as a confidential programmer and earn a lot of money, or not. Not doing so contemplated throwing in the towel and leaving the world of computers, or looking for a

new formula and studying if he could use his computer experience to contribute to the common good. Stallman chose this last option, in 1984 he left his place at MIT and began developing what seven years later would be the *GNU Linux* operating system, **based on free software**, for anyone to use, modify, redistribute, or sell.

These three people are the visible faces of the birth of the operating systems installed in the most personal computers: *Microsoft Windows*, *Apple MacOS* and *GNU Linux*. Since *Linux* is free software, there is a wide variety of distributions (adaptations) made by different companies or organizations such as *Ubuntu*, *Debian*, *Fedora* or *Android*.

In this chapter we will further look at what an operating system does, how they are designed, and how we relate to these programs.

2. What does an operating system do?

Whether in the computer manufacturing process or later, there is a time when the operating system is installed: it is copied to the hard drive of the computer. This operating system matches a specific version at the time of installation; this is indicated by a number or name, for example, *Windows XP* or *Windows 7*, *MacOS 10.6*, *Linux Ubuntu 13.04* or *Android 4.0*.

When we turn on a computer, the motherboard turns on the hard drive and reads the first instructions that are registered: the boot loader of the operating system. As of this moment, the operating system essentially does four things:

1. **It controls the hardware** of the computer: the processor, the memory, the hard disk, the keyboard, the screen, other peripherals and the battery, in the case of laptops.
2. **It translates for the hardware** all instructions necessary for other specific programs to work: the software we call applications (which includes, for example, the web browser, office software).
3. **It shows a Graphical Interface** which are the drawings and texts that we see on the screen: windows, buttons, arrows, icons, cursor. When we click on these drawings, the operating system translates our gestures into instructions for the hardware. For example, when you press the shutdown icon, the operating system sends instructions to close all programs and shut down the hardware.
4. **It manages user accounts**, that is, how different people can use that operating system. Personal computers are designed for use by one person at a time, but several users can be defined in the same system. There is always the administrator, who has permissions to see and control things related to the basic functions of the operating system; plus at least one other user who can only use basic applications that do not involve risks to the system.

Multitasking?

Current operating systems perform several tasks at once; to do this, they order the necessary instructions and copy them into the RAM, which in turn introduces them one at a time into the processor or CPU. We have the feeling that everything is done at the same time, but everything comes through the same door, while the feeling comes because current processors are very fast and can process millions of these mini-instructions per second.

These instructions are very diverse since they combine the functions that the user orders with the keyboard or the Graphical User Interface and other internal instructions that are repeated periodically, such as refreshing the image on the screen, reading the RAM or maintaining the connection to Internet. Understanding this means that when the computer is slow for example to open a window, and we are impatiently clicking twenty times or opening other things "in the meantime", we not only do not move forward but quite the opposite: we overload the instruction processor to perform, and It becomes even slower. On these occasions, it is better to leave it alone and go for a walk.

Some **basic elements found in all operating systems**, whether *Windows*, *MacOS* or *Linux*, are:

- **Start Menu**: contains a list of the programs installed on the computer and the storage discs (hard disk, CD / DVD drive, USB disk), and shutdown options (shut down, suspend or restart).
- **Control panel or settings**: contains the configuration of computer hardware (screen, keyboard, mouse, sound, printer), network connections for Internet access, the visual appearance of the Graphical User Interface (desktop background, colors and sizes of windows and text, screensaver), system date and time, user account management.
- **File and folder explorer**: shows the files stored on the hard disk or on other disks. These files are documents, images, videos or songs in digital format; the operating system and other programs distinguish some files from others by the final extension, that is, if the name of the file ends in *.pdf* it is a document, if it ends in *.jpg* it is an image, if it ends in *.mov* it is a video and if it ends in *.mp3* is a song. In turn, the operating system allows you to sort files hierarchically in containers that we call folders.
- **Software update**: after the operating system has been installed, it is common to find software improvement publications that extend the initial functions or include small security patches, which prevent computer attacks such as viruses or malware.

The operating system will allow us to also install other programs, such as text, music or video editors, web browsers. From a CD/DVD disc or a file downloaded to the computer, we can copy these programs to the hard disk of the computer and the operating system will manage to open the corresponding windows or read from the keyboard.

3. Life cycle of an operating system

Every personal computer needs an operating system to function. So each of the 315 million computers manufactured and sold in 2013, has an operating system installed. The manufacture of an operating system consists of programming thousands of lines of computer code that compose it. This process is called software development, and consists of several stages: requirements analysis, design and planning, code programming, partial tests, integration and global tests, documentation. These stages are generally repeated several times in order to obtain a more reliable final product, until a final version is achieved.

The software development of an operating system is complex and requires large teams of people working on it. While many software companies are based in Europe or the United States, it is common for them to outsource large parts of the programming to workers in other countries where workers have fewer labor rights and the cost of labor is much lower, as in the case of India.

After the software creation process, the company that has the authorship registers the product with a license. *Microsoft* and *Apple* register the operating systems as proprietary software with copyright license, which implies that only they know the code that conforms them and that not paying for their use or distributing it to other people is a form of piracy, and therefore reason for fine or jail. Companies that use *Linux* register operating systems as free software with a copyleft or GPL license, so that anyone can view, modify and distribute the software.

Can we choose?

About 90% of personal computers use some version of *Microsoft Windows* (*Windows XP, Vista, 7, 8*) as operating system. This is because *Microsoft* makes commercial agreements with hardware manufacturers, so they buy *Windows* licenses and install them on personal computers before they are put up for sale. In this way, *Microsoft* barely sells these products directly to individuals or organizations, but when purchasing each personal computer the *MS Windows* license is already included in the price.

The marketing, distribution and sales of the operating system are incorporated into the hardware sales process. This means that each user can decide to install a different operating system, but in any case he/she has already paid the licenses to Microsoft.

Care

The use of the operating system requires continuous maintenance that includes **software updates**. Sometimes, the installation of specific programs or the attack of malicious programs (viruses, malware, trojans, etc.) copied by external disks such as pendrives or files downloaded from the Internet cause errors in the operating system. This can be seen if the computer suddenly shuts down, works slowly, or some specific programs (such as Office or the web browser) do not work.

However, if the operating system is failing, it is always possible to erase it from the hard disk, re-format and install it again. This process may involve the loss of data stored on the hard disk, so it is advisable to make backup copies, that is, periodic copies of the data stored on the hard disk of the computer on another external hard drive.

Operating systems can operate indefinitely on compatible hardware and with a group of specific compatible programs, and an operating system stored on a CD, DVD or other electronic media can be preserved for its use years later as long as the medium is not damaged. Even in this case, the software could be copied to another medium.

However, both hardware manufacturers and software developers continually create newer products, which make the old ones obsolete and also their compatibility: we are again faced with programmed obsolescence. For example, if Microsoft publishes new software, since it is used by the vast majority of computers, manufacturers change the hardware to adapt their memory, video, process speed capabilities. Even the free Linux software community also programs new software versions for that hardware.

Experiences the Free Software Foundation

The Free Software Foundation (FSF) started by Richard Stallman in 1985 created the GPL license.

This license argues that software is knowledge, that it can be disseminated without hindrance and that its concealment is an antisocial attitude.

He also argues that the possibility that developers can modify programs is a form of freedom of expression.

A software is free when it guarantees:

1. the freedom to use the program for any purpose.
2. the freedom to study how the program works and modify it, adapting it to your own needs.
3. the freedom to distribute copies of the program, which can help other users.
4. the freedom to improve the program and make these improvements public to others, so that the whole community benefits.

Freedoms 2 and 4 require access to the source code of the program, because studying and modifying software without its source code is very unfeasible.

4. Technology as a means, the person as an end.

The software is the intangible part of a computer; it contains the logic that governs its functioning. This logic is written in code. The operating system code controls what the computer is doing at all times, what we see on the screen and what we order ourselves, as well as thousands of other instructions that are not visible to the user. The human being needs tools at his service, being able to control them and trusting that the programmer who produces them does so for their usefulness and the common good. This can be expected from free software as long as it can be reviewed by hundreds of programmers, but not from proprietary software created for eminently commercial purposes. With free software, programmers are free as they make decisions and create with full technical knowledge, but not users, who can trust them but do not have control.

The freedom that programmers have also implies responsibility. It is not about programming what they want and sharing it legally, but about creating programs that respond to deep human needs, and to the reality of society. Both programmers and users have been educated in a system that prioritizes quantity over quality, form over substance, having over being. Although users need to advance in technical knowledge, both can advance together towards their humanization. Free software means a breakthrough in terms of forms and standards, but much remains to be done in terms of substance: freedom of thought, freedom of conscience.

The operating system puts face to the machine: through icons, buttons and windows, it simplifies something very complex that happens inside. This simplicity activates a complexity, so that simple gestures allow us to launch electronic and mathematical complexity. We do not need to know it in detail, although in essence the tool serves as a reflection: the plow was a reflection of rural society, factories for the industrial society, and the computer is not for the post-industrial society.

As in a mirror, face to face with the computer, the human being can confuse his own external simplicity (eyes, nose, mouth) with his inner complexity: consciousness, thought, will, imagination, feelings, memories, desire, vices and virtues… And confuse its internal complexity with that of the computer: logic. What is the intangible in the human being? The more we know each other, the freer we can become. Therefore more people. Freedom is a practical matter; a theoretical problem is solved when we know the solution, a practical problem is not solved by knowing the solution but by putting it into practice, and there comes the complexity: feelings, prejudices, fears, conflicting interests, conflicts. Knowing the most essential human nature will guide us to know why, how and why use the tools to be more people. There are educational experiences focused on education for peace, from nonviolence and freedom of conscience.

Stallman defined free software for a free society, but what about a society that does not know its complexity as people? Could you assume that with a click everything is resolved? We easily accept that there is a big difference between knowing how to use a cashier and understanding how banks and financial markets work, between introducing the ballot box and understanding democracy. A free society needs free people. In the same way that the worker reinforced his

Do the supplementary exercises from the activity notebook to reinforce your learning.

culture in front of the machine, in the factory, finding that which humanized him, this search for freedom must be driven by users in a way that is still to be discovered.

The text processor

1. Introduction

Words are the main element of speech, which brings meaning, accent, and pauses; it is the base of verbal communication. According to philologist Walter J. Ong, the tools we use to read, write and manipulate information work our mind as much as our mind works with them: they model and condition our thinking process, our learning, as well as the way we perceive reality.

The change from oral culture to written culture radically transformed the lifes and brains of mankind. Societies are shaped according to the technologies they use. The evolution of writing technologies is a good example for this.

Throughout the historical process we have encountered the following milestones regarding writing: cuneiform writing on clay tablet devices in Mesopotamia, hieroglyphic writing on stone or papyrus in Ancient Egypt, writing on wax and paper tablet devices, manual writing drawing letters on paper in the Middle Ages, the use of the printing press and its mechanized letters in the Renaissance, the typewriter and photocopiers in the 20th century, and now computer writing.

The printing press was a paradigm shift in the way words were spread, being able to make hundreds of daily copies of the same writing. The typewriter reduced printing technology to an object for individual use. The typewriter and the computer sharae a common element: the keyboard, whose keys match to letters, numbers, punctuation marks, and formatting functions (space bar, tabulator, line break…). While on the typewriter the paper was written with each keystroke, on the computer the letters and words appear on the screen.

The specific software or program that allows the writing of a document on the computer is known as a word processor. The word processor is software with functions to create or open a text file on the computer, write, delete and copy text, format… (typography, tabulation, paging, index structure, etc.). The most common processor is *Microsoft Word*, whose first version came out in 1983 and included the WYSIWYG technique, so what we see on the screen when writing is already the way the document will take when printing it. For years, Word has been included in a software package called *Office* that also contains other programs for office work such as *Powerpoint*, *Excel* and *Access*. There are also free software programs for writing such as *OpenOffice Writer* or *LibreOffice Writer*.

It is possible to print on paper a document made with a word processor using a printer connected to the computer. Word processors are accompanied by PDF readers for on-screen reading or printing and digital “e-books”. It is also possible to read paper documents on screen after a scanning process.

In this chapter we will see what a word processor does and what it is for, that is, what aspects it reinforces and which it does not contemplate regarding to the writing itself.

2. What does a word processor do?

The word processor is a specific program installed in the computer's operating system. We can find its name or icon in the start menu or the operating system applications menu. To open the program, click on its name or icon. The program opens a window with a menu of options at the top, accompanied by a double horizontal line of icons that illustrate these same functions:

File: these are functions related to the text document as a computer file: open, close, save, print and convert the document into PDF.

Editing: support functions for writing and reading the document: undo recent changes, select parts of the text, search and replace words, track changes in the document.

- The most used functions of this menu are cut, copy and paste, as they allow you to replicate parts of the text in another place without rewriting.

Start and page layout: these are functions related to the appearance of the document.

- Font format: font, size, bold, italic, underline, font color, background color, character background.
- Paragraph format: alignment (left, centered, right, justified), space between lines of text.
- Format of lists and enumerations with different levels of depth.
- Other formatting functions allow you to highlight titles, set page margins, or structure the text in two or more columns.

Inserting elements in the document:

- Dynamic index of topics and sub-themes, which is generated automatically if we indicate certain document titles as headings of a depth level, assigning to each topic the corresponding page number.
- Tables to prepare tables or summaries of concepts or data.
- Graphics that illustrate the textual explanation, analogously to the tables.
- Predesigned drawings, also called autoforms, which facilitate the elaboration of diagrams and visual schemes.
- Stored images such as photographs.
- Links to addresses on the Web, so that clicking on the document link opens a new web browser window. This function is useful to complete the reading of the document with direct references.

Checking: Spell checking tools.

References: Predefined annotations and fields (page number, headlines) in the footer and header.

The word processor can open several documents simultaneously to work on them. This is interesting for example when we want to copy a part of a text and insert it (paste it) into a different document. In the window function, it is possible to change the working window from one document to another. In addition to these generic functions, conventional word processors include many other functions such as layout and design for digital publications and preparation of materials with certain graphic criteria, adding internet links or loading database elements.

All files stored on a computer have a certain **extension**, which indicates which program can use them. Text processors work with files labeled as *.doc* or *.docx* (*Microsoft Word*'s own extensions), but also *.odt* (for *OpenOffice*) or *.rtf* (simple text editors such as *WordPad*).

3. Life cycle of a word processor

Who sells word processors today?

Word processors are software products designed by companies, primarily *Microsoft*, or by free software communities. In any case, they are distributed within a package of programs aimed at office work: *Office*. Thus, large buyers of this software are public and private institutions with hundreds or thousands of workers.

The proprietary software is sold with a license that can be individual, to be used on a single computer, or multiple, to be installed on many computers. Between 2010 and 2013 *Microsoft Office* earned 20 billion dollars each year from sales.

Office packages are distributed by burning the software on DVD discs, accompanied by instruction manuals, which are sent by the manufacturers to distribution stores such as *Media Markt* or *Fnac*, including other commercial companies that include them in their computer area. Recently, they are also distributed over the Internet, through an online purchase and software download.

Recently, the *Microsoft Office* business model has changed: it is now combined with online services, so the software does not need to be installed on the personal computer itself; it connects to servers on the local network or on the internet when it is used.

The user then accesses the program through the web browser and pays for access to the service or for updating the app (application), in the case of mobile use. There are other online text processing tools such as *Etherpad*, *Titanpad*, or *GoogleDocs*, all of which are free to use although documents are always stored on the servers of these companies.

Why change the word processor software?

Whether from a downloaded file or from the DVD containing the software, the user installs it on their personal computer. Most users use only 20% of the functions of a word processor, which today allow the creation of professional-level publications, books or posters.

The ***obsolescence*** of a word processor rarely comes from the need for greater software performance. *Office* programs contain the same essential functions in the last ten years, and yet new versions are sold every two or three: *Office 95*, *97*, *2000*, *XP*, *2003*, *2007*, *2010*, *2013*. Since it is specific software, it must be prepared to work on the operating systems that computers use, which in turn do change (*Windows*, *Mac*, *Linux*). To work on a computer, *Office* must be compatible with the corresponding operating system, and with the document formats of the user (*doc*, *docx*, *odt*). For example, *Office 2000*, *XP* and *2003* formats are *.doc* while as of *Office 2007* the file format is *.docx*, which cannot be opened in previous versions.

4. Technology as a means, the person as an end.

Words humanize us

There is no culture or history without words. Human beings transcend in words, they are able to reflect on the world around him and on themselves, and this essentially differentiates us from any other living being. In the history of mankind, most cultures have been based on oral communication, spoken language. By this means they have increased and transmitted their culture generation after generation, also ordering their thoughts and emotions. There is an open discussion about what came before: words or concepts, communication or thought, but there is unanimous agreement that they go together. Those who also normalize some form of writing change their ways of knowing themselves and the world. Culture and history have a *before and after* the invention of writing. But in any case…

The question to ask ourselves would be, why and what do we write for?

Today we frequently write sitting in front of the keyboard and screen. Our hands move over the keys and our gaze is framed in the projected image. This tool facilitates the mechanical process of expressing the letters, as well as obtaining a result that can be copied and modified. The result has an appearance of perfection in the form that facilitates its reading. At the same time, this appearance makes the mistakes made invisible, loses details of the process of creating that text: blots, arrows, notes. It is okay to become aware of what we lose when only the final result is exposed.

We can easily fall into the mistake of turning writing into a mere mechanical process, when its nature is just the opposite: writing humanizes us, it is art. While literacy is a form of communication, writing plays the role of producing, issuing a meaningful message. Humanizing writing prioritizes the *what* before the *how*.

Today elite schools introduce computers in the classroom at the last moment, after developing creativity and thought in students. However, computers, tablet devices and digital whiteboards are now introduced massively and mandatorily in public schools. Ken Robinson states that

schools are killing creativity; that it is as important in education as literacy, that formal spaces for artistic expression or informal cultivation of creativity are excluded from educational plans; when we grow up we don't acquire creativity, we lose it. When we have been educated this way, we have to put our will in re-educating ourselves.

Writing is the last stage in a process of thought, expression and creation: acts in which the human beings pour their own minds, hearts, and life experiences into their works. This process happens outside, and before the person sits before the machine. First it wakes up and cultivates itself in life. We run the risk that "the form", "the style", or "the appearance" ends up covering the background, and that "the mechanical" ends up lacking body, emotion and spirit.

In an always social context, Freire defined literacy with the sense that *people learn to write their lives, as authors and witnesses of their story, aware of themselves and the world*. Here is the deep meaning of writing. Regarding digital writing, if this educational approach is still valid, it can inspire us in the power of words. We must not let writing be a purely mechanical process, but preserve that which combines reflection and lived experiences. There seems to be no doubt in that writing will be all digital in the future, but the question goes beyond whether the format should be paper or digital: it is necessary to rekindle the reflection on how we understand writing itself.

Do the supplementary exercises from the activity notebook to reinforce your learning.

ADDITIONAL RESOURCES:

- **PDF – Basic computer science manual (16 pages)**
- **PDF – Windows tutorial (50 pages)**
- **PDF – Basic Word manual (13 pages)**

3.3.2.3 THE E-LEARNING PLATFORM – LEVEL 1

The contents in this section comes from an excerpt from the work **"FROM E-LEARNING AND ITS OTHER LOOKS: A SOCIAL PERSPECTIVE"**, carried out by the professors of Psychology and Education Sciences (UOC) Jordi Planella and Israel Rodriguez in September 2004 for the *University and Knowledge Society Magazine*.
(http://rusc.uoc.edu/rusc/ca/index.php/rusc/index.html), Vol. 1, No. 1, ISSN 1698-580X.

SITUATING *E-LEARNING*

What do we mean when we talk about *e-learning*? There are many views that can be directed to *e-learning* and many perspectives and approaches that emerge from them. From the initial distance education projects -based on student learning alone- to the use of learning technologies, there are several ways of understanding the new formative paradigm. If we come from the definition given in 2004 by E-Learning Europe of *e-learning* as "the use of new media and internet technologies to improve the quality of learning through the access to resources and services, long-distance collaborations and exchanges", we realize that special emphasis is placed, on the one hand, on technology and its use, and on the other on learning processes. For the NSCA's e-*learning* group, it is "the acquisition and use of knowledge distributed and facilitated basically by electronic means […] *E-learning* can be a course, module, or minor learning object, and can incorporate synchronous or asynchronous access and be distributed geographically with a limited time range" (NCSA, 2004). Other proposals refer to different *e-learning* models: first and second generation *e-learning*.

This division between first and second generation *e-learning*, helps us rethink its possibilities and potential. In this sense, we share with Auzmendi that "everyone realizes that the incorporation of new technologies into the educational field, and specifically the university, is a huge interest demonstrated by large IT companies that see the future of their expansion and growth" (2003:13). Taking into account this perspective (the commodification of *e-learning* in particular and of training in general), it is necessary to explore the social perspective of *e-learning*. From this dimension (of *e-learning* linked to training in a company) it seems logical this neglect of the social dimension of said training practice.

RE-SITUATING *E-LEARNING* FROM A SOCIAL POINT OF VIEW

The social look at *e-learning* is part of what we could call the university's commitment to the transformation of society. The dichotomous vision of formative practices (real world/world of ideas) can be reconstructed according to the involvement of universities in transformational processes.

To break with this binary ontology an approach is necessary, which is why we believe that it is not possible to develop formative models from *e-learning* that turn their backs on their social dimension. The integration of citizens in the society of information is one of the priority objectives of the new social inclusion strategy of the European Union. This priority comes from the proposal established in the eEurope action plan. There it is affirmed that "integration in the information society is one of the first objectives of the new strategy for social inclusion, which pivots on the two dimensions. It is about fully exploiting the potential of the information society and the new technologies of training and communication, ensuring that no one is left out".

Digital exclusion often has a cumulative effect: those subjects who suffer from a situation of social exclusion also suffer from digital exclusion, and thus they are placed in the context of "the two Es" (social exclusion and digital exclusion). As Larrañeta suggests: "We find many groups with significant shortcomings before the information society and the use of technologies (*informarginality*); added to low levels of qualification in basic skills for information management (insufficient literacy level) and generally lacking learning tools, especially in an autonomous environment (self-training)" (2004). This social dimension of *e-learning* must necessarily contemplate the prevention of double exclusion.

INVESTIGATING THE SOCIAL PERSPECTIVE OF *E-LEARNING*

If university structures are built with their backs to what happens in society, they can hardly maintain real ties with it. And if the research carried out by the university is aimed at society, from an ethical point of view, the university and the production of knowledge should have a direct impact on the improvement of the citizens' living conditions. In this sense it seems necessary to place research on *e-learning* and its social perspective. We could divide the research carried out on *e-learning* into two levels, which in turn can be subdivided into two others.

- Level 1 includes technology in general and training processes.
- Level 2 includes both social interactions and transformations in *e-learning*.

Many investigations are limited to studying everything related to the most technological aspects of *e-learning* -technology, digital platforms, program, student performance, course costs, instructional design- but most do not impact its social aspects: social interactions, inclusion/exclusion, social transformations, etc. We see that in many investigations the object of study is the first level that we indicate in the previous outline, while the second level is ignored. On the other hand, research on *e-learning* issues, especially from its social reading, can allow us to incorporate subjects in the same research process through Participatory Action Research (IAP). The participatory dimension of the subjects located in *e-learning* actions is based on the idea that they are not passive recipients of training actions (mere recipients of information) but researchers of their own processes (builders and producers of knowledge).

The insistence on the investigation of the social perspective of *e-learning* is not free; these are the subjects to which less space, time, and resources are dedicated in the programs and in the scientific publications. As noted in the Barcelona Declaration on *e-learning* towards social inclusion, "Research is key. We do not have precise analysis of the links between exclusion factors and how they are related to ICTs. There is a very clear need to fund research programs that help us understand the different online exclusion groups and how they differ based on age, ethnicity or gender". The shift from technology to the social dimension and impact is part of this necessary but "yet to come" process. A future that we cannot intimidate before it fully takes roots among us.

UNIVERSITIES AND THE SOCIAL COMMITMENT FROM *E-LEARNING*

We just analyzed the aspects related to the research that is being carried out in universities, but also from other platforms on *e-learning* issues, and the little impact of their results on the transformation of society for the improvement of the quality of the lives of citizens. Beyond research-centered aspects, we understand that universities must be involved in society, and a clear way to do so is through *e-learning*. For this, it seems necessary to start from the assumptions that some authors have assigned to universities as main function.

The ideas proposed related to the function of universities are completely valid when we analyze them from *e-learning*. If we refer to the double social/digital dimension, we must study and analyze the implications of higher education institutions. In this sense, contents and training programs that take this dimension into account are starting to be created, but a greater implementation is necessary to allow these questions to appear as one of the main issues of concern for universities. This means, as Vilar points out, that "universities cannot be a dispassionate spectator of events, but active agents regarding the needs of society and its times" (Vilar, 2002).

SOCIAL *E-LEARNING*

As we just commented, the social perspective of *e-learning* is one of the least investigated aspects. This is why we have called this section "*Social e-learning*", and in it we'll test a kind of "re-foundation" of the transformational possibilities of the information society by *e-learning*.

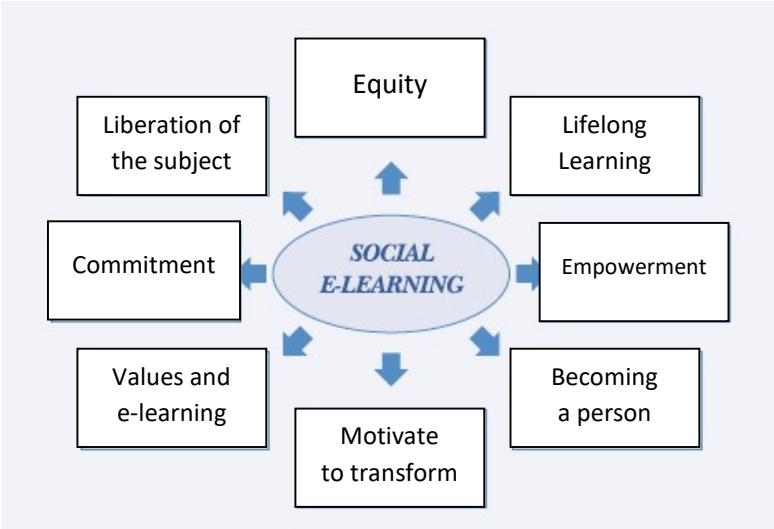
From the pedagogies that propose mechanistic visions of the world -linked to the simplistic relationship of cause and effect- to the new paradigms that tell us about the complexity of education -which allow us to analyze the world from a holistic perspective-, forms have developed radically different from understanding the teaching-learning processes.

We have traditionally heard criticism of a school built excessively with its back turned to "the real world". In *e-learning* we can find a parallel with this criticism, although with very different nuances. These nuances lead us to talk about *e-learning* models built beyond the involvement in the transformation of society.

Socio-cultural factors of e-learning

There are different ways to analyze the social and cultural perspectives of *e-learning*. To develop the analysis of these dimensions we start from the work "Education and network society: elements to interpret the social perspective", presented at the Seminar on education and network society. In this first work we proposed the following points of analysis: the educating society, lifelong education, globalization, education and the risk of double exclusion, professional competences in the information society, learning values, the educational environment and the community, and the process of becoming a person in the information society. Some of these initial proposals fit perfectly when analyzing the school in the

information society, but they do it with difficulties when thinking more specifically about *e-learning*. For this we have made another analysis that has led us to reflect on the following eight variables:



- **Equity and *e-learning***

When analyzing the opportunities of the subjects, the transversal view launched from *e-learning* opens up other points and perspectives of work. The structural differences of society -geographical, social, economic, etc.- can be reduced and eliminated.

Fragmentation of society -which some authors call the digital divide- has articulated new axes that designate new forms of inclusion (*e-inclusion*) and exclusion (*e-exclusion*). The social side does not have to match in both the real and the digital plane nor in the virtual and the social plane. New situations appear in which the subjects are isolated, cornered and marginalized from the information society. In this analysis, a strictly technological view has also often been raised and the social view has been set aside. Is the machinery (interface level) enough to connect to the information society? The answer is found in Area's statement: "Conceiving the training and literacy of the population in the digital culture as the mere instrumental mastery of ICT hardware and software is to reduce the citizen to be a mere consumer of information and digital products offered to us through digital TVs, the internet, or smartphones"(2001: 87). Therefore, it is not about fighting this new sophisticated form of exclusion through technology alone. We can go further, precisely through a social look at these issues where aspects such as gender, race, ages, individualities, etc. are accommodated.

- **Lifelong learning**

One of the aspects that radically transforms the use, functions, and implications of *e-learning* is what has been designated as the new pedagogical paradigm of lifelong learning. The

learning society inherently carries the continuing need to learn. The logic behind the axis of age in educational processes has been displaced.

For example, we can observe that the ages of the students of the Open University of Catalonia range between 25 and 50 years old. Age 24 being when people finish their university studies is already an outdated way of thinking and planning training. In the words of Delors: "The traditional breakdown of the existence in different periods (in the time of childhood and youth dedicated to school education, the time of adult professional activity, the time of retirement) no longer matches the realities of contemporary life and even less the demands of the future" (1996: 87). Education, understood from the parameters of *e-learning*, is beyond the formats set by ages. In the new pedagogical paradigm of education throughout life, the whole society is subject to a constant learning process. This new dimension brings new forms, new implications and, indeed, new social relationships into play.

- **Empowerment and *e-learning***

In some pedagogies, the teacher or expert is who holds the absolute power, but also in the control of relationships. E-learning can destabilize this pedagogy and propose new knowledge structures and new relationships. The key to understanding and changing this dimension is empowerment. Through empowerment we can understand the delegation in people of an organization, of a relationship -in this case educational or formative- of different quotas of power. More specifically, it is about motivating, promoting, providing facilities and developing and exploiting all the capabilities of some person, group or institution to achieve objectives. But it is not only about delegating quotas of power (in the capitalist sense of the term), but above all about trusting them. And next to the word empowerment we find the action of participation. Social participation can reach (one of or) its highest levels through practices like *e-learning*.

- **Motivate to transform**

Technology, the internet and its uses with certain groups sometimes lead to sterile situations. We often propose approaches from the technical dimension, but we forget their socio-personal dimension. What may interest internet subjects? Which advantages will such learning have for them? How will their life improve with the use of technology? These are key questions necessary for using the internet, and *e-learning* in parallel, to not become failures before starting the journey.

One of the problems that *e-learning* has with certain groups is motivation. They are offered courses and access to technology, but they need a motivation beyond their pragmatic use. It is possible to look for aspects that motivate citizens beyond the instrumentation of technologies. An example is in Mele's narrative "Cyberspace and disadvantaged communities. Internet as a tool for collective action". The author tells us precisely the experience of a group of African-American women who, through the Internet and technology, managed to save their neighborhood by opposing to the proposal of the local administration to tear it down.

- **Online commitment**

The issue of commitment has to some extent ceased to be of interest to citizens. Beyond what is possible and the real is the need to believe in the commitment of subjects through *e-learning* practices; it, and especially its social dimension, is commitment. One must be involved in the relationship with other subjects.

We could go to different experiences in this topic, but we have chosen to focus on two experiences of commitment and *e-learning*. The first is sponsored by the Campus for Peace of the Open University of Catalonia and is called Absoo. It is a "solidarity *e-learning*" project that aims, as stated in the mission of the organization, "to help improving the world by providing appropriate technological instruments to organizations that work to solve the problems of our society (human rights, environmental protection, sustainable development, childhood, health or the elderly). New technologies are the key to improving the efficiency of these organizations". The project began in 2003 with an online pilot course in Guatemala, Mexico and Santo Domingo in which teachers and professors were trained in the use of new technologies. It is, therefore, to train teachers in the area in virtual training techniques and thus create a worldwide network.

The second experience started with the Spanish Ministry of Labor and Social Affairs, through the Institute of Migration and Social Services (IMSERSO). This is the online postgraduate course in Healthcare for Dependents. The Ministry had detected that many migrants work in the field of elderly or disabled care, but did not have the necessary training. Thus, the postgraduate course was created jointly with the University School of Social Education of the Ramon Llull University of Barcelona. The problem appeared when they realized the difficulties the students had to access computers and the internet. This is how NGOs such as the Spanish Red Cross, VOMADE (Volunteer of Dominican Mothers) and MPDL (Movement for Peace, Disarmament and Freedom) came into play. The students, through the support of online teachers and tutors in face-to-face classrooms -from which they connected to the virtual campus- were able to overcome the difficulties of space and time that initially appeared (Planella, 2001).

These two experiences bring into play different levels of network engagement: from organizations with different groups, professionals, digital volunteers, subjects participating in *e-learning* projects, etc.

- **Becoming a person**

One of the most studied topics by social sciences is subjectivation or the forms of individuation and identity that are characteristic of our societies. At this time (Melucci, 2001) full of demands, needs, and very important transformations (globalization, computerization, and interconnection), we can also expect a transition in the forms of subjectivity. In this sense, the education system has been one of the most studied scenarios. Its institutional dimension, which makes it responsible for a certain form of socialization, which gives it a purpose linked to

a particular social, political and moral order, makes it one of the main agents of subjectivation of our societies.

Power relationships, the forms and the predominant values of the late modernity that we live are shown in the dynamics of the current educational system. In this sense, among many other questions, we need to initiate a debate on the effects of the network society and the practices of *e-learning* and on the forms of subjectivity that they promote, reproduce, encourage or discuss. Without any doubt, this type of study provides fundamental analysis and discussion elements to understand the role of education in our societies, while linking it with individual and everyday experiences. In the same way, it is a key analytical embryo to understand the social, educational and democratic purposes of contemporary forms of coexistence.

- **Liberation of the subject**

As with primary literacy, digital literacy can have different levels or functions. Thus, we can talk about practical ICT learning (interface management, software, etc.) and the symbolic-social ICT learning (activities and actions that can be carried out with other people, etc.). E-learning and digital literacy (as a previous process) can be done so that "the educator substitutes expressiveness for the donation of expressions that the student must capitalize on; the more efficiently they do it, the better student they will be considered" (Freire 1984: 54).

In Freire's criticism of this banking education -and some *e-learning* projects fall back into this dimension of being online distributors of content arranged in an orderly manner- there is a need to understand education as a political act. In analyzing the social dimension of e-learning, we must consider it from a political perspective, just as every educational process is. This political view, according to the Freirian proposal, shifts the master formula of the "I-teacher-think" towards the "we-subjects-think". It is through this change of perspective that we can talk about knowledge subjects, or if we prefer, about e-learning subjects.

When we conceive the other as "subject of something" (subject of e-learning, for example), we are already liberating him from the chains that hold him statically to ancient forms of production, thought or relationship.

- **Online Values and *e-learning***

When talking about *e-learning* and values, it may seem that we reference two completely separate themes. But as Castells proposes, "science and technology have great values, but only if they are at the service of the people" (Castells, 2001). We have heard speeches about sterile futures, with no possibility for subjects to cultivate their values. Cardús criticizes this by saying "the idea that a good part of the problems of today's society have their roots in a deep crisis of values has thrived. Among those interested in education issues, this idea is so popular that I know how difficult it is for someone to understand me when I say it does not exist". The announced catastrophisms that the internet and its implementation could cause (like the isolation of subjects, as predicted) have been minimized after seeing its real usefulness. In this

sense, what Duart announces is important: "The relevant factor […] is the existence of a relationship space, a virtual learning community that acts as a platform from which it is possible to experience, live, and explain educational values".
We do not only want to refer to values and relational forms, but also to the values linked to the new network society. We refer to issues such as interculturality and plural society.

SOCIALIZING *E-LEARNING*

Years ago we had the opportunity to coordinate an *e-learning* project with migrants. The technological issue was a small concern –having basic instrumental skills for internet and PC management–; we were more concerned with the actual use of *e-learning*. Would they really have a lasting motivation for ten months of learning? Would they dump *e-learning*? Would they understand the logic and process of participation beyond memorial pedagogical models?

These questions troubled us, and they surely trouble many of those who embark on digital journeys accompanying people through virtual campuses in their first digital experiences. It is important to not to have the answers ready –or to know the question before it is asked–; you need to be open to the social dimension of *e-learning*, since behind this expression that sometimes just sounds *cool*, are actually the faces of people with hopes and utopias, who believe in the chance of improving their lives, relationships, and transform the most problematic aspects of their environment.

This improvement with the real possibility of transforming society can be possible if we incorporate *social e-learning* into practices, reflections, policies, and research. In this sense, Castells states that "the internet is society, expresses social processes, social values, and social institutions" (2002). Thus, based on the conception that the internet is a society on itself, we deem it necessary to continue asking ourselves about the social perspective of *e-learning* and the social dimension of information and communication technologies.

Do the supplementary exercises from the activity notebook to reinforce your learning.

3.4. ACTIVITIES – LEVEL 1

3.4.1 MATHEMATIC ACTIVITIES – LEVEL 1

3.4.1.1 BASIC OPERATIONS FOR ACCOUNTING – LEVEL 1

- Basic numbers and operations:
  - Numbering systems and their evolution.

EXERCISES:

1. **Fill the table:**

ROMAN NUMBER	DECIMAL NUMBER
XCVII	
	3274
MCDVI	
DLXXIV	
	1077
	27
DXLIV	
	7612

2. **Write the decimal numbers formed by:**
   a. **Two tenths, one unit, five hundredths.**
   b. **Three hundredths, two tenths and three thousandths.**
   c. **Three thousandths, five hundredths and twenty-three tenths.**
   d. **One millionth, one unit and one thousandth.**

- The different kinds of numbers and their use in basic operations.

EXERCISES:

3. Calculate the results for the following expressions:

a. $3(6-2)-3\cdot 2+8:2$
b. $7-6:2+4(3+5)$
c. $2+3\cdot 4-(5+3):2$
d. $5(6+4:2)-3+5\cdot 4$

4. Solve this problem by indicating the necessary calculations in a single combined operations expression. Do not forget to include the necessary parentheses.

Rachel left home with 22.56€ (euros) in the purse. Throughout the day she has made the following expenses:

- **Three bus trips at the price of 1.03€ each.**
- **Purchase at the butcher shop for an amount of 6.76€.**
- **Purchase of press worth 0.92€.**

She also met a partner who paid her the 10€ he owed her.
With what amount of money has Raquel returned home?

5. Calculate following known rules:

a. $5\cdot 4+8\cdot(5-12)$
b. $3\,(6+2)-25$
c. $8-4(3-5)+4\cdot 2$
d. $(3\cdot 5+8)\cdot(7-10+1)$

6. Take a look at part of this savings book:

DATE	CONCEPT	INCOME/REFUND	BALANCE
6/04/19	Previous balance		13.7
10/04/19	Electricity	-10.25	
15/04/19	Cash income	20	
20/04/19	Invoice charge	-18.3	

Calculate the balance on day 20:

7. The temperature of a given place was -4ºC at 6am; at 3pm it had increased by 11ºC, and at 8pm it dropped another 9ºC.
What temperature is it at 8pm?

- Approach to the meaning of operations with powers and roots.

EXERCISES:

8. **Complete the following expressions:**
   a. $3^2 = \_\_\_$
   b. $3^3 = \_\_\_$
   c. $5^4 = \_\_\_$
   d. $\_\_^2 = 36$
   e. $\_\_^3 = 27$
   f. $5^{-} = 125$

9. **A transport company has a fleet of 10 trucks. Each of them has capacity for 10 containers, each with a capacity, in turn, of 10 tons. If a customer asks you about the kilograms the fleet can transport, what would be your answer? Write it using powers.**

10. **Solve:**
    a. $\sqrt[3]{125}$
    b. $\sqrt[4]{16}$
    c. $\sqrt[2]{-25}$
    d. $\sqrt[3]{-125}$
    e. $\sqrt[2]{1,44}$
    f. $\sqrt[3]{0,008}$
    g. $\sqrt[4]{0,00000001}$

11. **There are 1024 square tiles to tile an area that we want to be square. How many tiles will have to be placed on each side of the square?**

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- Mathematical aspects for daily use:
  - Introduction to the monetary system.
  - Multipliers and divisors.

EXERCISES:

12. Calculate some multipliers and the divisors of the following numbers:

a. 15
b. 20
c. 36
d. 17

13. Calculate the greatest common factor of the following groups of numbers using a different method in each case:

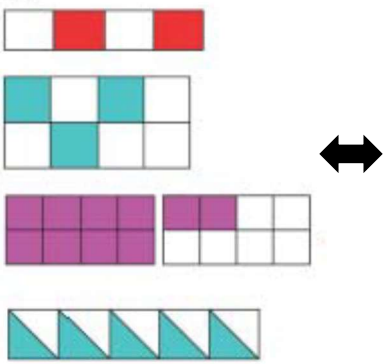
a. 15 and 20
b. 12 and 20
c. 4 and 7

  - Fractions and percentages.

EXERCISES:

14. Express the fraction that represents the colored area in each case and write how it is read:

a.
b.
c.
d.



15. **A) A factory worker has a salary of 926.2€ and needs 2/5 of it to pay the rent. How much of his money does he have left for the rest of his monthly expenses? B) In a tourist city, out of every 10 tourist: 5 are European, 2 are from the rest of the world, and 3 are national tourists. Express these amounts as a fraction.**

16. **Calculate:**

a. $\frac{2}{5}+\frac{4}{5}=$
b. $\frac{2}{3}+\frac{1}{5}=$
c. $\frac{3}{2}+\frac{5}{2}-\frac{1}{2}=$
d. $\frac{2}{5}-\frac{1}{7}=$
e. $\frac{1}{3}\cdot\frac{2}{4}=$
f. $\frac{2}{3}:\frac{3}{5}=$
g. $\frac{11}{2}\left(\frac{2}{4}+\frac{1}{5}\right)=$
h. $\frac{1}{3}+\frac{2}{5}\cdot\frac{6}{7}=$

17. **Solve:**
    a. **A machine manufactures 30 pieces in 3/4 of an hour. How many pieces will it manufacture in 60 hours?**
    b. **Calculate the remaining fraction of water reserve if a farmer uses 3/7 of the total, and then 1/3 of what remains after.**

Co-funded by the Erasmus+ Programme of the European Union

- Proportionality:
  - Basic notions.

EXERCISES:

18. **To make a chocolate pudding you need 135g Chocolate for every 3 eggs. Calculate the amount of chocolate needed if you use:**
    a. **1 egg.**
    b. **Half a dozen eggs.**
    c. **4 eggs.**

  - Percentages and distribution.

EXERCISES:

19. **80% of people in Spain say they are not racist. If we consider that the total population is 40 million inhabitants, how many millions of people have shown this opinion?**

20. **The last will of a mathematician says "I wish all my money, 700.000 euros, to be distributed among my three heirs proportionally, according to their age". If their ages are 40, 60 and 75 years respectively. How much corresponds to each?**

3.4.1.2 MAKING A BUDGET – LEVEL 3

- Definition, concepts and elements:
  - What is a budget?
  - Income and expenses.

EXERCISES:

21. **Lucia has a salary of 900€ a month as shop assistant. She also has a bank account that gives her 100€ in interests every month.**
    Her expenses are: gym 20€, phone bill 20€, electricity 40€, loan payment 50€, food 185€, going out with friends 40€, rent 450€, and other expenses 10€.
    Lucia also estimates that she will make gifts worth 600€ (total for the year).
    Lastly, Lucia wants to save 10% of her monthly income.

    a. **Create a budget reflecting Lucia's expenses and income from the previous items, and don't forget to include savings.**

    b. **Is it possible for Lucia to save what she wants, or does she have to cut shorter?**

- Statistics and probability:
  - Identifying and understanding statistic information.

EXERCISES:

22. **The following is a frequency table corresponding to a statistical study on the daily consumption by students of a given school of prepared food products packaged, but some data has been lost.**
    Fill in the missing data.

nº of products	Absolute freq. (Fi)	Relative freq. (fi)	%
Less than 5	30		37,5
5 to 10		0,5	
More than 10	10		
TOTAL	N		

23. The average score of the three tests carried out for the oppositions was 6. I know that two of the scores were 7 and 4, but I have forgotten the third. Could you help me figure it out?

S

24. A study has been conducted on the number of children per couple in a given city. For it, a sample of 60 randomly chosen couples were surveyed, and the results were:

nº of children	0	1	2	3	4	5	6	7	8	9	10	11
Frecuency	11	12	25	5	3	2	0	1	0	0	0	1

a) Make a graph adapted to these variables.
b) Calculate the central measures that you deem necessary/useful.
c) Calculate the span, the average deviation and the standard deviation.

- Quantifying uncertainty.

EXERCISES:

25. Classify the following experiments as random or deterministic:
a) Drawing a card from a deck of cards. _____
b) The real duration of the Math class. _____
c) The schedules of trains on a working day. _____
d) Throwing a stone to the sky and seeing if it does fall or not. _____
e) The amount of electricity consumed daily in your home. _____
f) Who is going to win tomorrow's basketball match? _____

26. Observing a slot machine for several days threw out the following results from a total of 848 tries, and have been classified per try:

Prize (€)	0	1	1.5	3	6
Tries	700	120	15	10	3

a) What is the probability of each result?
b) What is the probability of getting any prize?
c) And of not getting any?

27. Translate to algebraic language:

a) My income doubles my husband's.
b) The age of my oldest son if is triple the age of my youngest.
c) The price of a car if it is a quarter of my savings.
d) The price of two sandwiches and a coffee if the coffee costs one third of a sandwich.

28. Solve these first degree equations:

a) $2x + 23 = 366$
b) $3 = 4x + 2$
c) $2 \cdot (x - 5) = 3$
d) $2x - 2 = 3x - 6$
e) $2x - 4(x - 7) = x$
f) $\frac{x}{2} - \frac{x+1}{2} = -5$
g) $x - \frac{x}{5} - \frac{3x}{4} = 1$
h) $\frac{3x}{5} + \frac{4(x-2)}{2} = \frac{3x}{2} + 7$

SOLUTIONS TO THE MATHEMATIC ACTIVITIES – LEVEL 1

BASIC OPERATIONS FOR ACCOUNTING – LEVEL 1

- Basic numbers and operations:
  - Numbering systems and their evolution.

EXERCISES:

1. **Fill in the table:**

ROMAN NUMBER	DECIMAL NUMBER
XCVII	97
MMMCCLXXIV	3274
MCDVI	1406
DLXXIV	574
MLXXVII	1077
XXVII	27
DXLIV	544
VIIDDCXII	7612

2. **Write the decimal numbers formed by:**
   a. **Two tenths, one unit, five hundredths.**
   b. **Three hundredths, two tenths and three thousandths.**
   c. **Three thousandths, five hundredths and twenty-three tenths.**
   d. **One millionth, one unit and one thousandth.**

- The different kinds of numbers and their use in basic operations.

EXERCISES:

3. **Calculate the results for the following expressions:**
   a. $3 \cdot 4 - 3 \cdot 2 + 8 : 2 = 12 - 6 + 4 = 8$
   b. $7 - 6 : 2 + 4 \cdot 8 = 7 - 3 + 32 = 36$
   c. $2 + 3 \cdot 4 - (5 + 3) : 2 = 2 + 12 - 8 : 2 = 1 + 12 - 4 = 13 - 4 = 9$
   d. $5(6 + 4 : 2) - 3 + 5 \cdot 4 = 5(6 + 2) - 3 + 20 = 5 \cdot 8 - 3 + 20 = 40 + 20 - 3 = 60 - 3 = 57$

4. **Solve this problem by indicating the necessary calculations in a single combined operations expression. Do not forget to include the necessary parentheses.**

   Rachel left home with 22.56€ (euros) in the purse. Throughout the day she has made the following expenses:
   - **Three bus trips at the price of 1.03€ each.**
   - **Purchase at the butcher shop for an amount of 6.76€.**
   - **Purchase of press worth 0.92€.**

   She also met a partner who paid her the 10€ he owed her.
   With what amount of money has Raquel returned home?

22,56 – (3·1,03 + 6,76 + 0,92) +10 =22.56 – 10,77 + 10 =21,79

5. **Calculate following known rules:**
   a. $1º\ parenthesis\ 5 \cdot 4 + 8 \cdot (-7)$ $2º\ multiplications\ 20 + (-56)$ $3º\ addition = -36$
   b. $1º\ parenthesis\ 3 \cdot 8 - 25$ $2º\ multiplications - 24 - 25$ $3º\ substraction = -49$
   c. $1º\ parenthesis\ 8 - 4(-2) + 4 \cdot 2$ $2ºmultiplicaciones\ 8 + 8 + 8$ $3º\ addition = 24$
   d. $1º\ parenthesis\ 23 \cdot (-2)$ $2º\ 2ºmultiplicaciones\ = -46$

6. **Take a look at part of this savings book. Calculate the balance on day 20:**

DATE	CONCEPT	INCOME/REFUND	BALANCE
6/04/19	Previous balance		13'7
10/04/19	Electricity	-10,25	3,45=(13,7 – 10,25)
15/04/19	Cash income	20	23,45=(3,45+20)
20/04/19	Invoice charge	-18,3	5,15=(23,45-18,3)

7. **The temperature of a given place was -4ºC at 6am; at 3pm it had increased by 11ºC, and at 8pm it dropped another 9ºC.**
What temperature is it at 8pm?

-4 + 11 - 9 = -13 + 11 = -2

- Approach to the meaning of operations with powers and roots.

EXERCISES:

8. **Complete the following expressions:**
   - **a.** $3^2 = 9$
   - **b.** $3^3 = 27$
   - **c.** $5^4 = 625$
   - **d.** $6^2 = 36$
   - **e.** $3^3 = 27$
   - **f.** $5^3 = 125$

9. **A transport company has a fleet of 10 trucks. Each of them has capacity for 10 containers, each with a capacity, in turn, of 10 tons. If a customer asks you about the kilograms the fleet can transport, what would be your answer? Write it using powers.**

10 trucks · 10 containers · 10 tons · 1000kg = 1.000.000kg = $10^6 Kg$

Remember that 1 ton = 1000kg = $10^3 Kg$

10. Solve:

a. $\sqrt[3]{125}$
b. $\sqrt[4]{16}$
c. $\sqrt[2]{-25}$
d. $\sqrt[3]{-125}$
e. $\sqrt[2]{1,44}$
f. $\sqrt[3]{0,008}$
g. $\sqrt[4]{0,00000001}$

⟷

a) 5
b) 2
c) Does not exist.
d) -5
e) 1,2
f) 0,2
g) 0,01

11. There are 1024 square tiles to tile an area that we want to be square. How many tiles will have to be placed on each side of the square?

To calculate the surface of the square, we multiply the measure of the side by itself, using the square(X^2), so in this case we have to use the opposite operation, the square root.

$$\sqrt[2]{1024} = 32\ tiles\ per\ side$$

- Mathematical aspects for daily use:
  - Introduction to the monetary system.
  - Multipliers and divisors.

EXERCISES:

12. Calculate some multipliers and the divisors of the following numbers:

a. **Multiples of 15: calculate just the first 6, since there are infinite. They are obtained by multiplying 15 by 1, 2, 3… = 15, 30, 45, 60…**
   Divisors of 15 are the numbers that divide 15 exactly = 1, 2, 3, 5 and 15.
b. **If we proceed like this for the rest of the numbers, we get:**
   Multiples: 20,40, 60, 80, 100,…
   Divisors: 1, 2, 4, 5, 10, 20.
c. **Multiples: 36, 72, 108, 144…**
   Divisors: 1, 2, 3, 4, 6, 9, 12, 18, 36.
d. **Multiples: 17, 34, 51, 68, 85…**
   Divisors: 1, 17 (it is a prime number).

13. Calculate the greatest common factor of the following groups of numbers using a different method in each case:

a. Divisors of 15 = 1, 3, 5, 15
Divisors of 50 = 1, 2, 5, 10, 25, 50
Common divisors are 1 and 5.

b. We'll use the method that takes the smallest of the numbers, 12. If it divides the other that is the number sought. As it is not the case, we continue testing with the successive divisors of 12 in descending order (6, 4… 4 is a divisor of 20, so that is the number sought. G.c.f. (12.20) = 4

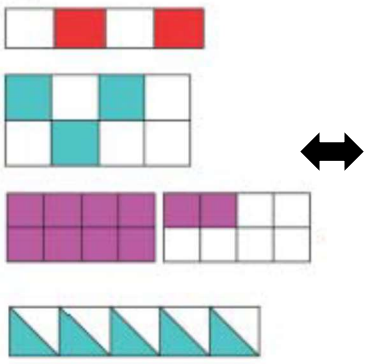
c. We will use the method of decomposing into prime factors. $4-2^2$ and 7 cannot be decomposed anymore, 7-7. We take the common prime factors. As in this case there is none, the only common one is 1. It only has one common divisor, 1. These are prime numbers.

- Fractions and percentages.

EXERCISES:

14. Express the fraction that represents the colored area in each case and write how it is read:

a.
b.
c.
d.



a) 2/4 or 1/2 One half
b) 3/8 Three eights
c) 10/8 or 5/4 Five quarters
d) 5/10 or 1/2 One half

15. A) A factory worker has a salary of 926.2€ and needs 2/5 of it to pay the rent. How much of his money does he have left for the rest of his monthly expenses?
B) In a tourist city, out of every 10 tourist: 5 are European, 2 are from the rest of the world, and 3 are national tourists. Express these amounts as a fraction.

A) Amount for rent: 2/5 of 926.2 = 370.48
The remaining amount = 555.72 = 3/5 of 926.2
B) European foreigners: 5/10 ; non-European foreigners: 2/10 ; Nationals 3/10

16. Calculate

a. $\frac{2}{5}+\frac{4}{5}=$
b. $\frac{2}{3}+\frac{1}{5}=$
c. $\frac{3}{2}+\frac{5}{2}-\frac{1}{2}=$
d. $\frac{2}{5}-\frac{1}{7}=$
e. $\frac{1}{3}\cdot\frac{2}{4}=$
f. $\frac{2}{3}:\frac{3}{5}=$
g. $\frac{11}{2}\left(\frac{2}{4}+\frac{1}{5}\right)=$
h. $\frac{1}{3}+\frac{2}{5}\cdot\frac{6}{7}=$

a) 6/5

b) 13/15

c) 7/2

d) 9/35

e) 1/6

f) 10/9

g) 77/20

h) 71/105

17. Solve:

a. A machine manufactures 30 pieces in 3/4 of an hour. How many pieces will it manufacture in 60 hours?
b. Calculate the remaining fraction of water reserve if a farmer uses 3/7 of the total, and then 1/3 of what remains after.

a) Divide 60 hours by ¾ to see how many times this period is contained in the given time of 60 hours, then multiply the result by the 30 pieces manufactured in each period: 60 · 3/4 = 80 , 80 · 30 = 2400 pieces in total manufactured in 60h.
b) When extracting 3/7, 4/7 of the 8400 liters will remain, that is, 4/7 · 8400 = 4800L. Taking 1/3 of the rest, what remains is 2/3 of 4800, so 2/3 · 4800 = 3200L.

- Proportionality:
  - Basic notions.

EXERCISES:

18. To make a chocolate pudding you need 135g Chocolate for every 3 eggs. Calculate the amount of chocolate needed if you use:

a. 1 egg.
b. Half a dozen eggs.
c. 4 eggs.

a) 1 egg is 135/ 3 = 45g
b) 6 eggs are 45 · 6 = 270g
c) 4 eggs are 45 · 4 =180g

- Percentages and distribution.

EXERCISES:

19. **80% of people in Spain say they are not racist. If we consider that the total population is 40 million inhabitants, how many millions of people have shown this opinion?**

80% = 80/100 = 0,8

0,8 · 40.000.000 = 32.000.000 inhabitants

20. **The last will of a mathematician says "I wish all my money, 700.000 euros, to be distributed among my three heirs proportionally, according to their age". If their ages are 40, 60 and 75 years respectively. How much corresponds to each?**

The total of years to start drawing out proportionality is: 40 + 60 + 75 = 175

The youngest heir: 40/175 = 0,23 so 0,23 · 700.000 = 160.000 €

The middle heir: 60/175 = 0,34 so 0,34 · 700.000 = 240.000 €

The oldest heir: 75/175 = 0,43 so 0,34 · 700.000 = 300.000 €

MAKING A BUDGET – LEVEL 3

- Definition, concepts and elements:
  - What is a budget?
  - Income and expenses.

EXERCISES:

21. **Lucia has a salary of 900€ a month as shop assistant. She also has a bank account that gives her 100€ in interests every month.**
Her expenses are: gym 20€, phone bill 20€, electricity 40€, loan payment 50€, food 185€, going out with friends 40€, rent 450€, and other expenses 10€.
Lucia also estimates that she will make gifts worth 600€ (total for the year).
Lastly, Lucia wants to save 10% of her monthly income.

a. **Create a budget reflecting Lucia's expenses and income from the previous items, and don't forget to include savings.**

Presupuesto mensual de Lucía			
Ingresos		**Gastos**	
• Sueldo	900 €	**Gastos fijos obligatorios**	**500 €**
• Intereses bancarios	100 €	• Alquiler vivienda	450 €
		• Devolución de préstamo	50€
		Gastos variables necesarios	**250 €**
		• Compra comida	185 €
		• Factura luz	40 €
		• Consumo móvil	25 €
		Gastos discrecionales	**120 €**
		• Salir con amigos	40 €
		• Gimnasio	20 €
		• Regalos (al mes)	50 €
		• Otros	10 €
		Ahorro planificado	**100 €**
		• Hucha o cuenta ahorro	100 €
Total ingresos	**1000 €**	**Total gastos**	**970 €**
Ahorro adicional			30 €

b. **Is it possible for Lucia to save what she wants, or does she have to cut shorter?**

Yes, it is possible. With her income and expenses, Lucia not only gets the 100€ of mandatory savings, but can also get an extra 30€ of savings. So she can save 130€ each month.

- Statistics and probability:
  - Identifying and understanding statistic information.

EXERCISES:

22. **The following is a frequency table corresponding to a statistical study on the daily consumption by students of a given school of prepared food products packaged, but some data has been lost.**
Fill in the missing data.

nº of products	Absolute freq. (Fi)	Relative freq. (fi)	%
Less than 5	30	0,375	37,5
5 to 10	40	0,5	50
More than 10	10	0'13	13
TOTAL	N=80		

23. La media de las notas obtenidas en las tres pruebas realizadas en unas oposiciones ha sido 6. Sé que dos de las notas eran 7 y 4, pero he olvidado la tercera. ¿podrías ayudarme a calcularla?

For X being the missing score, the average score will be:

(7+4+X) / 3 = 6 11+X = 18 X= 18-11 X=7

24. A study has been conducted on the number of children per couple in a given city. For it, a sample of 60 randomly chosen couples were surveyed, and the results were:

nº of children	0	1	2	3	4	5	6	7	8	9	10	11
Frecuency	11	12	25	5	3	2	0	1	0	0	0	1

a. (…)

b. Calculate the central measures that you deem necessary/useful.

N° hijos	0	1	2	3	4	5	6	7	8	9	10	11	suma
Fr. (F_i)	11	12	25	5	3	2	0	1	0	0	0	1	60
$X_i \cdot F_i$	0	12	50	15	12	10	0	7	0	0	0	11	117
D_i	1'95	0'95	0'05	1'05	2'05	3'05	4'05	5'05	6'05	7'05	8'05	9'05	
$D_i \cdot F_i$	21'45	11'4	1'25	5'25	6'15	6'1	0	5'05	0	0	0	9'05	65'7
$X_i^2 \cdot F_i$	0	12	100	45	48	50	0	49	0	0	0	121	425

$$\overline{x} = \frac{117}{60} = 1'95; \quad Me = 2; \quad Mo = 2.$$

c. Calculate the span, the average deviation and the standard deviation.

The span is 11; $DM = \frac{65'7}{60} = 1'095;$ $\sigma = \sqrt{\frac{423}{60} - 1'95^2} = 1'81$

- Quantifying uncertainty.

EXERCISES:

25. Classify the following experiments as random or deterministic:

a) Drawing a card from a deck of cards. RANDOM
b) The real duration of the Math class. DETERMINISTIC
c) The schedules of trains on a working day. DETERMINISTIC
d) Throwing a stone to the sky and seeing if it does fall or not. DETERMINISTIC
e) The amount of electricity consumed daily in your home. DETERMINISTIC
f) Who is going to win tomorrow's basketball match? RANDOM(ISH).

26. Observing a slot machine for several days threw out the following results from a total of 848 tries, and have been classified per try:

Prize (€)	0	1	1.5	3	6
Tries	700	120	15	10	3

a. What is the probability of each result?
b. What is the probability of getting any prize?
c. And of not getting any?

Total number of tries = 700 + 120 + 15 + 10 + 3 = 848

a) P(0€) = 700 / 848 = 0,83 or 83%
P(1€) = 120 / 848 = 0,14 or 14%
P(1,5€) = 15 / 848 = 0,02 or 2%
P(3€) = 10 / 848 = 0,01 or 1%
P(6€) = 3 / 848 = 0,004 or 0,4%

b) As it doesn't specify which of the prices, any price is fine, so:
P(any€) = (120+15+10+3)/848 = 0,17 or 17%

c) Not getting any price is the exact opposite to getting any, so:
1- P(any€) = 0,83 or 83%

27. Translate to algebraic language:

a. My income doubles my husband's.
2X (X being my husband's income).

b. The age of my oldest son if is triple the age of my youngest.
3X (X being my youngest son's age).

c. **The price of a car if it is a quarter of my savings.**
X/4 (X being my savings).

d. **The price of two sandwiches and a coffee if the coffee costs one third of a sandwich.**
2X + X/3 (X being the price of a sandwich).

28. Solve these first degree equations:

a. **2x + 23 = 366**
b. **3 = 4x + 2**
c. **2·(x - 5) = 3**
d. **2x – 2 = 3x – 6**
e. **2x – 4 (x – 7) = x**
f. $\frac{x}{2} - \frac{x+1}{2} = -5$
g. $x - \frac{x}{5} - \frac{3x}{4} = 1$
h. $\frac{3x}{5} + \frac{4(x-2)}{2} = \frac{3x}{2} + 7$

a) **X = 343/2**
b) **X=1/-4 = ¼**
c) **X = 13/2**
d) **X=4**
e) **X=14**
f) **X=28**
g) **X=20**
h) **X=47/11**

7. a. $2x=366-23$
$2x=343$
$x=343/2$
b. $-4x=2-3$
$-4x=-1$
$x=-1/-4=1/4$
c. $2x-10=3$
$2x=3+10$
$2x=13$
$x=13/2$
d. $2x-3x=-6+2$
$-x=-4$
$x=4$

e. $3x-4x+28=x$
$3x-4x-x=-28$
$-2x=-28$
$x=-28/-2=14$

f.
$6\cdot\left(\frac{x}{2}-\frac{x+1}{3}\right)=6\cdot(-5)$
$6\cdot\frac{x}{2}-6\cdot\frac{x+1}{3}=-30$
$3x-2(x+1)=-30$
$3x-2x-2=-30$
$3x-2x=-30+2$
$x=-28$

g.
$20\left(x-\frac{x}{5}-\frac{3x}{4}\right)=20\cdot1$
$20x-\frac{20x}{5}-\frac{20x}{4}=20$
$20x-4x-15x=20$
$x=20$

h.
$10\left(\frac{3x}{5}+\frac{4(x-2)}{2}\right)=10\left(\frac{3x}{2}+7\right)$
$\frac{10\cdot3x}{5}+\frac{10\cdot4(x-2)}{2}=\frac{10\cdot3x}{2}+10\cdot7$
$2\cdot3x+5\cdot4(x-2)=5\cdot3x+70$
$6x+20(x-2)=15x+70$
$6x+20x-40=15x+70$
$6x+20x-15x=7+40$
$11x=47$
$x=\frac{47}{11}$

Co-funded by the Erasmus+ Programme of the European Union

3.4.2 DIGITAL ACTIVITIES – LEVEL 1

3.4.2.1 THE INTERNET – LEVEL 1

EXERCISE 1. INTERNET SEARCH ENGINES

Open your browser and search for specific information on the Internet: search engines.

Search engines are special internet pages that allow us to find out the names of the web pages we want to visit.

There are many search engines on the internet, but the most used ones are: Google, Yahoo, Safari, Bing… You are who decides which one you prefer. All of them work very similarly. We will use *Google* for this example.

Open the browser. The first thing to do is to introduce the web address of the search engine, in this case *www.google.com* in the address bar of the browser.

As an example: To do a *Google* search -try "internet course"-, the management is as simple as clicking in the "text box" and typing the word or phrase that we want to search. The *Google* search engine is smart so, at the moment you type part of the sentence, it will auto-fill the rest with suggestions of what you might want to look for. Now you just have to click on the *internet courses* section that it offers, and automatically (in tenths of a second) it will give many results:

These results are usually 10 per page, and to access each of them, you just have to click on its title (Blue, bold and underlined), which have the links below to access the different pages.

At the top (under the search box) appears the approximate total of results that Google has found. How many results did you get?

Now is your turn to try! Browse, and when you are finished, close the browser.

EXERCISE 2. *GMAIL*

To start using *Gmail* you have to create an account, meaning that you have to register. You have two options for this:

1. Go to www.gmail.com.
2. Go to *Google*, and from there go to *Gmail*.
Once the *Gmail* web page loads, click on "create an account".

Fill in the requested fields:

- **Personal Data**: Name, Surname, date of birth, sex.
- **Username**: the name you want to give to your account, it will be subject to the existing availability in *Gmail*; if it is not available you'll have to use another one.
- **Password**: Use at least eight characters, at least one or two numbers, and please, do not use a password from another site, a common name, or your pet's name, etc.
- **Mobile phone**: This information is requested in case there is a problem with the account in the future. It is not necessary to provide these data.
- **Alternate email address**: This is useful and advisable. If there is a problem with the password, *Gmail* can send an email to your alternate address, which must be a different account than the one you are creating.
- ***Captcha***: This is what those distorted letters/numbers are called. These are implemented by web pages to verify that the one registering is a human and not an AI. You'll need to write the words shown.
- **Terms of service and the Privacy Policy**. You always need to accept them to create the account.
- **Option to use the account information**: This option is pre-selected, but it is not necessary to create the account. This allows *Google* to use your information to customize ads for you.
- **At last**, your *Gmail* account is created. On the next page you will be offered to customize your account with a picture, also not necessary. You can click on "Next", and a tab will allow you to directly access your newly created account.

Log in to your account:

To log into your account, you just have to go to the page we previously described (from *www.google.com*, click on *Gmail*) or access the address *www.gmail.com*.

Once here, enter your username (it is not necessary to add "@gmail.com" at the end) and enter the password below. Click below on the "Login" button.

Once inside, the first thing you see is the "inbox". To know its features in detail, its tools, tags, and options, we recommend you to access the *Gmail* tutorial attached as an additional resource in this Didactic Unit.

Thus, here we will explain how to write an email:

In order to send an email, you need to click on "**Compose**" in the inbox sidebar. Once the option to compose is selected, a new screen will open to start writing the new mail.

Then select contacts from your contact list. Click "**To**" to open the window and select the contacts to whom we want to send the message, or simply type their address.

Cc means that if you add the address of a recipient in this box, a copy of the message will also be sent to that recipient and the other recipients of the message will be able to see their name.

Bcc is used to send a hidden copy. If you add the address of a recipient in this box, a copy of the message will be sent to them, but the other recipients of the message will not be able to see that. The Bcc box can be added if it is not visible when creating a new message.

Subject: write a brief and concise description of the contents of the mail.

Once you have finished writing the email, you can click on the "**Send**" button.

It's your turn now! With this information and to end the activity, you just have to send an email to the address _____. However, you must wait until the end of activity 4 of this activity booklet to be able to attach the document created in said activity to the email.

3.4.2.2 OFFICE AUTOMATION – LEVEL 2

EXERCISE 3. *WINDOWS* AS AN OPERATING SYSTEM

3.1 Create a folder in your desktop

Once the computer boots, the first thing you see is the *Windows* desktop. Well, let's create a folder with your name on the desktop; it is very easy. Right-click with the mouse pointer on an empty space of the desktop: a menu should open. Go to "new" and then click on "folder". The new folder will then be created, but without a name. While it remains in blue you can write a name for it. Write your name and then click with the mouse anywhere on the desktop.

You can create more folders within it with the same procedure.

3.2 Hard drive and external storage units

First go to the Windows desktop. Find "This PC" and double click on it. As you already know, it shows the disk drives in your computer among other things. Double click on the hard drive icon. Look at the amount of folders and files inside! Exit again and now right-click on the icon and choose the Properties option. The general tab also displays a pie-graph telling you how much hard drive space is spent and how much is free. Close the hard drive window.

Now go to "This PC" again (now you know how to). Insert a USB memory (pen drive, flash drive) to the computer, look for the access to this device and open it. You will see the files inside when you open it. Move the folder created in the previous exercise from the computer to the device and vice versa. Close the window.

EXERCISE 4. *MICROSOFT WORD* – TEXT PROCESSOR – CREATING AND SAVING FILES

For a better performance of the following exercise we recommend that you take a look at the specific *Microsoft Word* tutorial attached as a resource with this Didactic Unit.

Open *Microsoft Word*. Look closely at the screen and try to recognize at a glance the main parts of a word processor. The sheet marks your working area, in which you can write, draw shapes, insert images and pictures, etc.

The cursor tells you at all times where you can write or where you are writing. Start by writing something and testing some of the toolbar functions, such as font and font size, text indent and alignment, document layout, etc.

When you feel a bit comfortable, write a short draft in this document explaining how you came to know this basic education course for adults from the VIVAR platform, and what you expect from it. Write it with the font Calibri (Body), size 12, with a line spacing of 1.5 and text indent.

Lastly, save the document in the folder you created in exercise 3. For this, click on the "save" button and the "save as" window will open. Click on "save in", select the desktop and there you will find the folder with your name. Select it and accept.

Word automatically uses the first words of any document you create to name it. The file name goes in the "File Name" bar. Write any name you want, but one that is easy to recognize and remember. Once written, click on the "save" button.

3.4.2.3 THE E-LEARNING PLATFORM – LEVEL 3

EXERCISE 5. *E-LEARNING*

You have already done this exercise, since you are currently navigating this http://www.virtualinclusiveeducation.eu/ platform, registering, accessing this course, and browsing its contents and activities.

Getting here is a large part of what this exercise intended to teach, so you can continue moving forward with the rest of the Didactic Units. Don't forget to explore the different educational tools of the platform!

3.5 RESOURCES – LEVEL 1

PDF – Critical Literacy Guide: an invitation to reflect and act.

Digital downloadable version:
www.guia.ondula.org

Edit: BioCoRe S. Coop, Madrid. Contact: www.biocore.es / editorial@biocore.es
Format and cover: Javier López Herrera.

Colaborations: Irene Araus, Javier López, Noelia del Potro, Manuel Araus, Auxiliadora Zamorano.
1st edition: December 2015.
ISBN: 978-84-942483-4-4

PDF – MATHEMATICAL PROCESSES AND TOOLS GVA

I.S.B.N.: 84-482-3204-6

Dep. Legal: V-3300-2002

Imprime: Gráficas Alarcón, s.l.

Ctra. Nac. III, Km. 263,8 - 46300 Utiel

Tel.: 96 217 12 17 - 96 230 53 45

Fax: 96 217 20 03

e-mail: graficasalarcon@ctv.es

3.6 EVALUATION – LEVEL 1

- Is able to read, write, and sort natural numbers.
- Is able to make simple series of numbers.
- Can perform basic mathematical calculations, both mentally and in written form. The agility in mental calculation will be evaluated as a basis for the resolution of operations and problems.
- Can perform basic mathematical operations (addition, subtraction, multiplication, and division) with natural numbers, and use them to solve everyday problems.
- Solves easy problems related to his/her closest environment by applying the operations learned, also comparing the results with the estimate of an expected solution.
- Uses some resources (calculators, abacuses, computers, etc.) to solve mathematical problems.
- Knows the decimal metric system (units of length, mass, and time).
- Knows the monetary system (how to use money, know what currency to use…).
- Knows how to use conventional measuring tools (tape measures, scales, clocks, etc).
- Uses the mathematical knowledge acquired in everyday activities.
- Has the knowledge and knows how to make a basic use of information and communication technologies, along with other tools, instruments, and technological resources of daily use.
- Properly understands the display messages of simple interactive actions related to new technological devices: smartphones, ATMs and such.
- Easily uses basic tools to understand and adapt to different communication channels and the various elements of the digital learning environment.

VIRTUAL
INCLUSIVE
EDUCATION
PLATFORM

DIDACTIC UNIT 4

INTRODUCTION TO LANGUAGE LEARNING

COURSE FOR ADULTS

4.1 DESCRIPTION OF THE TOPIC – LEVEL 1

The didactic unit that you are going to start intends to offer adult users the possibility of acquiring, updating, completing or expanding their knowledge and skills for their personal and professional development.

Throughout this 4th Didactic Unit, we will work on the development of language communication skills. Far from wanting to turn it into an in-depth essay, resulting in a complex and cumbersome material, the unit wants to be a basic but comprehensive document addressing the common sense that awakens when knowing the reason for things, without having to start from some previous high knowledge or already developed sensitivities. In this way, it aims to serve as a material for all audiences, as a support resource for self-training, based on a simple and dynamic reading.

On the one hand we ask ourselves, what is the value of the language? And we analyze and explain how this is a basic element for inclusion. We also study the linguistic and multicultural diversity in Europe, and the definitions and characteristics of some of its languages.

On the other hand, we will work on two languages (Catalan and English) from two dossiers of contents and activities following, as in the previous topic, a *Freirean* approach to adult literacy. That is, seeking to be able to address it with a global map, an overview containing a technical basis, a historical-cultural-political context, and an anthropological reflection of the subject.

4.1.1 THE VALUE OF LANGUAGE AND CULTURE AS A MEANS OF INCLUSION – LEVEL 1

Languages are a primary tool for social inclusion, since they have always managed to unite the people who speak them, regardless of their origin, and make them feel part of the same linguistic community.

We are taking the case of Catalan as common and inclusion language, first because it is the language of Catalonia, the language of the country of birth and host throughout the world; second, because it plays a fundamental role as a tool for social inclusion, it offers opportunities to those who adopt it; and third, for the social cohesion, because it can be a true backbone of linguistic and cultural diversity.

Even so, the social inclusion of new Catalans cannot be achieved only from their skills, effort or will. The adaptation of the host society and its institutions to the new challenges posed by a diverse and plural society like the current one is absolutely necessary. In the linguistic plan would need, at a minimum, to recognize the specific linguistic diversity present in the different fields: work, schools, public institutions, leisure, etc. Likewise, it would be necessary to assume the responsibility in the access of everyone to the Catalan language and culture.

There are 1.5 million newcomers in Catalonia, and more than 300 languages are spoken. Inclusion and social cohesion must be based on the respect and recognition of the different cultures and on equal opportunities, but these opportunities can hardly be achieved without the inclusion and linguistic welcome of newcomers. Integration implies living in a place on equal terms as the rest of citizens, thus, the incorporation of newly arrived students, workers and families to our society without access to Catalan, means another form of social exclusion.

Catalan has, among other components such as affective, in the communicative presents a strong social component. The work of linguistic reception for newcomer groups is essential to build a diverse, cohesive, egalitarian, fair, and solidary society.

All of us as linguistic references

The responsibility of teaching and learning the language does not only have to fall on language teachers; the actors that handle the first reception are also capital linguistic referents. By dealing with newcomers we have a very important role as linguistic references: our language use will have important effects on them because newcomers usually ignore the reality of the country and are at the same time potential new speakers. Our attitude gives them valuable information, in the sense that it transfers a greater or lesser usefulness to learning and using Catalan.

Overcoming clichés

If what we want is to reinforce the attitude dimension towards Catalan, we have to unmask some of the topics that are still in use in relation to newcomers and the language. Not addressing someone in Catalan because “they are a migrant person”, rather than an educated and communicative attitude -as we have always been told- is actually a form of exclusion:

a) First of all, we don’t know who this person: maybe they already feel like a citizen of the country, is already working here, etc.; but we often make the mistake of labeling them as “an immigrant”, thus creating a barrier that prevents a normal and full inclusion in society;
b) Secondly, we do not know their language proficiency or the ability to understand each other. For example, it is easier for many people to understand Catalan (like people of Moroccan origin who speak French) than other languages they also do not know;
c) And lastly, not speaking in Catalan implies separating them from a basic element of society as a whole. Therefore, not being able to access the knowledge of Catalan in our society is a factor of social exclusion; having this knowledge allows people to create new opportunities for their future. Probably, one that we will have heard is that of pointing out Catalan as an added problem to the already complicated condition of a newcomer: “poor people, they already have enough problems to also be weighed down with Catalan”. A condescending attitude like the one in this example builds an equivalence in which newcomers are judged as poorly capable persons, which naturally stigmatizes them. Also, as we have seen, we

have to understand and explain that Catalan is not an added problem, but is actually a very useful tool that we can offer to a newcomer so they can solve the whole range of problems they have to face.

Catalan as social cohesion language.

Catalan, the common and social cohesion language in Catalonia has been developing over the years with the contributions of many generations, formed by people with diverse backgrounds, who have found a homeland. Today's Catalonia is multilingual, modern, open, and plural, and we must continue to ensure that all citizens, regardless of their origin, can participate in public life and exercise their rights in equal conditions. This means that language policies have to be considered as social policies aimed at equity and justice, expressing the commitment to reduce imbalances in the exercise of people's rights, and to guarantee all citizens equal effective opportunities and an increase in their well-being. Therefore we have to teach Catalan to newcomers so they become more autonomous, able to participate in equal conditions as any other citizens in social, economic and political life, to feel they are part of the society that welcomes them, and so they feel citizens of Catalonia. To achieve this, progress must be made in guaranteeing labor, social, civic, political, and linguistic competence. Knowing Catalan has to help ensure the presence of migrants in all social areas, to allow us to offer more possibilities to enter the job market, and be active members of society.

In fact, we understand learning Catalan as the best tool for autonomy and integration. By learning it, migrant people will grow in cultural experiences and contribute to making Catalonia a more heterogeneous and inclusive society; and all of this while still being who they are, without losing their language, culture, and identity. Catalan has always been a tool that generates opportunities (social, labor, and educational); it opens doors, provides autonomy, and generates empathy within the host society. It erases labels, it is an antidote against exclusion, and has always had the function of uniting in this context of diverse origins. This is why it is so important that nowadays, that we are in a more heterogeneous and diverse society than ever, we continue to entrust the functions of cohesion and inclusion to it.

4.1.2 LA DIVERSIDAD LINGÜÍSTICA Y MULTICULTURAL DE EUROPA – LEVEL 1

Cultural and linguistic diversity is already an integral part of European identity. Languages have a primary task for the promotion of social cohesion and personal development.

From this point of view, European institutions have to promote and strengthen linguistic diversity and support and visibility to all languages in Europe, emphasizing minority and more vulnerable languages so they can achieve a social and legal status, and become standardized languages in all fields.

Treatment of the language and cultural diversity.

The diversity of cultures and languages of origin present from the task of teaching-learning the language, instead of assimilating it as a problem, should be approached as enrichment and an opportunity. The fact of welcoming people from very diverse backgrounds:

- is a challenge with the intention of improving the task of all the people who welcome the newly arrived population.
- allows us to know distant cultures and languages and new ways of thinking and facing everyday situations.

It is essential to implement intercultural education, understanding the transmission of values to facilitate the understanding of criteria and ways of seeing the world different from one's own, in a common relationship framework. This can be done through the following proposals:

a) Organizing activities to spread the customs and features of the cultures of origin of newcomers.
b) Not putting an excessive emphasis on cultural identities different from ours, which only creates more distance; it is more useful to recognize both cultural differences and shared elements. There are traditions that are shared by many cultures and religions, which perhaps have different approaches but start from the same original custom. For example, the winter and summer solstices, or the end of the year.
a) Give all possible information about cultural and linguistic diversity in our country, and about the Catalan language and culture. To talk about the importance for our country of Spanish, English, but also Arabic, Chinese, Wòlof, Urdu, etc., and explain that the common language and culture that unites this diverse society is Catalan.
b) Sharing the importance of speaking the languages of the place you live as a way to raise awareness and worry about languages that, like Catalan, have been or are minorized. By explaining, for example, that there are many people here whose first language is Berber or Quechua, also minorities, reinforces the self-esteem of its speakers and broadens the vision of people, both newcomers and native, on the existing diversity of our country.

Acknowledging language and cultural diversity.

When talking about language diversity, we need to give equal visibility and value to all languages. For example, more than 300 languages are spoken in Catalonia in addition to the 3 official languages (Catalan, Spanish, and Aranese), which are numerically important languages in the world (such as Arabic, Chinese, Urdu, and also minority languages like Amazigh, Quechua, and Aymara). We have to temporarily grant instrumental rights to some of these languages to guarantee access to their speakers' public services, during the essential transition period for the newcomer population to achieve basic skills in Catalan. Having a multilingual society made of multilingual Catalonians of diverse origins has many advantages: it opens and

connects us to the world, with all the implications this fact entails (e.g. encouraging trade between Catalan companies and of their countries of origin). It also gives us the opportunity to be a great center of knowledge, studies, art, and science exchange (as were Ripoll and Toledo, European reference centers a thousand years ago).

Linguistic diversity challenges not only professionals working in the field of immigration and translation and interpretation, but also other sectors, which have to adapt to this reality, which at the same time creates new opportunities (new programs, information technologies, publishing, cultural management, sports, businesses…). Having become a multilingual country is also an opportunity to give value to languages used by migrants living in Catalonia who have suffered any kind of discrimination in their countries of origin.

Related links:

- Decalogue "Be linguistically sustainable"

Document developed in 2008 by HIELA (Threatened Languages Study Group), including 10 recommendations to contribute to the sustainability of the world's language diversity. Available in twelve languages: Catalan, Spanish, English, French, Italian, Occitan, Galician, German, Chinese, Greek, Esperanto, and Berber.

http://www.ub.edu/xdl/dinlin/quefem/decaleg.htm

https://www.upf.edu/web/multilinguisme

- GRASA, R. and REIG, D. Cuadernos Linguapax. Unescocat, PAU Editions, 1998.

Materials focused on education for peace and development, aimed at secondary school students, although it can also be used with adults. They propose cooperation activities from several areas (languages, social sciences, mathematics, arts, etc.). Each notebook works on a different aspect:

Notebook 1: We live in one world.
Notebook 2: Living with others.
Notebook 3: Images and stereotypes.
Notebook 4: The rights of Earth.
Notebook 5: The restaurant of the world.

- CRUDO, J .; PONCE, A. Teaching sheet "Linguistic diversity in the world", Linguapax - Unescocat, Barcelona, 2004.

This sheet proposes a series of activities -one of which is coupled with videos produced by the Discovery Channel- to give some basic information about the linguistic heritage of the planet and show a sustainable vision of diversity.

www.linguapax.org/fitxer/165/fitxadiscoverycat.pdf

- Edu3.cat Portal

It is an educational radio and television site on the Internet, containing audiovisual proposals and other materials of interest in Catalan, grouped by fields of knowledge. It is recommended to check the “Catalan” and “Education for personal development and citizenship” options.

www.edu3.cat

- Migracat Portal

This is an initiative promoted by the Jaume Bofill Foundation, aimed at developing a free virtual environment capable of responding to the information, updating, and critical knowledge needs of people working in the field of immigration. It is mainly aimed at associations, entities, public administrations, research teams, teachers, and the media, and includes a section of resources to raise public awareness on the values of equal rights and opportunities, non-discrimination, justice, and interculturality. While not all experiences have a linguistic purpose, it is also true that it can be included.

www.migracat.cat

- Lingcat

The Intercat Lingcat Project is a multimedia presentation on Catalan, the sociolinguistic reality of Catalonia, and the Catalan-speaking territories, initially focused on mobility students visiting Catalan universities, but it is also useful for everyone who wants to quickly know current and useful data about Catalan.

http://www.intercat.cat/lingcat/

http://www.intercat.cat/

4.1.3 LANGUAGES: DEFINITION AND CHARACTERISTICS – LEVEL 1

Languages are defined as vehicles of communication and social relationship. There are more than 6000 languages in the world. The European continent does not reach 100, while most of the languages are found in South East Asia. There is also a considerable part of languages that are in the process of extinction or lack of legal status. Chinese, Spanish, and English are the languages that have more speakers worldwide.

Languages can be classified according to linguistic criteria and criteria of use in different fields.

1) Linguistic criteria: we can talk about grammar aspects and linguistic families.

First we look for the lexical characteristics (shared points and similar ones in the lexicon and the vocabulary of each language), so they are grouped into linguistic families such as the Indo-European family, the Afro-Asian family, etc…

Then they are grouped according to syntactic characteristics; in other words, the position of linguistic elements such as subject, verb, and object in the sentence (like these syntactic structures: SOV, SVO, VSO, etc…)

Lastly, they are grouped according to morphological characteristics: insulators (Chinese), binders (Turkish), flexives (Catalan)…

• Main language families:

- Indo-European: Spanish, german…
- Afro-asian: Hebrew, Arabic…
- Austronesian: Maori, Javanese…
- Austro-asian: Somali, Vietnamese…
- Altaic: Mongolian…
- Caucasian: Georgian.
- Sino-tibethan: Chinese.
- Amerindian: Quechua, Guarani.
- Uraliana: Dutch, finara.

- The family of Indo-European languages:
  - Romanesque languages: Spanish, French, Catalan…
  - Germanic languages: German, English, Danish…
  - Slavic languages: Vulgar, Russian, Czech…
  - Indo-Iranian languages: Urdu, Hindi, Persian…
  - Celtic languages: Irish, Scottish…
  - Greek, Albanian, Armenian…

2) Criteria of use in different fields:

• Statute:

- Official languages: used in administration, teaching, and other fields.
- Co-official languages: with the same official status in the same territorial area.
- Non-regulated languages: missing a legal regulation.

• Number of speakers:

"Majority languages" are those with a large number of speakers, such as Spanish, Chinese, English, Chinese… and "minority languages" are those with fewer speakers (Catalan, Basque…).

• Vitality (the goal a language has in a given society. We speak of):

- Normalized languages, those with legal and official status in their fields of use.
- Languages in the process of normalization.
- Languages in process of substitution.
- Extinct languages.

4.2 OBJECTIVES – LEVEL 1

Linguistic communication competence (LCC) is the result of the communicative action within certain social practices, in which the individual acts with other speakers and through texts in multiple modes, formats, and supports. It requires the interaction of different skills, since it happens in multiple communication modalities and different media. From orally and writing to the most sophisticated forms of audiovisual or technology-driven communication, the individual participates in a complex network of communicative possibilities thanks to which he expands his competence and abilities to interact with other individuals.

This is an essential tool for socialization and the use of educational experience, as it is a privileged way of access knowledge inside and outside school, and in it we can highlight the interaction of the following components:

• The linguistic component includes several dimensions: lexical, grammar, semantics, phonology, orthography, and orthoepic, understood as the correct articulation of sound from the graphic representation of the language.

• The pragmatic-discursive component contemplates three dimensions: sociolinguistics (linked to the adequate production and reception of messages in different social contexts); pragmatics (which includes communicative micro-functions and interaction patterns); and discourse (which includes textual macro-functions and issues related to discursive genres).

• The socio-cultural component includes two dimensions: knowledge of the world and the intercultural dimension.

• The strategic component allows the individual to overcome difficulties and solve the problems that arise in the communicative act. It includes both communication skills and strategies for reading, writing, speaking, listening and conversation, as well as skills related to information processing, multimodal reading and the production of electronic texts in different formats; likewise, the general cognitive, metacognitive, and socio-affective strategies that the individual uses to communicate effectively, essential aspects in the learning of foreign languages, are also part of this component.

• Lastly, the competence in linguistic communication includes a personal component that intervenes in communicative interaction in three dimensions: attitude, motivation, and personality traits.

4.3 TRAINING CONTENTS AND ACTIVITIES FOR THE BASIC LEARNING OF LANGUAGES FOR INCLUSION – LEVEL 1

4.3.1 CATALAN – LEVEL 1

Find the course in PDF attached at the end of this Didactic Unit.

4.3.2 ENGLISH – LEVEL 1

Find the course in PDF attached at the end of this Didactic Unit.

4.4 RESOURCES – LEVEL 1

CATALAN

http://llengua.gencat.cat/web/.content/documents/publicacions/vivim_junts/arxius/6_vjunts_salut.pdf

http://llengua.gencat.cat/web/.content/documents/publicacions/vivim_junts/arxius/16_malalties.pdf

http://llengua.gencat.cat/web/.content/documents/publicacions/vivim_junts/arxius/4_vjunts_familia.pdf

http://llengua.gencat.cat/web/.content/documents/publicacions/vivim_junts/arxius/1_vjunts_ens_presentem.pdf

http://llengua.gencat.cat/web/.content/documents/publicacions/vivim_junts/arxius/10_vjunts_casa_entorn.pdf

http://llengua.gencat.cat/web/.content/documents/publicacions/vivim_junts/arxius/2_vjunts_activitats_quotidianes.pdf

http://llengua.gencat.cat/web/.content/documents/publicacions/vivim_junts/arxius/7_vjunts_comprem.pdf

http://llengua.gencat.cat/web/.content/documents/publicacions/vivim_junts/arxius/3_vjunts_bar__restaurant.pdf

http://llengua.gencat.cat/web/.content/documents/publicacions/vivim_junts/arxius/5_vjunts_mesos_estacions.pdf

Visual dictionary:

https://drive.google.com/file/d/0BwoVbhjGjAKlNkdvRWF6WnlxRURGNk15b0oyUmJVdVJsU1VZ/view

Basic conversation guide:

https://drive.google.com/file/d/0BwoVbhjGjAKlOXBxUlRxWHNNYTBBUG5ETE1jY1BuZjBlTzhZ/view

Activities:

http://www.edu365.cat/eso/muds/catala/mudsmots/nomcosa1/01_2.html

http://www.intercat.cat/speakcat/itineraris/1#unitat3

4.5 EVALUATION – LEVEL 1

To know:

- The diversity of language and communication depending on the context.
- Language functions.
- Main characteristics of the different styles and registers of the language.
- Vocabulary.
- Grammar.

To know how to:

- Express yourself orally in multiple communicative situations.
- Understand different types of texts; collect and process information.
- Express yourself in writing in multiple modalities, formats, and media.
- Listen with attention and interest, controlling and adapting your response to the requirements of the situation.

To know how to be:

- Willing to critical and constructive dialogue.
- Recognize the dialogue as primary tool for coexistence.
- Interested in interaction with others.
- Aware of the impact of language on other people.

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VIRTUAL
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DIDACTIC UNIT 5

DEVELOPMENT OF CRITICAL THINKING AND THE COMPETENCE OF LEARNING TO LEARN

COURSE FOR ADULTS

5.1 DESCRIPTION OF THE TOPIC – LEVEL 1

5.1.1 WHAT IS CRITICAL THINKING? – LEVEL 1

The concept of critical thinking is not standardized; there is a wide variety of ideas on it, in fact, one cannot establish a general approach that encompasses what critical thinking implies. This is because critical thinking encompasses the whole history of philosophy, since most of the authors in the history of philosophy, to a lesser or greater extent, have aimed their efforts and knowledge towards a method that would allow them to reach a reliable knowledge.

It is necessary, therefore, to specify a definition for what critical thinking means, from our point of view, to develop on the concept. To put it simple: to our understanding, critical thinking is a search for knowledge through reasoning skills, problem solving, and decision making, that allows us to achieve the desired results with the most effectiveness. In this line of thought, but in greater detail, you can find the definition of Saiz and Nieto (2002).

Following the words of Richard Paul and Linda Elder (2005), we can say that critical thinking assumes a previous knowledge on two basic elements that we will see throughout the subjects of this course: “on the one hand the knowledge of the most basic structures of thought (the elements of thought), and on the other the most basic intellectual standards of thought (universal intellectual standards). The key to releasing the creative side of critical thinking (the true improvement of thinking) is to restructure thought as a result of analyzing and evaluating it effectively”.

However, beyond these definitions, and sometimes without having them in mind, surely all of us has heard someone (politicians, civic leaders, educators, journalists, business people…) talk about critical thinking, and we have not only asked ourselves what it means, but also why it is so useful and important.

We can state, since it is part of our nature, that everyone thinks; but very much to our regret, this alone can be arbitrary, distorted, biased, uninformed, or prejudiced. However, our quality of life and what we produce, do, or build depends, precisely, on the quality of our thinking. Based on this, the guide developed by the Foundation for Critical Thinking (2003) states that poor quality thinking will have repercussions both economically and in quality of life.

Returning to the definition of the concept, we can see the logic of expressing critical thinking as that way of thinking -about any subject, content or problem- in which the thinker improves the quality of his thought by seizing the inherent structures of the act of thinking and subject them to intellectual standards.

Finally, as an inherent characteristic of it, we can say that when critical thinking also internalizes the thinker’s skills, it becomes self-directed, self-disciplined, self-regulated, and self-corrected.

5.1.2 CRITICAL THINKING AND THE COMPETENCE OF LEARNING TO LEARN – LEVEL 1

We start from the base and the conviction that, nowadays, the function of training is not so much about teaching a series of knowledge related to certain subjects and fields, but rather in teaching to learn, enhancing in those interested the acquisition of a certain degree of intellectual autonomy. This is not only about acquiring cognitive skills in addition to the logical assumption of knowledge and skills, but rather, about the development of the learning process: we do not limit ourselves to receiving knowledge, we also participate in its construction.

Undoubtedly, by acquiring these forms, the individual becomes the real protagonist of his/her own learning process, by achieving skills that will add benefits to allow them to face the challenges and circumstances of their own lives.

From our point of view, and with the definition from the first point, the key to the connection between learning and critical thinking is the one proposed by Richard Paul and Linda Elder (2005): “The only ability we can use to learn is human thinking. If we think well while we learn, we learn well. If we think badly while we learn, we learn badly”.

Without critical thinking guiding the learning process, learning by memorization becomes the primary resource, in which students forget about the very reason they learn, and rarely internalize ideas of power.

It is through critical thinking that we are able to acquire the knowledge, understanding, introspection, and skills from any part of the contents; in order to fully learn them, we must think analytically and evaluatively within them. Thus, critical thinking provides tools to both internalize contents and evaluate the quality of said internalization, it allows us to develop the system from our mind in which we take contents, internalize them, and use them in reasoning through real problems and issues.

On the other hand, the organization and management of contents is paramount for the permanent learning that takes place throughout life and in different formal, non-formal, and informal contexts. The skills necessary for this require reflection and awareness of these processes, meaning that assuming the processes as an object of knowledge and learning to execute them properly is precisely the characteristic that makes the skill of “learning to learn” so important.

This involves the ability to start, organize, and persist with learning, and requires knowing and controlling the learning processes themselves to adjust them to the schedule and demands of the tasks and activities that lead to learning. The skill of learning to learn ultimately results in an increasingly effective and autonomous learning.

If we understand that the “what” of education is the content that we want to acquire, the “how” would therefore be the learning process itself. In this sense, critical thinking is the

"how" to obtain all the educational "what". However, most teachers focus education on "covering content" within the schedule, instead of learning how to learn.

We believe that the essential role that critical thinking plays in the acquisition of knowledge has to be well understood. In the words of Swiss pedagogue and educator Johann Heinrich Pestalozzi: "thought directs man towards knowledge. You can see, hear, read, and learn what you want, and as much as you want; but you will never know anything about it, except for what you have thought about; about that what, because you have thought about it, you have made it property of your own mind".

In order for the learning process to be effective, the learner must know and include in his/her dynamics what intellectual work is, how the mind works when it is intellectually engaged, what means taking ideas seriously and taking ownership of said ideas.

Lastly, we can say that both critical thinking and the skill of learning to learn are enhanced by setting realistic goals in the short, medium, and long term. When these goals are reached, the perception of self-efficacy and confidence increases, and with this, the learning objectives also increase progressively. People must be able to rely on previous life experiences and learning in order to use and apply new knowledge and skills in other contexts.

5.2 OBJECTIVES – LEVEL 1

First place, it is necessary to describe the competence to be studied in this course, to be able to see its connections and causal relationships with the concept of critical thinking, and thus determine the objectives that they share.

The European Union's Committee for Education considers learning to learn as a basic skill with a great influence on all other ones. Their definition of it is the following: "The ability to continue, persist, and organize one's learning, which entails an effective control of time and information, individually and in groups". Or simply put: to be able to organize and manage your own learning.

Learning to learn therefore means having the skills to start learning and being able to continue doing so in an increasingly effective and autonomous manner, according to your own objectives and needs. This can be useful for purposes such as setting goals and objectives, identifying the best ways and means to achieve them, and to monitor and evaluate the learning process itself; knowing your own learning skills and the optimal use of time, information and learning opportunities; developing more thoroughly the experience and competences already acquired; being able to apply what you have achieved to personal, professional, and social life; and knowing how to increase self-motivation and self-confidence.

However we can distinguish two fundamental dimensions within this competence: on the one hand, the acquisition of awareness of your own potential and flaws, which involves developing the skills involved in learning, such as attention, concentration, memory, understanding, and linguistic expression among others; and achieving maximum and personalized performance from them using different strategies and techniques: study, observation, cooperative work, tasks, and problem solving.

On the other hand, to have a feeling of personal proficiency, which results in motivation, self-confidence, and a desire for learning. All of this involves the development of skills to obtain information and, especially, to turn it into self-knowledge.

Without repeating what previously stated on critical thinking, we believe that it should be considered a tool at the service of critical individuals that is acquired through work and perseverance, so that it isn't an innate quality, but one that is achieved only with motivation and effort. The way of acquiring it is through an educational process, and it is on this basis that we have to understand its link to the skill of learning to learn, joining in what we could call "the competence of learning to learn and to think".

This formulation, far from being ours, is already included in Article 6.2 of Decree 175/2007, which establishes the Basic Education curriculum in the Basque Country, and in fact defines the ability of "learning to learn and to think" as follows: "Learning to learn and to think, learning to understand, generate, and evaluate information, to make decisions and solve problems, learning work and study habits, learning strategies, and learning how to apply methods of scientific and mathematical knowledge to identify and solve problems in the multiple fields of knowledge and experience".

5.3 TRAINING CONTENTS TO DEVELOP CRITICAL THINKING – LEVEL 1

5.3.1 CHARACTERISTICS OF A PERSON WITH CRITICAL THINKING – LEVEL 1

The students that internalize the standards of critical thinking, which we will see in depth in the evaluation section, will see that critical thinking involves both abilities regarding effective communication and problem solving, and a commitment to overcome their natural egocentric and socio-centric tendencies.

By internalizing this skill, people in the learning process will become self-directed, self-disciplined, and self-monitoring thinkers. They will develop their abilities to:

- Pose questions and essential problems (formulating them clearly and precisely).
- Collect and evaluate relevant information (using abstract ideas to interpret it effectively and fairly).

- Arrive at well-reasoned conclusions and solutions (comparing them with relevant criteria and standards).
- Think openly within alternative thought systems (recognizing and evaluating, as necessary, their assumptions, implications, and practical consequences).
- Communicate effectively with others when looking for solutions to complex problems.

In summary, the standards for critical thinking include indicators to identify the extent to which it is used as the main tool for learning. These standards indicate important thought habits that show in every dimension and mode of learning: for example when a person reads, writes, speaks, and listens, as well as in professional and personal activities.

A critical and exercised thinker:

- Formulates problems and vital questions, with clarity and precision.
- Accumulates and evaluates relevant information and uses abstract ideas to effectively understand that information.
- Arrives at conclusions and solutions, testing them with relevant criteria and standards.
- Thinks with an open mind within alternative systems of thought; recognizes and evaluates, as necessary, assumptions, implications, and practical consequences.
- Communicates effectively when conceiving solutions to complex problems.

Lastly, in the words of Campos (2007), a good critical thinker has the following features:

- Rationality: use of reason based on evidence.
- Self-awareness: recognition of premises, prejudices, biases, and points of view.
- Honesty: recognition of emotional impulses, selfish motives, tendentious purposes, etc.
- An open mind: evaluation of the different points of view, accepting new alternatives but in light of the evidence.
- Discipline: being precise, meticulous, comprehensive, and exhaustive, not yielding to irrational manipulation and claims, and avoiding hasty judgments.
- Judgment: sees the relevance and/or merit of alternative premises and perspectives, and the extent and weight of the evidence.

5.3.2 PROCESSES TO BUILD AN INDIVIDUAL OPPINION – LEVEL 2

Learning processes do not automatically generate critical thinking per se. Many times it is assumed that thought, including critical thinking, develops in people naturally, without any strategies or plans for it. After all, we could believe that thinking is something people do without even intending to do it, in a natural way, and this way one could assume that people will learn and turn into good thinkers just through the learning processes. However, the achievement of skills for critical thinking needs support, intentionality, and an action strategy.

Education as a whole has the task of not only teaching multiple subjects and knowledge, but also ensuring that the person who is part of the learning process acquires the capabilities to generate their own thoughts. In the opinion of Saiz and Rivas, “it is difficult to have a more ambitious goal than teaching how to think critically”.

Returning to the idea defined in the first section, critical thinking implies mastering ideas and being able to generate own judgments. Consequently, a critical thinker will be capable of thinking for himself, as simple and complex as that is. Only from here is it possible to develop the systemic capability to understand and evaluate the ideas and arguments of others as well as your own. If this is achieved, we’ll become people with the ability to think effectively, solve problems, and make decisions in our lives and our society, adapting to our globalized, complex, multicultural, and ever-changing environment.

Based on the previous approach and deepening on what guides this whole section, we propose below didactic methodologies of, in our opinion, great use for the promotion of this critical thinking that we have defined as a thesis for the development of a proper personal opinion.

For this, we reference the study concerning this subject reflected in the master's degree final draft "Promotion of critical thinking" by Ernesto Soria, from University of Almeria[1].

PBL, or problem-based learning:

Facing the traditional explanation of a subject and subsequent planning of an activity on it, this learning method poses a problem to the student, from which they must find out and understand its content and find an appropriate solution for it. The benefits this offers are:

- It exercises real problem solving.
- It exercises decision making.
- Teamwork.
- Improving communication and reasoning skills.
- It exercises and develops values like tolerance and attitudes such as accuracy and review.
- Awareness of one's own learning.
- The development of learning strategies.
- Self and lifelong learning.

Inverted classroom:

The works of reading, documentation, and search of information are done at home, and the classroom is used to investigate, deepen, practice, solve doubts, and discuss the subject studied. This method's advantages are:

- A better adaptation to the work pace of people involved in the learning process.
- The student can repeat learning as much as needed.
- The student can pause as needed, according to his/her learning pace.
- It saves precious time for other deepening activities, because it doesn't use time for the explanation of contents.
- It improves the attitude of the person towards the subject and towards their own learning.
- The teacher becomes a learning guide, not just a mere transmitter.

1 http://repositorio.ual.es/bitstream/handle/10835/6067/10281_TFM%20Soria%20Estevan%2C%20Ernesto.pdf?sequence=1&isAllowed=y

- The teacher isn't the center of the process, the student is.
- Allows the evaluation of the whole learning process, not just its result.
- The student feels responsible for their own learning.

Case method:

Students are introduced to real-life experiences and situations, from which they themselves will build their learning in a context that brings them closer to their real environment. They are active participants in a collaborative and democratic group process to discuss meaningful decisions. The teacher provides a series of data needed for the analysis of the case, and students work on it afterwards. Its main advantage is that students use skills essential for real life, such as observation, listening, diagnosis, decision making, and participation in group and collaborative processes.

Learning by discovery (heuristic learning):

With this method the person does not receive contents from a passive position, but discovers instead the concepts and relationships between them by him/herself, and reorders and adapts them to his/her cognitive scheme. This way, the contents are not explained in a finished form, but a goal to be achieved is displayed, and the teacher serves as a guide along the path of discovery, while also providing the students with the necessary tools to discover themselves what they have to learn. Its usefulness lies in the fact that it endures the acquisition of a really significant knowledge, since it links preexisting knowledge with new one, while also fostering research and rigor habits in the students.

Socratic discussion:

This method fosters a teaching accompanied by critical thinking. Its main characteristic is that it eliminates pretensions of certainty, to achieve a deeper understanding of the subject studied. Thus, it intends to question everything without leaving any possible situation without investigation. It eliminates the idea that everything is already known about a certain topic, and it always looks for all possible lines of knowledge on it. The teacher has a subordinate role, and the students feel comfortable, being able to speak openly, since everyone, including the teacher, has a humble and modest attitude. The learning process can start with a question from the teacher: the student answers from his preconceived perception of the topic, then the teacher continues to ask until the student says something that contradicts his/her first answer, so they return to the first question. At this point the student is less sure that his/her answer was right, and he/she is forced to start a critical thinking process that questions his/her preconceived ideas.

Its main advantage is that it uses the very points made by the people participating in the learning process to convince them that they know less than they thought, opening their minds to new possibilities that they had not previously considered.

5.3.3 CRITERIA TO EVALUATE REASONING – LEVEL 2

In the opinion of Richard Paul and Linda Elder (Foundation for Critical Thinking, 2005), when wanting to verify the quality of reasoning on any issue, the universal intellectual standards should be used. Thinking critically implies mastering these standards, and we can see how they are also used when judging a thought process by reasoning people. When people internalize these standards and use them regularly, their thinking becomes clearer, truthful, accurate, relevant, profound, extensive, and fair.

The main universal intellectual standards are:

- **Clarity**: understandable, its meaning is clearly seen.
- **Truthfulness and certainty**: free of lies or distortions, true.
- **Accuracy**: accurate to the right level of detail.

- **Relevance**: related to the subject in hand.
- **Depth**: contains complexities and multiple interrelations.
- **Extension and Amplitude**: encompasses multiple points of view.
- **Logic**: the parts make sense together, there are no contradictions.
- **Importance**: focuses on what is important, not trivial.
- **Justice**: justifiable, not for personal or unilateral profit.

In order to help learn these, any teacher or trainer in any field of education must ask the questions that spark in people the ability to think critically; questions that cause the recipient to take responsibility for their thinking; questions that, if asked regularly, become part of the questions they need to ask. Thus, the final goal is to merge these questions in the thinking process of the students until they become part of the inner voice that will guide them to an increasingly better reasoning process. Here are some of the questions for each of those universal standards (source: http://blogs.leeward.hawaii.edu/coc/is/):

These questions, in order to be effective, must be applied to what the authors Richard Paul and Linda Elder call “elements of reasoning”. These state that at least eight basic structures are present in all thought: “whenever we think, we do it with a purpose, within a point of view, and based on assumptions that lead to implications and consequences. We use concepts, ideas, facts, experiences, and theories to interpret data, answer questions, solve problems, and clarify issues”.

The eight elements on which all thought can be analyzed are:

Clarity	Could you elaborate further? Could you give me an example? Could you illustrate what you mean?
Accuracy	How could we check on that? How could we find out if that is true? How could we verify or test that?
Precision	Could you be more specific? Could you give me more details? Could you be more exact?
Relevance	How does that relate to the problem? How does that bear on the question? How does that help us with the issue?
Depth	What factors make this a difficult problem? What are some of the complexities of this question? What are some of the difficulties we need to deal with?
Breadth	Do we need to look at this from another perspective? Do we need to consider another point of view? Do we need to look at this in other ways?
Logic	Does all this make sense together? Does your first paragraph fit in with your last? Does what you say follow from the evidence?
Significance	Is this the most important problem to consider? Is this the central idea to focus on? Which of these facts are most important?
Fairness	Do I have any vested interest in this issue? Am I sympathetically representing the viewpoints of others?

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1. **Purpose**: What is the purpose of the reasoning? Is this purpose implicit or explicit? Is it justified?

2. **Question**: Is the question clearly stated? Is it free from prejudice? Is it formulated in a way that reflects the complexity of the issue at hand? Is there a correspondence between the question and the purpose?

3. **Information**: Are there any experiences, evidence, and/or essential information quoted in the subject at hand? Is this information rigorous? Does the author deal with the complexities of the issue?

4. **Concepts**: Does the author clarify the key concepts? Are they used and applied appropriately?

5. **Assumptions**: Does the author show any sensitivity in what he takes for granted or presupposes (to the extent that these assumptions can be questioned)? Does the author use dubious assumptions without addressing the problems inherent to them?

6. **Inferences**: Is the line of reasoning by which the conclusions are reached clearly explained?

7. **Point of view**: Does the author demonstrate sensitivity to other points of view? Does he/she consider and respond to possible objections that other points of view may offer?

8. **Implications**: Is there any sensitivity shown towards the implications and consequences of the assumed position?

However, people participating in the learning processes do not only need to acquire intellectual capabilities (developed through the routine application of intellectual standards to the elements of reasoning), but also intellectual dispositions. In the words of the authors, these attributes are essential for the excellence of thought, since they determine the level of perspective and integrity with which people think. They state, therefore, that the “main goal of critical thinking is to support the development of conceptual characteristics or dispositions”. These include:

- **Thought justice**
- **Intellectual empathy**
- **Intellectual humility**
- **Intellectual perseverance**
- **Intellectual integrity**
- **Intellectual integrity**
- **Intellectual autonomy**
- **Trust in reason**

5.3.4 ACQUIRING INFORMATION THROUGH INFORMATION AND COMMUNICATION TECHNOLOGIES (ICTS) – LEVEL 2

As we analyzed in the previous section, information is one of the eight basic structures of thought, which works in relation to the others. In order to understand any content, human communication, book, film, or message from the mass media, a person must not only understand the "raw information" that it contains, but also its purpose, the questions that it poses, the concepts that structure said information, the assumptions made on it, the conclusions that are obtained from it, the implications that follow those conclusions, and the point of view that informs them.

The fact of having a piece of information is not enough: one must be able to evaluate it in terms of its clarity, truthfulness, precision, relevance, depth, amplitude, logic, and importance.

In a scenario in which the culture of information is a growing concern for educators, the development of a constellation of skills linked to both education and critical thinking becomes necessary. Without any competition in the culture of information, people cannot and will not know which information to accept and which to reject; it is critical thinking that can provide the tools to evaluate such information.

It is important to know that our mind is comprised not only by the information we seek, but by the information that "seeks us", and in this sense, also by the one we reject. In our case, when obtaining information through ICTs, in order to minimize the internalization of prejudices and propaganda, people need realistic information on how mass media, social networks, or other communication and information channels work by selecting, creating, and "packaging" information for mass consumption.

We must have in mind that -when talking about mass media- their main goal is not to educate people, but to obtain a profit. They maximize their profits by telling people essentially what they want to hear, and by manipulating the desires, prejudices, and loyalties of their audience. Mass media emanates sensitivity towards its audience, advertisers, the government, and the ratings of their competitors. They feed the passion of the masses towards what is new, sensational, and/or outrageous. This is not a conspiracy of any sorts, but a matter of economic interest.

Within any society or culture, the dominant points of view are granted a privileged place and command, so critical consumers who intend to get information from mass media have to be aware of this and look for other points of view from sources outside this dominance. Likewise, they understand that mainstream news is mainly concerned with showing these "news" in a way that validates the point of view of their consumers, not an objective and impartial one. People who write the news reports and those who decide which stories to include and exclude are both guided by the ideology, economic interests, conventions, and taboos of their owners and their public. Therefore, critical consumers read news critically, with a deep understanding

of the media; refusing to being misled by the public hysteria created by a dominant trend, not accepting what they hear or read in mainstream news until they have critically analyzed and evaluated it themselves, and not assuming that any point of view is true or false, whether it is the dominant or the minority one. We can say critical consumers routinely compare the points of view of mainstream news with those of alternate news sources.

When talking about social networks, we must be aware that they are becoming less and less "ours". We mean that, if at any time we, as "social majority", were able to surpass the traditional media and mark the political agenda in a decentralized way, nowadays bots, big data companies, and greater economic and political powers have a greater control of these networks.

To a certain extent, the algorithm of Facebook initially worked as a "click-democracy": it prioritized the contents that generated more "likes" and were "shared" more. But now, views are sold to the highest bidder, and messages are received individually with a segmentation adapted to individual profiles.

These kinds of techniques have already been used in much more important scenarios such as voting campaigns in many democratic countries. Viral fake news campaigns, the purchase of massive data bases, and micro-segmentation of users were one of the keys for Donald Trump's victory in the US, Jair Bolsonaro's victory in Brazil and, more recently, the emergence of the far-right party "Vox" in Andalucía (Spain).

"Science" magazine published a few weeks ago two articles on the propagation of fake news. This study, conducted in several fields ranging from politics to entertainment, revealed that, after grouping some tweets as true or false, false ones were "retweeted" much more and faster than real ones. On average, it seems that real news spreads six times slower than fake ones, and this showed to be caused by their emotional component, since -establishing a parallel with what we have seen in mainstream media- we tend to "re-tweet" news that fit our ideology and individual bias.

In words of Albert Díaz-Guilera (Professor in the Department of Condensed Matter Physics of the University of Barcelona, Researcher in the DataScience @ UB group, and Director of the Complex Systems Research Institute), "this study has analyzed a large amount of data over a long period of time, which allows us to extrapolate its results. We tend to keep what we call information bubbles, following those who give you the information you want to read, and we usually do not leave this bubble".

Does this mean that those who understand clearly this very human behavior of accepting what adapts to their convictions can manipulate news in social networks to achieve certain economic, political, or social purposes? Professor Díaz-Guilera, when asked about this, answer without a doubt "Yes, there are companies dedicated to manipulate information that use these types of techniques to create marketing campaigns and better position certain products; or like Cambridge Analytical data from Facebook show, end up supporting a US presidential

candidate or attacking another. (...) the purpose of fake news is to create opinion states beyond their verisimilitude or reality".

But this does not mean that we have to leave the digital sphere completely, we just have to be aware of its limits and strive to overcome them. After all, social networks can only be truly "social" if they are the reflection of an integrated and mobilized society, capable of putting them at the service of collective demands.

In conclusion, we can say that if we want people to develop a culture of information, they will not be able to do it without previously having developed critical thinking skills.

https://www.eldiario.es/tribunaabierta/fake-news-face_6_848375170.html

https://www.publico.es/sociedad/internet-fake-news-ganan-goleada.html

5.3.5 EXAMPLE CASE STUDIES – LEVEL 3

In recent years we have witnessed a growing proliferation of fake news, as well as its ease to spread through the usual social networks (*Facebook*, *Twitter*) or through messaging apps (*WhatsApp* or *Telegram*).

Fake news, is a phenomenon against which authorities are making great efforts, given the damage they can do to the general population. They are false information deliberately created with the intention of deceiving and/or misinforming, massively disseminated, and they also tend to create confusion, influence personal decisions, and damage or give value to the image of specific people, entities, or institutions.

According to a recent study by the MIT (Massachusetts Institute of Technology) published by the BBC, 86% of people have difficulties when distinguishing fake news from true ones, and this study also showed that false information is "retweeted" 70% more than real one.

However, if some basic points are taken into account, we can quickly identify fake news and stop false information that can manipulate us generating an unnecessary alarm. To easily recognize fake news:

1. First look at the signature; fake news are usually anonymous, do not cite any sources and do not indicate a date, but they urge to spread the message.
2. If you do not recognize the source or medium, do not trust it; make sure the news is written by a trusted source. Fake news websites often simulate the website or URL of prestigious media, but if it is unknown, check the "information" section for more details.

3. If, despite seeming non-believable, it has the signature of a recognizable media institution, it becomes necessary to pay attention to the text itself. If fake, it will usually contain spelling mistakes and will abuse capital letters and exclamation marks, something that would not happen in official information or a recognized media. So, if the format is unusual, you have reasons to doubt.
4. Another of the clues that helps us identify false information is the "exclusivity" that some media sometimes seem to have: if it is important news, it should appear in more than one media or channel, even if it is said to be exclusive. So, suspect if it doesn't show up in more than one media.
5. Real news usually emerges right after the events, but fake news is written days later or is dateless. People usually forward news from months or years ago thinking that they are current. So always pay attention to the date.
6. Pictures often give clues. Fake news usually contains manipulated images or videos, or these are out of context.
7. Lastly, be guided by your common sense, and do not share something that would not be signed by yourself and seems too good to be real. Also, keep in mind that family and friends can also be wrong and send you fake news, just make a minimal contrast and you'll be able to avoid many problems.

Let's take a look at this case as an example:

- Manipulated picture on the yellow-vest movement riots in France (December 2018).

https://www.eluniversal.com.mx/mundo/la-fotografia-falsa-sobre-los-disturbios-de-los-chalecos-amarillos-en-francia

Thousands of people spread in Spanish, English, and French a montage of two pictures taken during the December 2018 riots of the "yellow vest" movement in Paris, followed by the sentence "perspective matters".

The criticism to the coverage of the protest made by mass media is legitimate, but this example from hundreds of tweets is not the best. Its objective was to denounce the manipulation made by the media, but both images were taken in two different days and places, it is unknown if photojournalists were involved, and no image of the skateboard in flames with the Arc de Triomphe in the background was taken by the AFP.

According to the information revealed by Mexican journal site "El Universal", the first picture dates from December 1st and was taken by Karine Pierrre, photographer of Hans Lucas agency. The second picture was taken on December 8th by a journalist from Le Point, and published on that magazine's Twitter account.

Although each one of the pictures making the montage was taken in a different spot (Av. Foch and Av. Friedland), exactly in opposite sides of the Arc de Triomphe, the montage displays them with the intention of creating a relation between them, since the point of view the journalists have in the second picture would look similar to the first one.

The montage led to a site writing the headline: "This is how the photographers covering the protests in Paris turn a small bonfire into hell". The site accused AFP of manipulation, although AFP had not taken any of those pictures.

We can therefore speak of a montage with a malicious and false intention. It was Mexican and French journalists who verify the montage through elements in the pictures, such as: 1/ the public lights, 2/ the traffic light, 3/ the barrier at Traktir street on the right.

Also, if we take as reference some of the clues mentioned earlier to recognize fake news, we see that some also show up: an absence of sources and dates in the editing, news published days after the facts, accompanied by a montage of pictures taken out of context, and a format designed to cause an emotional response (of surprise and rejection in this case).

5.4 ACTIVITIES – LEVEL 3

5.4.1 CASE STUDIES – LEVEL 3

After the previous example, we will show now a series of news to analyze and compare. This exercise is proposed to help build your own knowledge, from the process of reflection and contrast of different sources and perspectives from journals, TV channels, radio stations, etc.

Based on the clues listed above to help identifying fake news, do your own research to identify if the following are real or fake news, and why:

- **Ada Colau offers jobs to… all immigrants in the Aquarius! –** https://www.mediterraneodigital.com/espana/politica/ada-colau-ofrece-contratos-de-trabajo-a-todos-los-inmigrantes-del-aquarius.html

- **A man is attacked in Almería for being a "Guarida Civil" (Spanish military police) wearing a shirt with the Spanish flag –** https://okdiario.com/espana/2018/12/28/agreden-hombre-almeria-ser-guardia-civil-llevar-polo-bandera-espana-3522323#.XCZA9Y0IOQQ.twitter

- **"Podemos" (leftist party in Spain) will prohibit the tradition of "Moors and Christians" to not offend Islam –** https://www.mediterraneodigital.com/portada/nacional/edicion-comunidad-valenciana/alicante/podemos-prohibira-la-tradicion-de-los-moros-y-cristianos-para-no-ofender-al-islam.html

- **Pablo Casado: "There cannot be *papers* for everyone and Spain cannot welcome millions of Africans" –** https://www.larazon.es/espana/pablo-casado-no-es-posible-que-haya-papeles-para-todos-DN19275969

- **Feminists want to ban spanish *flamenco* guitar: "playing guitar is like raping" –** https://www.mediterraneodigital.com/feminismo/feminazis-2/las-feministas-piden-prohibir-la-guitarra-espanola-tocar-la-guitarra-es-como-violar.html

- **Denounced for carrying a handbag with the acronym ACAB; police felt insulted –** https://www.abc.es/espana/madrid/abci-denunciada-llevar-bolso-siglas-acab-y-creer-policia-insultaba-201605231916_noticia.html

Look at the solutions below only after having done your own research and built your opinion!

Solutions:

- **Fake** - https://maldita.es/bulo/no-ada-colau-no-ha-ofrecido-contratos-de-trabajo-a-todos-los-inmigrantes-del-aquarius/
- **Fake** - https://maldita.es/maldito-bulo/no-no-han-agredido-a-un-hombre-en-almeria-por-ser-guardia-civil-y-llevar-un-polo-con-la-bandera-de-espana/
- **Fake** - https://pagellapolitica.it/bufale/show/251/foto-fuori-contesto-il-migrante-che-urina-sul-sedile-del-treno
- **Fake** - https://www.eldiario.es/escolar/bulos-Pablo-Casado-inmigrantes-refugiados_6_798330175.html
- **Fake** - https://maldita.es/bulo/no-las-feministas-no-han-pedido-prohibir-las-guitarras-porque-tocarlas-es-como-violar/
- **True** - https://www.elplural.com/sociedad/archivada-la-denuncia-contra-la-joven-con-un-bolso-de-gatos_81499102

*As an appendix to this section, we think it would be interesting to list a few of the web pages that work to spot fake news, from different countries:
https://maldita.es/

https://www.snopes.com/

https://www.bufale.net/home/

Lastly, another type of activities that could be put into practice to work on these cases that we leave in your hands are:

• Moral dilemmas: a brief narration is introduced in this dynamic with a problematic situation that raises a conflict of values. The people involved in the learning process should position themselves and answer what they would do in that situation according to their moral values. In this activity, participants will be able to reflect on their own values, decide what their final action will be and argue why.

• Debates: a debate may arise from the reading of a book, an article, viewing a video, a conflictive situation, etc. The debate allows the people involved in the activity, after analyzing the information, to argue the position they have chosen.

5.5 RESOURCES – LEVEL 1

PDF – Critical Thinking Competency Standards (Richard Paul and Linda Elder).

http://www.criticalthinking.org/resources/PDF/CT-competencies%202005.pdf

5.6 EVALUATION – LEVEL 1

Every educational level and scope should develop the competence of learning to learn. If learning is arranged in a way that favors the development of techniques to learn, organize, internalize, and retrieve information, this essential competence will be favored, and its development allows people to progress and integrate new knowledge.

Developing this competence means being aware of what one knows, what is necessary to learn, and how to learn it, in order to satisfy personal objectives. It requires knowing your own strengths and weaknesses, taking advantage of the first, with motivation and will to overcome the later, progressively increasing the confidence to face new learning challenges.

To summarize, learning to learn involves the awareness, management and control of your own abilities and knowledge from a sense of competence or personal effectiveness, and includes the efficient management of a set of resources and techniques of intellectual work.

The purpose of evaluation is to help improve and learn to develop learning strategies. It is part of the “learning to learn” process. The evaluation has to provide information about what the person knows, what they think, why they think as they think, and what their learning process is like. So, evaluation also allows teachers to understand the learning process and way of thinking of their students, and helps them understand how to review and improve what they do.

VIRTUAL
INCLUSIVE
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PLATFORM

DIDACTIC UNIT 6

DEVELOPMENT OF INITIATIVE, ENTREPRENEURSHIP, AND SOCIAL AWARENESS

COURSE FOR ADULTS

6.1 DESCRIPTION OF THE TOPIC – LEVEL 1

In this didactic unit we will work on three concepts: personal initiative, entrepreneurship and social awareness. The relationships between them will allow us to treat them in a transversal and interrelated way through different approaches and contents, instead of isolated areas.

Entrepreneurship and personal initiative are found among the basic competences in the curriculum of European education systems, although with some variations in terms of its denomination.

Its inclusion is justified by its contribution to integral education, developing a series of competences that people participating in training processes will need throughout their lives, either for personal, professional, and/or social fulfillment. In this sense, entrepreneurship, personal initiative, and social awareness can be considered as essential competences among the basic ones.

If we do a bit of historical review, and based on the materials created by the education department of the Basque Government "Competence for entrepreneurship and personal initiative; theoretical framework" [1], we can see that, in late nineties of the twentieth century, the Organization for Economic Cooperation and Development (OECD) conducted a study in twelve countries to determine which were the necessary competences for the progress of life and the improvement of society's functioning.

The results of the "DeSeCo2 Report" (Definition and Selection of Competences) were published in 2001, establishing three categories of competences, and among them those which allow personal autonomy, that is, those needed to understand the context in which we act and decide, create and manage life plans and personal projects, and defend and state our own rights and interests.

Likewise, the Council of Lisbon established in the year 2000 a frame of reference to define the basic qualifications that lifelong learning should provide, and this capability related to entrepreneurship is found within it.

The Councils of Stockholm (2001) and Barcelona (2002) also established the objectives to be met by European education and training systems, and defined a work program called "Education and Training 2010". To support this program, the document "Key competences for lifelong learning" (2004) was drafted; in it, the EU defines the eight key competences, among which is "entrepreneurial spirit" or entrepreneurship, defined as "*The individual ability to*

[1] http://ediagnostikoak.net/edweb/cas/materiales-informativos/ED_marko_teorikoak/Autonomia_e_iniciativa_personal.pdf

transform ideas into actions. This is related to creativity, innovation, and risk assumption, as well as the ability to plan and manage projects to achieve objectives".

Based on this definition, it is understood why "entrepreneurial spirit" is considered as the precursor of the competence of autonomy and personal initiative.

In Spain, the Ministry of Education and Science implemented the proposal made by the EU in the Organic Law of Education (LOE) and its consequent Royal Decrees of Minimal Teaching (2006), in which eight basic competences are identified, including autonomy and personal initiative.

Learning to be an autonomous individual also means learning how to thrive in your personal, professional, and social levels in an increasingly complex world. In the new, competence-based educational approach, this requires the development of a series of knowledge, skills, abilities (facing problems, making decisions, working as a team, etc.), attitudes, and values (perseverance, solidarity, creativity...) that do not appear spontaneously nor through the mere acquisition of information or knowledge. As A. Escamilla (2008) points out, "*such complexity demands and justifies an orderly, planned, gradual, and consistent work, from the first stages of schooling; one that has to be coupled with family action (and not to mention with what should be social demands and opportunities)*".

This competence implies "*being able to imagine, undertake, develop, and evaluate actions or individual or collective projects with creativity, confidence, responsibility, and critical sense*". It is, therefore, fully linked to the individual's integral training, as are the other basic competences.

This is a complex competence, and also the one that has faced the greatest changes, not only in its definition, but also in the curricular elements that make it up. According to the curriculum defined by the Ministry of Education and Vocational Training of the Government of Spain, the knowledge required by this competence includes "the ability to detect the existing opportunities for personal, professional, and commercial activities. It also includes broader aspects that provide the context in which people live and work, such as understanding the general lines that govern the functioning of societies, unions, and business organizations, as well as economic and financial ones; organization and business processes; the design and implementation of a plan (management of human and/or financial resources); as well as the ethical position of organizations, and the knowledge of how these can also be a positive impulse".

It is exactly this theoretical approach to the concept of competence with which we analyze the need to approach the subject from a perspective that addresses social awareness as part of

the content, to not ignore in the analysis certain elements that are, in our opinion, inescapable to understand the environment.

On the other hand, the essential skills or abilities that this competence requires would be the following: "analysis capability; planning, organization, management, and decision-making capabilities; the ability to adapt to changes and solve problems; an effective communication, presentation, introduction, and negotiation; the ability to work, both individually and in a team; participation, leadership, and delegation capabilities; critical thinking and sense of responsibility; self-confidence, evaluation, and self-evaluation. All of these are essential to determine the strengths and weaknesses of oneself and of a project, as well as assess and take risks when these are justified (management of uncertainty and assumption and risk management)".

Lastly, regarding the development of attitudes and values, it requires: "a predisposition to act in a creative and imaginative way; self-knowledge and self-esteem; autonomy or independence; interest, effort, and entrepreneurial spirit. It is characterized by initiative, pro-activity, and innovation, both in the private and social life as in the professional. It is also related to motivation and determination when meeting objectives, both personal and established in common with others, including in the workplace".

6.1.1 INITIATIVE AS A MECHANISM OF OVERCOMING BARRIERS AND BUILDING AN OWN SELF – LEVEL 1

"**People are autonomous when they are able to set their own standards; when they are not governed by what they say, but by the rules they believe anyone should comply, whether they want to fulfill them or not**" *Immanuel Kant*.

Within this theoretical framework, the competence of autonomy and personal initiative is introduced, and the importance of its development is shown, so that our people are able to develop their full potential and face the challenges of the 21st century society in the best conditions throughout their formative processes

"Autonomy is one of the human qualities that offer us the possibility of acting for ourselves, therefore turning human beings into the unrepeatable protagonist of their lives" [2].
So far, we've talked about competence from a perspective comprised by two terms: autonomy and initiative. We must clarify, before continuing and deepening in the subject, that these show an asymmetric character, meaning that they do not have the same importance. When

[2] Ibíd.

talking about autonomy, we refer to a much broader concept that encompasses the second (initiative), and this makes it a framework concept, in which initiative is only one of its aspects.

However, given the importance of initiative as a power to transform ideas into actions, being one of the key aspects of this competence, we think that it is useful to specify the term to underline its importance.

Having an initiative implies to adopt a proactive attitude, choosing a direction through concrete actions, objectives, plans, and projects. This competence means "being able to imagine, undertake, develop, and evaluate actions or projects with creativity, confidence, responsibility, and a critical sense". Personal initiative –depending only on oneself– is self-confidence in action: the predisposition to take actions, create opportunities, and improve results without the need of an external requirement to push it, inspired by self-responsibility and self-direction.

This requires, among other things, from individual reflection capabilities and the exercise of responsibility both in the personal, social, and work areas, which will encourage the individual to be more and more autonomous.

It is an extremely ambitious competence; some authors describe it as a competence for life, since much of the person's development as a complete human being will depend on it. It affects learning in general, and personal and social development in particular, in ways such as:

- Powering self-awareness.
- Directing the user towards the search for alternatives and problems solving.
- Encouraging metacognition about one's learning, enabling reflection and decision-making with own criteria.
- Encouraging critical attitudes and empathy.
- Developing self-esteem, personal balance, and emotional control.
- Enabling a positive attitude towards change and entrepreneurship.

Another important dimension of this competence related to its more social aspect is constituted by the skills and attitudes related to projects leadership, which include: "self-confidence, empathy, spirit of improvement, skills for dialogue and cooperation, schedule and tasks organization, the ability to state and defend rights, and risk assumption. This dimension also includes, in different degrees, the ability to take initiative, to manage, promote, encourage, and motivate a working group effectively and efficiently to, above all, build trust

and confidence among the group" (competence for autonomy and personal initiative, theoretical framework, 2013).

The challenges to be faced in the development of this competence do not just cover the education and school framework: we need a whole social ecosystem for the development of this competence, in which the educational center, the families, the educational community, and the subject itself are integrating parts of a whole. These must work together in order to offer proper educational, formal, informal, and non-formal frameworks that enable the development of all basic competences (autonomy and personal initiative in this case), not only during the school years, but all throughout life.

6.1.2 ENTREPRENEURSHIP AS ACTION OF DOING OR ACCOMPLISHING – LEVEL 1

The competence "sense of initiative and entrepreneurship" implies the ability to transform ideas into actions, to acquire awareness of the situation in which to intervene or solve, and to know how to choose, plan, and manage with your own criteria the knowledge, skills, abilities, and attitudes necessary to achieve the intended goal.

This competence shows in personal, social, school, and work environments people deal with, allowing them to develop their activities and take advantage of new opportunities.

The acquisition of this competence is decisive in the training of future entrepreneurs, contributing to the culture of entrepreneurship as a whole. Thus, their training should include knowledge and skills related to "career opportunities and the world of work, economic and financial education, knowledge in business organization and processes, and the development of attitudes that lead to a change of mentality that favors entrepreneurship, the ability to think creatively, and to manage risks and uncertainty"[3]. These qualities and abilities, along with the inclusion of social values and/or awareness are also very important to favor the birth of a much broader type of entrepreneur, which, with a bit of vision of future, will allow them to apply to almost any area and propose innovative initiatives that collaborate in the transformation of society. We will talk about this in the next section, which is known as social entrepreneurship.

Let's focus now on the analysis of this competence in the workplace. The media nowadays floods us with the need in our society of entrepreneurs and entrepreneurship, able to imagine and develop new ideas or look for multiple solutions, with the ability to successfully carry

[3] Order ECD/65/2015 of the 21st January, describing the relationships between competences, contents, and the evaluation criteria of primary and secondary education.

these out, and with the perseverance not to abandon when they face the first difficulty. Thus, we are shown "entrepreneurs" as superheroes of our world, so we must be especially cautious and critical with the discursive majority of sources that are a big part of the related literature.

From our point of view, it is necessary to understand that the model of work organization and relationships that we knew is no longer viable for more and more portions of the population, especially in the western world. We are witnessing a change of era, which makes it necessary to question the nature of the change itself and the direction it takes.

Fordism, the model based on the assembly line, routines, mass production... were changes in the ways of work that led to a change in how we understand work and how to analyze the working class, which meant a new type of work and of worker. This change also helped us understand that work today is different from how it was in the 70s, so this new change also involves alterations that require a new analysis both for work and the working class.

We could say that this meant a new signification of the concept of work, and even of wage ratios themselves, since they are unable to ensure a set of certainties over time, either because of scarce supply of jobs, or because jobs do not even guarantee any future viability. We are thus presented with solutions that do not rely on objective truths, but rather have to do with different interpretations that benefit conflicting interests. One of those two outputs is the one offered by the figure of the entrepreneur.

Before a collective problem, the neoliberal system offers an individual response known as entrepreneurship, or what we are going to analyze as "the ideological model of the entrepreneur". This is not only a legal exit, it is a whole idea, a worldview about how collective perception is constructed.

Precisely, this states to "individually accept the imposed reality, while denying the social dimension of any issue (the real capability of society to intervene in the development of events). Since we are all products, everything is about knowing how to sell yourself, to compete tirelessly, and to be able to manage emotions and communication. Since employment is no longer what it was, nor will be what once was, because the imperative of competitiveness focused on consumption will not allow it, we must *emancipate ourselves from social gains*, as El Roto would say" Jorge Moruno (2015)[4].

In other words, we must have a positive approach to adapt ourselves to reality instead of delving into the reasons that made this reality possible and looking for political ways to alter work and wage relationships.

[4] Jorge Moruno (2015): "La fábrica del emprendedor. Trabajo y política en la empresa-mundo", *Akal*

The image of the entrepreneur has been portrayed to us as the only one who can rescue the situation we live in. They are the ones who generate employment, who provides innovation, and who appears to us as possibly the ones with the greatest look of rebellion. We can find a clear attitude against conformism in forums of entrepreneurs, encouraging disobedience and breaking monotony to escape from settled normality; what they call “to leave your comfort zone”.

Their image is associated to the concept of non-conformism, and is supported by the hopes of a whole generation that fights against everything that does not allow them to develop and reach the success they want, but the truth is that entrepreneur ideology is only non-conformist in appearance, and their simulacrum of rebellion is reduced to the way of adapting to the established norms, but never questioning it. You can discuss and incorporate in the “how” any innovation that allows to perpetuate the “what”.

This concept of entrepreneur goes beyond what we normally understand as an entrepreneur: a person who opens a business in a small garage with the idea of having a breakthrough into the market, etc. This is now a category that extends to the whole workforce, meaning that even if you are an employee in company, you have to be constantly proactive, to give your all to company. These are now called as “intrapreneurs”. In this way the company is everyone, but it is not of everyone; all for one and one for none.

Going back to what we stated at the beginning -not denying that we are in a change of era, but to question the nature of this change and its direction-, in face of an objective problem, its possible solutions do not rest on objective truths, precisely because there are interpretations that answer to conflicting interests. Thus, re-signifying the concept of entrepreneurship is essential to use it as a mean to transform the economic model, and not surrender it to financial elites.

We are of course not talking about rejecting entrepreneurship as a whole or being against individual undertaking, but we think it is necessary to modify the current meaning of this concept.

We understand that entrepreneurship is inherent to the nature of the human being; it is to build, to innovate, and it can transform society. In fact, it has served to progress both technically and socially, significantly improving our quality of life. Schumpeter, one of the economists theorized most about innovation, spoke of creative destruction as the engine of progress in the economic system. However, we believe that the neoliberal ideology has completely conquered the concept of entrepreneurship, and therefore we think that it is our collective responsibility to defend a different concept of entrepreneurship: social entrepreneurship.

6.1.3 INITIATIVE AND ENTREPRENEURSHIP IN THE SOCIAL SCOPE – LEVEL 1

We finished the previous section with the statement that we should change the current meaning of the concept of entrepreneurship, this is, to give it a new meaning and defend another type of entrepreneurship, separated from the individualist approach, that delves into its roots to remind ourselves and the whole society of what we are: an integrated society, not just isolated individuals.

We want, therefore, to avoid the message (often associated with entrepreneurship) of "**you** don't get a job because **you** do not have enough initiative, or **you** don't innovate enough, or **you** don't…" makes us the sole leaders of our successes, but also of our failures, forgetting the overall context, enhancing individualism and ultimately making us accept precariousness more easily.

We are not saying that social entrepreneurship being a panacea or the solution to all our problems, only that it provides an alternative: undertaking collectively, with solidarity, and with the awareness and will to transform our society. Therefore, we speak about understanding entrepreneurship as a means to innovate and change, but not as an end in itself.

Despite the growing interest on this area of knowledge, when we try to find a definition of entrepreneurship, and especially of social entrepreneurship, we find that there is no consensus on what this concept actually means.

If we resort to the Spanish Royal Academy of Language (RAE), it tells us that entrepreneurship is the action and effect of undertaking. To our knowledge, this implies that entrepreneurs decide from the beginning that their main activity will be to generate value; thus, social entrepreneurship will be a way of undertaking that goes beyond creating value or generating wealth, since its objective involves the creation of social values and the improvement in the quality of life of the groups of interest in the area where the activity is conducted.

But, if we delve in the origins of social entrepreneurship, we can see that this is not a new phenomenon or a trend, but that it is found from the beginning of the 15th century, and even more throughout the 19th and 20th centuries, always with the concern of addressing social problems.
Among other examples, we highlight:

- "Monte di Pietá": created in the 15th century in Italy, these ancient companies had the objective of offering a solution to the problem of usury.

• Savings banks: they were born in the 18th century to offer a system of compensation for savings to the working class, in order to improve their living conditions.

• Worker Cooperatives: born in the 19th century in England, they were based on associative self-employment, matching stock with work in the organization itself.

• Mutualism: born in the 19th century, this collective social movement sought to eliminate the control and monopoly that guilds maintained on certain trades and activities. The development of mutualism gave rise to religious, cultural, and philanthropic organizations.

• Foundations and associations: born in the 20th century, they offer practical solutions to social problems. Nowadays, many large corporations create their own foundations to reach society and be able to commit firmly and officially[5].

From these examples, noticing the common lines of their characteristics, we can say that social entrepreneurship acts as a ways to detect social needs, and gradually transforms the lives of individuals and society as a whole. Its main objective is the creation of social value.

This ability of the entrepreneur of contributing to the improvement of social welfare makes a part of the entrepreneurial process to be marked by differentiation through innovation, which is why Social Innovation is one of the objectives of the Europe 2020 Strategy. In this case, social innovation is defined as the search for new ways of meeting social needs not currently covered by the market or the public sector, or of fostering the behavioral changes necessary to solve the challenges of society, training citizens and generating social relationships and collaboration models, designing and implementing social practices that improve the people's quality of life (European Commission, 2010).

According to the Global Entrepreneurship Monitor (GEM) and its report of 20166, social innovation is defined as "the need to respond to a social challenge that integrates different visions (economic, social, environmental…) and involves a systemic change that favors interactions between agents (institutions, companies, civil organizations…) and groups of interest" (GEM, 2016: 123). For Nuria Alonso Martínez (2017), "it is all innovation developed by governments, companies, and individuals that contribute, through the use of new technologies and from a social and environmental vision, to improve the quality of life of our society and generates sustainable economic benefits".

Nonetheless, it is necessary to clarify that not all social entrepreneurship has to be channeled through a company, and not all human needs need to be "entrepreneurialized". For example:

[5] Sandra Escamilla Solano, Nuria Alonso Martínez y Losa, Paola Plaza Casado (2017): "Emprendimiento social", pág. 3. REVISTA DE ESTUDIOS DE JUVENTUD, December | nº 118. Seen in http://www.injuve.es/sites/default/files/2018/29/publicaciones/5._emprendimiento_social.pdf

[6] http://www.gem-spain.com/wp-content/uploads/2015/03/InformeGEM2016.pdf

gathering youth from a marginalized neighborhood to create a soccer league as a mechanism for integration and education in values is a social entrepreneurship activity that needs a lot of drive and perseverance, even risks, but does not need a new company to be founded. Opening a soup kitchen for people without resources in a village requires good levels of organization and a certain investment, but does not require any professional management or legal structure.

However, it is true that a great deal of collective social enterprise is carried out through a mercantile society or an entity or company of social and solidary economy[7]. At this point we must also define and limit this concept to not fall into possible confusions: being an entity or company with a social and solidary economy does not necessarily mean practicing a social enterprise. The form does not equal the function, even if it helps. There are social economy companies that start with an entrepreneurial attitude, and others in which entrepreneurship has a purely economic motivation or, despite having a clearly social purpose, do not incorporate any innovative or disruptive idea, which we consider necessary for the definition of social entrepreneurship.

In the same way, not all social entrepreneurship is a social and solidary economy, even though this economy fits naturally with the philosophy, needs, and aspirations of social and collective enterprises that want to channel their activity through a company. The best proof of this is that a large number of them are constituted as associations, labor societies, foundations, or cooperatives. The affinity between social economy and social entrepreneurship comes from sharing the purpose, more social than economic, of solving needs instead of maximizing benefits; but it also comes from the fact that the business organization created to channel a social entrepreneurship project is usually managed in a similar way to how social and solidary economy companies are.

As we said in the beginning, social entrepreneurship initiatives are collective, since they are a better way to add capabilities, reduce risk, and to achieve a more transformative impact. Furthermore, they are jointly led by their stakeholders, so it is no coincidence that many social and solidary economy practices have been references for entrepreneurship and social innovation. The very figure of the cooperative society is a key social innovation, as social welfare worker mutual societies were in its time, which inspired Social Welfare systems.

[7] De acuerdo con la ley de economía social (Ley 5/2011, de 29 de marzo, de Economía Social), podemos entender por economía social aquellas entidades en que predominan las personas y la finalidad social por encima del capital, que se gestionan de manera autónoma, transparente, democrática y participativa, que aplican resultados principalmente en función del trabajo aportado y del servicio o actividad realizada por los socios/as o por sus miembros, o si se requiere, con respecto a la finalidad social objeto de la entidad, que promueven la solidaridad interna y con la sociedad y que son independientes de los poderes públicos.

We do not want to end this section without referring to the lines of work that should be developed, from our point of view, to face future challenges. We believe that it is necessary to multiply social entrepreneurship initiatives and social transformative innovation in order to solve the most bleeding wounds that society and as humanity currently have: social inequality, poverty and exclusion, the socio-ecological crisis, and the progressive degradation of democracies.

We understand that social and solidary economy offers the ideal framework for projects of like these that need to become companies, but don't be mistaken, social entrepreneurs will not "save the world". We believe that we must also call for the emergence of political entrepreneurs, brave people who won't kneel before the dictates of the oligarchy and "the market" and promote public policies to support entrepreneurship and social economy instead of marginalizing them, denaturalizing them, or using them to dismantle the welfare state. But they should, above all and together with the mobilized social majority, support and promote a series of institutional innovations to change the structures and rules that bring us closer to a social and ecological abyss each passing day.

6.2 OBJECTIVES – LEVEL 1

With the intention of not repeating what was already described in the description of this subject, in this section we will refer to the skills or abilities as well as the attitudes and values that is necessary to address for the competence of initiative and entrepreneurship.

This competence requires the following essential skills or abilities: analytical capabilities; planning, organization, management, and decision-making capabilities; the ability to adapt to change and solve problems; effective communication, presentation, representation, and negotiation skills; the ability to work both individually and in a team; participation, leadership, and delegation capabilities; critical thinking and sense of responsibility; self-confidence, evaluation, and self-evaluation. This is all essential to determine the strengths and weaknesses of oneself and of a project, as well as to assess and take the needed risks when justified (management of the uncertainty factor and risk management and assumption).

On the other hand, it requires the development of attitudes and values such as: the predisposition to act in a creative and imaginative way; self-knowledge and self-esteem; autonomy or independence, interest and effort and entrepreneurial spirit. It is characterized by initiative, pro-activity and innovation, both in private and social life as in the professional. It is also related to motivation and determination when meeting objectives, whether personal or established in common with others, including the workplace.

Therefore, for the proper development of the competence sense of initiative and entrepreneurial spirit it is necessary to address:

- The creative and innovation capacity: creativity and imagination; self-knowledge and self-esteem; autonomy and independence; interest and effort; entrepreneurial spirit; initiative and innovation.

- The proactive capacity to manage projects: analysis capacity; planning, organization, management and decision making; Problem resolution; ability to work both individually and collaboratively within a team; sense of responsibility; evaluation and self-evaluation.

- The capacity of assumption and management of risks and management of uncertainty: understanding and assumption of risks; ability to manage risk and handle uncertainty.

- The qualities of leadership and individual and team work: leadership and delegation capacity; ability to work individually and as a team; capacity for representation and negotiation.

- Critical sense and responsibility: meaning and critical thinking; sense of responsibility.

6.3 TRAINING CONTENTS – LEVEL 1

6.3.1 RIGHTS AND DUTIES OF THE CITIZEN: PARTICIPATION – LEVEL 2

The condition of citizen implies that persons who belong to a community can have rights, and must also fulfill their duties. The Constitution refers us to the Universal Declaration of Human Rights, so territorial and national citizenship rights are those collected on December 10th 1948 in this document by the General Assembly of the United Nations.
But in practice, the real exercise of the rights and practice of rights and duties is linked to the socioeconomic conditions of the different social groups that constitute any community. Along with the development of a citizen's identity, we have access to tools that allow us the real exercise of our rights and duties, so we can get really involved in civic life.

To attain these rights, it is essential that citizens perceive the possibility of contacting the Administration of their community as close and flexible, that they can relate to it and not only feel a subject outside government action. The involvement in the life of the community is a citizen's right that must be made possible from the institutions.

We will therefore speak of participation as one of the basic rights of citizens within democratic systems, and we will focus its analysis, first pointing out which is the applicable legal regime,

clarifying the contours of its meaning, the conditions to participate, the different channels of participation, and what new challenges it faces.

In the case of Spain, the legal regime applicable to citizen participation is the Constitution of 1978, which incorporates the ideas of participation in public affairs. Article 9.2 regulates the obligation of public authorities to promote conditions and facilitate the participation of all citizens in political, economic, cultural and social life. Likewise, it is worth mentioning article 23 of Magna Carta which grants the right to the citizens of participating in public affairs, directly or through representatives; and article 129.1, which states that "the law will establish the forms of participation of those interested in the activity of public bodies whose function directly affects the quality of life or social well-being".

Later, the regulation of citizen participation has been developed in different laws of the State, of each Autonomous Community, and from the local level. Although in some territories such as Andalusia it was regulated more extensively, being a basic objective of the Community (statutory social right), generally the local legislation of the local regime was quite scarce, only repeating the precepts established in state legislation.

Citizen participation has now become one of the basic elements in the government and administration of local entities. It is presented as an inspiring principle for all municipal action and a complement to representative democracy in a society in which citizens, as a component of a political community, demand an increasingly active presence in decision-making.

This is why in recent years, and as a pretense to answer to new challenges, we find many new local regulations that establish measures for the active participation of citizens, creating channels that foster participatory culture (citizen hearings, consultation forums, etc.), and clearly support the use of technology in the relationship between institutions and citizens. However, the general level of participation and social involvement is not only stagnant, but is a low percentage of the population. This is why we need initiatives that promote awareness of the status of citizens, their rights, and their duties, to increase their involvement in collective matters. Participation is one of the main indicators of the democratic system.

In our opinion, participation must be present in different social spaces, at work, in neighborhoods, at school… and the latter, as one of the main educational agents, can and must have an important role in learning of values. We believe that it is from the local scope, from society, and from the school, where one has to promote the values of citizenship and participation, since this cannot be understood as a status, but as the active behavior of society. Participation is therefore the tool to exercise citizenship, and also a cornerstone of democracy that is in constant reconstruction and redefinition.

Thus, learning to participate means necessarily participating: getting information, taking a part, positioning oneself, constructing, getting involved, and criticizing, but also understanding and listening, collaborating, and knowing the starting point and which social spaces are institutions

to participate. Participating is becoming aware that an individual is part of a community, which needs the opinion of each of its members to be able to decide the path to take, but it also needs their effort to build it. Everyone in a community receives, and everyone contributes. This contribution is participation, and one can only learn to participate by participating. We can say that it is an attitude, a way of doing. It is with the development of this skill that each individual shapes their way of participating, acquiring skills and knowledge that allow them to fully do so. This cannot be taught only by theory, it has to be internalized. And this is where we find the lack of awareness in active citizenship, of those who participate, which in turn identifies today's society. Communication and dialogue between people are the building blocks of participations, which is why it involves stating certain needs, concerns, or desires of individuals, with the purpose of being heard and collected by others. It is, therefore, a construction that goes from personal will or individual concerns and needs to the will and needs of the group, created through dialogue and interpersonal communication.

We can state that there is no democracy without participation, and the more participation there is, the more advanced democracy will be. The only path to build a democratic society where we can grow, as a society and as persons, is to get involved in public affairs, which are indeed our business. If we are part of society, the affairs of society are ours too.

The social reality and the conditioning of what we want to transmit (active citizenship) means that we have to be prudent for the moment to expect high participation rates in the short term for many actions that are carried out. As in any learning process, this implies a large investment and a significant dedication of resources and efforts over a long period of time. Education and education in values are an investment in the medium and long term.

In order to participate, three conditions have to be met: "to want", "to be able" and "to know how". The first one reflects the concerns of people to impact public life. However, no matter how much we want, if there are no real spaces for participation, this will be frustrated, although many groups and individuals after many years of involvement often manage to create them, either at the institutional level, or in the social network. This is why one has to be able to participate, to create spaces for participation, and this means that the administration has to co-decide the future of the citizenship with it, helping in the creation of associations and the different participatory platforms. We are talking about a learning process, and as in any learning process, this must be increasing. People must have the possibility and ability to be present in each of the stages of social construction, often certain personal or group conditions, have many obstacles in the implementation by the public in all these stages: lack of physical spaces, lack of time, lack of resources… all of them could help to reduce many of the obstacles of the citizens with the flexibilization of the administrations and the incorporation of new elements of communication.

Lastly, we cannot end without noting the main existing types of participation and the main challenges that it can face. One way to distinguish between degrees of participation is to

answer the question of how much power decision makers are willing to share with citizens. Depending on the answer, four degrees of participation can be distinguished[8]:

"Information: this is the first degree, considered as "participation pedagogy". It is information that flows in two ways: ascending, from the citizens to the authority; and descending, from public charges to the citizens; we can define it as the attention put by the authorities on the opinions of the citizens; the organization of local technical services to provide a quick and adapted response. The modernization of relations between the administration and the citizens already shows a way in which they can influence power. In conclusion, this is about moving to a logic that emphasizes the personalization of the service and the satisfaction of demands, which must be understood as extremely heterogeneous.

Consultation: listening to the opinion of the citizens through consultation can be legally mandatory (such as some administrative procedures with neighborhood or public information), or voluntary, when local authorities decide to improve their decisions taking note of the opinion of certain groups or individuals or the general public. This is the second stage towards citizen participation.

Consultation may be mandatory (such as public surveys in France) or optional. It is about gathering opinions, which will or will not be taken into account, but should help clarify the decision. The consultation or evaluation of the reactions and demands of citizens can be done, for example through opinion polls, satisfaction surveys, studies of ecological, health, social, or socioeconomic impact, public meetings, referendum, consensus conferences, or direct consultation through new media offered by information technologies (internet).

The quality of the data obtained in the consultation depends to a large extent on the quality of the information the citizen had to issue their opinion on the subject to be consulted.

Concertation: it considers citizens as experts in their own way and implies the permanent intervention in local or territorial structures of individuals or representatives of associations in administrative procedures or in the formulation of local public policies. The agreement constitutes a third degree before participation itself, and implies the intervention of the citizens or their representatives throughout the development of a decision in the established temporary or permanent, sectorial or territorial structures. Citizens are treated as experts in the issues that impact them; they are provided with the needed means, and communication and training activities are carried out to improve their intervention; they are informed in advance of the rules and the use that will be made of the results of this intervention.

[8] César Colino, Eloisa del Pino (2003): "GOBIERNOS LOCALES E IMPULSO DEMOCRÁTICO: LAS NUEVAS FORMAS DE LA PARTICIPACIÓN CIUDADANA EN LOS GOBIERNOS LOCALES EUROPEOS", Grupo de estudios de participación ciudadana Fundación Alternativas proyecto de investigación, Diputación de Barcelona. http://www.enredalicante.org/documentos/estudi_fundacio_alternativas.pdf

Decision making: making decisions in place of the authority or jointly with it. The most elaborate form of participation is co-decision. For many, this is proper participation and involves sharing power with local leaders, a co-decision between the citizens and their representatives. It implies a high degree of commitment, a kind of contractual link between both, which is nevertheless still infrequent in practice. Participation can be organized through different formulas: the local initiative, the economic and cultural context, the specificities of each territory, the real involvement of the participants (those chosen, administration, technicians, financiers, experts, and citizens themselves) are determining elements.

These participation mechanisms include: decision-making referendums, the creation of commissions for users of public services, co-management and direct management, participatory budget, and the creation of financial structures through funds initiated by the inhabitants that allow easily and quickly financing individual or collective projects.

For some, this would be participation itself, which implies a distribution or redistribution of power. It is usually done contractually between the authorities and an association. In this sense can be understood the elaboration of participative budgets of the city or the co-management of the public services in different City Councils.

With all this, we cannot forget that in the current reality of the scale of participation there is an inverse relationship between the level and the examples found in practice. For the most part, strategies to promote participation usually start by favoring information, then consultation, then concertation, and lastly decision-making or self-management.

All the proposed forms of participation (the ones mentioned and those left out) have advantages and disadvantages, and it is difficult to decide which of them is the most suitable. Some leave unsolved questions, such as who has the last word when there are irreconcilable positions, who ensures that the individuals or groups participating in the process are not co-opted by organized groups of interest, what is the degree of involvement of people living in a community to implement this kind of initiative, or just questions regarding the reliability of the selection of people through the media. The challenges, theoretical dilemmas, and practical difficulties that we'll face if we want to move towards a more participatory social system and a more active citizenship are all along these lines.

However, it is reasonable to think that democracy works best with more and better informed citizens, and that experience can and will solve some of these problems.

6.3.2 THE IMPORTANCE OF THE INDIVIDUAL IN THE CONSTRUCTION OF SOCIETY – LEVEL 1

The relationship of the individual with society and its role in history have been approached as object of study from different points of view, from classical to contemporary sociology and philosophy.

Before delving into this subject, it is necessary to clarify or try to define what we understand by society. This is a complex term, capable of referring to different realities and of receiving opposing approaches. Its radical meaningful polysemy has grown a great variety of definitions, depending on the point of view taken or the elements included. Generally, society is defined as "*any type of association or group formed by living beings connected by certain similarities or coincidences in their constitution or in their activities*". Thus, according to the diversity of the term, it can refer to people, animals, or plants; and due to the diversity its activity, it can be a natural, civil, labor, or commercial society.

Here we will obviously refer to human society in general, but this is an ambiguous concept too, due to the wide variety of social structures created in space and time, and their complex evolution or diversification.

The main purpose of this section is to address the relationship between individual and society. This is a complex process to explain, since the interrelations between the structures of the social and the individual must be taken into account. In this sense, the point of view conditions and alters the analysis, either aimed at an individualist or collectivist (structural) method.

In general, methodological individualism states that social phenomena can be entirely explained by individual actions: society does not exist as an entity, it is the "sum of individuals". This implies that collective action can be explained by distributing the purposes and goals of the group among each of the agents.

This theoretical spawn is completely dominant in many of the analysis of some social sciences, like economics; according to this world view, individuals are entirely responsible for their economic and social situation. This theory perfectly fits capitalist production, since the inequalities and injustice it creates would not be structural, but responsibility of each person.

On the other hand, and abandoning the individualist approach, it is argued that the individual can become a person thanks to being within a social circle, and at the same time society is a society because there are individuals within it who reflect it and make it real. According to this, one cannot understand the "person" if one does not take into account both personal and social structure. The individual is therefore always immersed within society and it here that they move in situations and circumstances and act on networks of different social connections.

In our opinion, here lies the development of persons or the human essence, that is, in their full social relations. Therefore, the role of the individual cannot be analyzed but as a whole (society), so the history of individuals is the history of their own activity and interaction with the natural-social world. We understand people as social beings, as the product of the development of society, and this is in turn the history of the individual generated by work.

Thus, the development of society based on a materialist conception of history starts from the principle that production and the exchange of its products constitutes the basis of the whole social order. In any society in history, the distribution of products and the social articulation in classes or tiers is oriented by what it produces, how it produces it, and how these products are exchanged.

This structure of society in classes from the modes of production will determine the contradictions and conflicts of interest between the different social groups. Class struggle has been the history of society to this day: free men and slaves, patricians and plebs, nobles and servants… in short, oppressors and oppressed, always at odds, in constant struggle.

We therefore have the two main elements that characterize social historicism in this sense: the base would be economics, and social dialectics or class struggle would be the engine of history. But we must also consider that the active social forces that drive social dialectics as engine of history also integrate the action of its individuals. That is, without the conscious action of concrete individuals (relevant or not) there would be no historical evolution. This is, once again, relating the role of the individual with that of the group.

Individuals make their own history, but do not choose conditions, nor are they free from material pressures, and do not have unlimited possibilities. Their behavior is determined by the social order in which they live, which has modeled their physiques, psyche, their categories of thought, and their hopes and fears. However, they can in turn modify nature or society through their actions. In fact, individuals change with the society they are a part of.

This human action can be active or passive. The individual is an active being, but their activity is not always free and conscious; it is coupled with some passiveness, which diminishes with the development of their consciousness, but will never completely disappear. Activity and passiveness are matched as opposite poles.

Thus, thanks to the peculiarities of their character, individuals can influence the destiny of society. This influence is sometimes considerable, but both the very possibility of this influence and its proportions are determined by the organization of society and the correlation of the forces that act in it. The character of the individual constitutes a factor of social development only in that place, that moment, and to the extent that relations allow it. One can argue that the degree of personal influence also depends on the person's talent. We agree, but the individual cannot show their talent except when they are in the social position that allows it.

The action of the individual therefore constitutes the subjective factor of history, but the objective factors are always there: class co-relation, poverty, culture, structure of power, etc. They interact with each other, so one must not wait for the maturation of objective conditions, nor must think that the messianic will of a few to modify the set of subjective and objective factors, but act on them.

6.3.3 THE WELFARE STATE AND THE STATE TREATY - LEVEL 3

Before analyzing the Welfare State, we have to clarify the meaning of Welfare State. Due to the amplitude of the concept, there is no unanimous definition or way to understand it, but there are many definitions. To cover several of them and give a consensus option, we could say that: "The Welfare State is a change of aim in the activities of the public powers to provide citizens with a set of services, goods, and benefits that guarantee their survival before market failures, which arises within a concrete reality in which public action is necessary to appease the conflicts generated by the capitalist system".

All definitions are close to the emerging social policies that aim to protect the worker from market uncertainty (unemployment, illness, poverty, ignorance). The Welfare State refers to a certain concept of State according to which it must guarantee the "basic needs" of citizens, as well as regulate the private (economic) activities of individuals or companies.

Vicenç Navarro, Professor of Public Policies at Pompeu Fabra University, expert in Welfare State, defines it as follows: "(…) includes State interventions (both at the central and the regional and local levels) aimed at improving social welfare and the quality of life of the population".

From this simple and straightforward definition of the concept, Navarro broadens and clarifies its content emphasizing that, although most State interventions impact the welfare of the population in one way or another, those that most explicitly impact the quality of life of its citizens are:

1. Public services like health, education, family support services (0-to-3 year old schools, home services for the elderly and disabled, day centers, nursing homes…), social services, social housing, and other services provided to people, aimed at improving the welfare of the population and the quality of life of its citizens. All surveys carried out in Spain show the importance for the citizens of these public services.

2. Social transfers, which, as the name suggests, are transfers of public funds from one social group to another. Old-age, widowhood, and disability pensions are the most important ones, transferring the public funds of workers, employees, and employers who contribute to Social Security to pension beneficiaries. Some of these transfers (as in the case of non-

contributory pensions) are made from general State funds. In both cases, pensions are a hugely important part in the Welfare State. Without them, 68% of the elderly would live in poverty, making Social Security the most important anti-poverty program. There are other transfers in addition to pensions, such family support and unemployment allowance, both important components of the Welfare State.

3. Normative interventions, done by the State and aimed at protecting citizens in their condition as workers (work health and hygiene), consumers (consumer protection), or residents (environmental health). In such type of interventions, the State generally does not finance or provide services but dictates norms and sanctions to enforce and guarantee compliance.

4. Public interventions are aimed at producing quality jobs, establishing favorable conditions for the private sector to produce them, and so that when such sector does not create enough good jobs, its production in the public sector is boosted" [9].

With all this, the question that arises is: what is the origin of the Welfare State then?

Right-wingers often state that "the welfare state was invented by conservatives and christian democrats, not by the left", adding that "it is important to seize the social policy flag from the left, to demystify that commitment they show off without reason and without results", referring to both Spain and Europe. In Spain, as it has been shown on multiple occasions, the great delay in the welfare state is precisely due to the enormous dominance the conservative and christian forces had over the country throughout history (see the book "*El subdesarrollo social de España. Causas y consecuencias*", by Vicenç Navarro). But it is surprising that the establishment of the welfare state in Europe is often attributed to the conservatives and christian democrats, since this reflects either a great ignorance of the history of the welfare state in Europe, or an interested confusion with the "state of support to the poor" that has always characterized the social proposal of such political forces.

Unlike the church and its political tools that historically favored public intervention to care for the poor and people at risk of marginalization due to lack of resources, the welfare state established by social-democracy (defined as all socialist sensibilities that want to develop such a project through the democratic way, whether socialist, labor, social-democratic, or communist parties) is a universal state in which social rights are for everyone, citizens and residents, without limitations or restrictions of rights according to level of income.

In the words of Vicenç Navarro, this right translates into "transfers and universal public services like health, education, social services, schools, and residential services among others, not granted by the State, but considered rights of all citizens, guaranteed by the State". The engine of such a project historically was the labor movement and the middle classes.

[9] Navarro, V. (2004): "El estado de bienestar en España", TECNOS, Madrid, Capitulo 1.

The church and the conservative forces, including Liberals, opposed such a welfare state by speaking instead of the welfare society. The social axis of the church was the family, in which women take care of children and the elderly, and men work from 16 to 65 years, financing the transfers of public funds -such as pensions and health- through the social contribution of employers and workers to Social Security funds, controlled by employers and workers from different sectors and representatives of the state.

Such a format had been established by a conservative, Chancellor Bismarck, who, fearing the workers' movements that were appearing in Europe, wanted to break their solidarity by establishing a diversity of benefits to confront them among themselves. His enemy was the universal rights, as Bismarck himself stated, and the way to stop the workers' movement was not only through repression, but also through measures to divide the working class. The Social Security program came from this, established not from state funds, but from contributions of workers and employers themselves, with benefits according to a hierarchical system, depending on the place of the worker in the social order, who wanted to defend and reproduce itself with such a program (see Vicenç Navarro "*Why some countries have National Health Insurance, others have National Health Services and The US has neither*" International Journal of Health Services 19 (3) pp. 383-404.1989)" [10]. This model, result of the alliances between conservative forces and the social democracy to be able to govern, has changed and transformed until adapting to the universal model, but it is obviously influenced by history.

Lastly, Vicenç Navarro notes in the article referenced above that "The most developed welfare state is that of the Nordic countries of socialdemocratic tradition with greater spending on social support. On the contrary, the less developed welfare states are in Southern Europe, specifically Spain and Portugal, where conservative and Christian forces governed for longer periods after World War II". Thus, and considering the elements of judgment on the Welfare State, we can say that it has -and must continue to have- essential functions for the construction of a society in which its members can have a dignified and sustainable life, despite it not being the answer to all the ills of a complex society.

Rather, we can say that this is the institutional expression that social reform has adopted in European countries of after World War II, allowing important achievements in social welfare and in the political development of societies in which tensions between capitalism and Democracy have always been there as a consequence of social conflicts that, as described in the previous section, usually arise between classes with incompatible positions and interests.

This work, which we could consider mediation in many cases, has not been its only function; the Welfare State has also been driven by a "de-mercantile" impulse, in the words of *FUHEM Ecosocial* this means that "it has preserved spaces in society outside the market, or mitigating its influence by some social regulation according to criteria different from private profitability".

[10] Navarro, V. (2011): "¿El estado de bienestar lo inventaron las derechas?, Artículo publicado en el diario digital EL PLURAL, 14 de marzo de 2011.

It has also served as an important security net for citizens before social risks arising from social class, work history, age, or illness among others. Likewise, we must remember its contribution to equal opportunities through its redistributive aspect.

All these functions -pacification of social relations, de-mercantile impulse, social protection and redistribution-, added to economic development, have made possible to develop a public expense with a strong social component, and a regulation in the workplace. However, the Welfare State is currently being asked to add new functions capable of facing new challenges: "the socioeconomic transition induced by the assumption of environmental sustainability and the acknowledgement of diversity in increasingly multicultural realities". Thus, the combination of both traditional functions and new challenges necessarily calls for a rethinking of the Welfare State to better adapt it to our times.

The original economic and social structures on which the Welfare State was built have varied up to the present, so they show an accumulation of institutional and financial tension that cannot be linked to just neoliberal movements; also expressed in the dynamics of globalization, financialization, and the transformation of labor frameworks. Limitations of other natures -economic, financial, democratic, demographic, etc.- and the emergence of new social needs to be taken care of by the changes that have taken place: the aging of the population and the social support of dependent persons, immigration, new family structures, job insecurity, and emerging risks associated with ecological and climate deterioration generate changes in vulnerable groups that do not find sufficient coverage in the general and homogeneous patterns of past models.

The defense of the Welfare State as a whole also implies assuming the challenge of the continuous improvement of public intervention and the need to correct the mistakes that may exist in the processes done up to now. In our opinion, these changes would be of no use under state control if the State itself were not reformed by being under the democratic control of the citizens. "Avoiding corporate trends in the provision of welfare, neutralizing biases in social policies, and de-bureaucratizing and bringing management closer to citizens requires a democratic welfare state through participation and decentralization capable of detecting and accepting political aspirations and needs of all social subjects. This is a challenge of a Welfare State more democratic, flexible, effective and adapted to socio-diversity and the challenges that arise" [11].

According to Vicenç Navarro, the adequacy of the Welfare State to the needs and challenges faced will only be possible if "public revenue is sufficient, state spending priorities are coherent, management is as best as possible, control processes reach the maximum rigor, and

[11] *FUHEM Ecosocial* https://blogs.publico.es/econonuestra/2014/07/20/en-torno-al-estado-de-bienestar/

the democratic participation of civil society is considered central. (…) The existence of fair and sufficient public revenue depends on tax structure and the effective fiscal pressure. Advancing in tax systems and innovating in green taxes is essential to guarantee the financial viability of a Welfare State capable of combining old and new functions".

Members of *FUHEM Ecosocial* Association state that "there is a core of social cohesion essential to face the current problems and challenges of global change with the transitions it entails. Those societies that know how to preserve it will be in a better position to deal with it effectively, which would be difficult without the redistributive capability and the coverage of basic needs that a state action committed to the welfare of citizens can provide".

We therefore believe that without a solid socio-political base that defends and develops the Welfare State, there is a risk that it will be degraded, although the rhythm and degree may vary from one society to another depending on internal factors, the context, and the functionality it keeps for the reproduction of the prevailing socioeconomic system. Thus, it is necessary to weave alliances between the different social sectors committed to the defense of everything public and the construction and administration of common spaces and resources.

We face new times, with no place for the defense of the heritage received by history. Society must dare to rethink ways and means to preserve the underlying objectives with new content.

6.3.4 GOVERNMENT AND SOCIAL INSTITUTIONS – LEVEL 2

Etymologically, the word institution in Latin shares its root with *institutio*; on one hand *in* implies to enter; *statuere* to place, and the suffix -*tion* is action or effect, so we can say that an institution is a system created to perform a certain task (cultural, political, social, etc.).

We identify institutions as social and cooperative structures created under legal impositions, which seek to organize and normalize the behavior of a group of individuals (society), this is, mechanisms of social order.

Many institutions are formally established organizations, but others aren't and do not even have to be linked to a physical space. The concept extends beyond the particular government and public service formal organizations, to behaviors and customs considered important for a society, or even to contingent social facts. Its functioning varies widely in each case, although there are numerous rules or regulations that are usually inflexible and adaptable.

Institutions, despite their evolution over time, have been a conduit for the creation of social order and stability, in which each member of the group has to conform to certain rules and regulations, generating the division of work and organization of tasks and roles, among others.

Institutions, as structures and mechanisms of social order, are one of the main objects of study in social sciences like anthropology, sociology, political sciences, economics, and business administration among others. They are also a central subject of study for the law, the formal regime for the development and implementation of rules.

Regarding their history (historiography of institutions), political institutions are especially subject to it, since they allow to periodize it. "The main one, the State, can be studied from its origins in the classical *polis*, the Hellenistic monarchy, the Roman Empire, the Germanic Kingdoms, the feudal monarchy, the authoritarian monarchy, the absolute monarchy, the Liberal State, and the Social State. The rest of the political, local (town councils), judicial, and legislative institutions are also subject to discipline. Institutions of any other type would be subject of economic and social history: social institutions (marriage, family…) and economic institutions (banking, business…), most of them being mixed (the fief, the seigniory system, the entitled estate system, property, school, the army, etc.). Religious institutions (the Church itself, the clergy and its sections, monasteries, cathedrals, parishes…) are the subject of church history; and since they are institutions that produce great quantity of documents, their history is easily studied.

Institutionalism in history (not to be confused with the homonymous trend in economics) is a historiographical school opposed to historical materialism, by highlighting the role of history in institutions, while the latter highlights social classes (this is analyzed in section 6.4.2); it also opposes providentialism or an individualist interpretation of history" [12].

In this section we will distinguish between:

GOVERNMENT INSTITUTIONS

- **AT THE STATE LEVEL**

  We must ask ourselves: Do I know the institutions of the State? Do I know what their function is? It is very important that you know that their decisions impact all citizens and the economic and social development of the country.

  Below are links that list the institutions and agencies of the state and the relations between them, from the member countries of this project, so you can investigate more.

  - **Spain**:
    - https://administracion.gob.es/pag_Home/espanaAdmon/directorioOrganigramas/quienEsQuien/Institucionesl_Estado.html#.XHfH_YhKjIVç

[12] Visto en: https://es.wikipedia.org/wiki/Historia_de_las_instituciones

- **Italy**:
  - http://www.governo.it/il-governo-funzioni-struttura-e-storia/la-struttura-del-governo/185

- **France**:
  - https://www.gouvernement.fr/en/other-key-bodies

- **AT THE EUROPEAN LEVEL**
  The same goes for higher levels of governance. EU's institutions and bodies are complex to explain if you are not familiar with them, so here's a link that "briefly" explains it:

  - https://europa.eu/european-union/about-eu/institutions-bodies_en

SOCIAL INSTITUTIONS

In the words of Émile Durkheim, he defines "institutions" as conglomerates of beliefs and ways of acting instituted by a society. He states that institutions precede specific individuals, and are part of the supremacy of society over the individual; institutions last over time. From a general point of view, they perform certain functions necessary for the existence of a society.

These necessary functions are defined by sociologists as universal functional prerequisites. The term institution refers to everything that allows society to continue; this would be for example language, since communication cannot exist without it, and therefore neither would society, nor beliefs, ideas, values, or interrelations, all of them being essential functions of a society. Talcott Parsons states that, in order for a society to exist, the following (4) basic requirements must be met: A basic reproduction and socialization system for individuals, a system of economic structure, a system of power, and a system of religious, political, and social beliefs.

In order to fulfill these basic functions, the existence of a series of institutions is necessary:

"To ensure reproduction and achieve socialization, institutions such as family or **educational institutions** are needed in developed systems.
To satisfy these basic needs, the economy of a country needs the **economic institutions** that guarantee and protect the economy.
Political institutions regulate and order the exercise of power (defined above). The institution of the State grants security and mediation among citizens. In our society there is a state of law, due to the need to delegate the order and maintenance of society to a higher state.
Multiple **religious** and **ideological institutions**, social communication media, ensure the fulfillment of social expectations and help to understand and interpret social reality. These exist to interpret social relations, like institutions such as religion or the media, which fulfill a function of ideological and expressive order".

Society is therefore constituted by the so-called "social institutions". The functioning of these institutions with specific objectives, structure, and roles ultimately determines the overall functioning of society. Its study is the primary objective of sociology as a science of social behavior, but its knowledge should be assumed by society as a whole, to better understand the functioning dynamics "imposed" through these structures, to have the capability and initiative to change them.

6.4 ACTIVITIES – LEVEL 1

6.4.1 RIGHTS AND DUTIES OF THE CITIZEN: PARTICIPATION – LEVEL 2

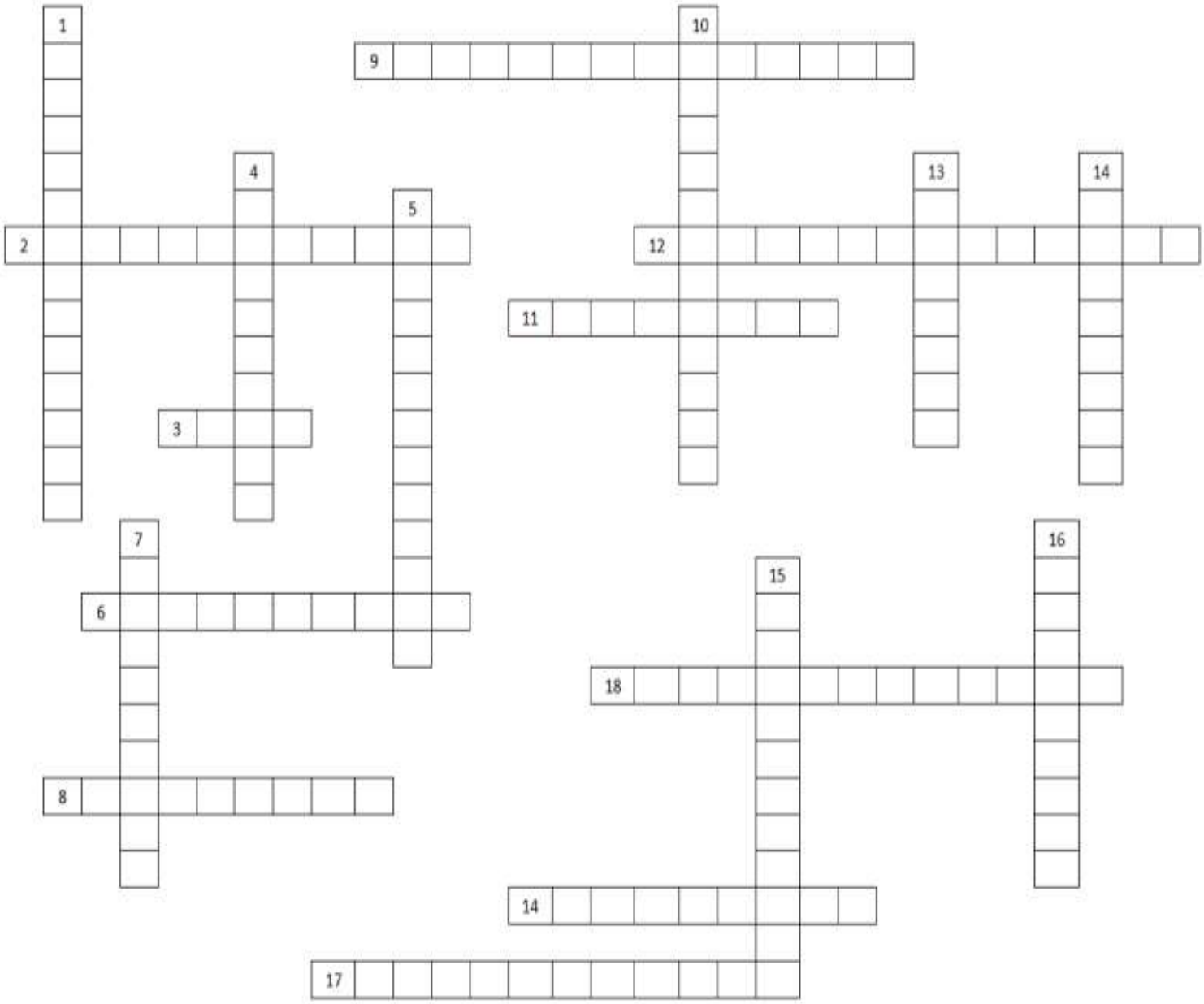
CROSSWORD PUZZLE

Read the definitions in this section and write the word in the box with the matching number:

1. The condition that allows those who belong to a community to have their rights, as well as fulfill their corresponding duties.
2. Becoming involved in the development of an activity, project or collective affairs.
3. Power to do or demand justice, everything that the law establishes in our favor for the full development of people.
4. Political doctrine in favor of the system of government in which the people exercise sovereignty through the free election of their leaders.
5. Organization that performs a public interest function, especially educational or charitable.
6. Getting information about something.
7. Paying attention to what is heard.
8. Action of speaking between two or more people who alternately express their ideas or affections.
9. Action and result of communicating or communicating
10. A group of individuals to whom a relationship joins or pursues the same goal.
11. A group of people who live and relate within the same space and cultural field.
12. Knowledge that the human being has about himself, about his existence and his relationship with the world. Detailed, accurate and real knowledge of something, in this case about citizenship.
13. Restlessness, shock, inclination of mind towards something.
14. Action and effect of learning. Acquisition for the practice of lasting behavior.
15. Set of associates for the achievement of the same purpose.
16. Medium of any kind that, if necessary, serves to achieve what is intended.

17. It constitutes the first grade, that is, it is considered as pedagogy of participation. It is defined as the attention paid by the authorities to the opinions of its citizens.
18. Mechanism for obtaining the opinion of citizens, this can be legally perceptive or voluntary.

(Print out these sheets so you can fill them with a pen)



6.4.2 THE IMPORTANCE OF THE INDIVIDUAL IN THE CONSTRUCTION OF SOCIETY – LEVEL 1

WORD SEARCH

The objective is to find in the 14 words related to the content of this section, related to the relationship between the individual and society. Remember that the words located in the word search are read from left-right (horizontal) and top-down (vertical).

I	S	O	R	G	Y	X	I	L	U	C	H	A	A	E	Ñ	B	O	T	L	C	R	J	I
R	T	P	H	N	I	F	P	V	S	O	C	I	E	T	Y	A	S	R	C	I	P	Y	U
U	R	L	T	M	L	Y	O	D	T	B	S	Z	P	R	O	Y	T	A	C	T	I	O	N
Y	U	H	N	A	B	R	H	I	S	T	O	R	Y	H	E	X	O	N	T	N	A	X	A
O	C	J	I	T	S	N	J	N	W	B	T	V	A	T	S	K	O	S	N	D	I	S	N
I	T	F	P	E	N	A	C	D	I	A	L	E	C	T	I	C	T	F	I	I	L	T	S
U	U	G	L	R	B	S	Z	I	R	B	D	F	O	T	W	U	N	O	P	V	M	S	P
C	R	Y	O	I	T	D	P	V	U	N	S	G	R	I	P	Y	U	R	L	I	B	U	L
M	A	F	I	A	I	A	L	I	Y	U	C	A	M	P	R	O	Y	M	O	D	T	O	O
B	L	E	S	L	Y	X	I	D	O	Y	T	G	A	O	O	I	J	N	I	U	H	C	I
C	M	D	U	I	C	D	C	U	N	T	P	G	M	Ñ	D	U	J	D	S	O	C	I	S
Ñ	E	P	V	S	O	C	I	A	L	C	L	A	S	S	E	S	R	S	U	O	G	A	U
G	T	L	I	M	U	O	E	L	P	H	C	J	C	M	P	D	R	B	D	F	O	L	T
S	H	O	D	C	Y	F	D	O	C	A	U	H	C	B	O	F	U	N	S	G	R	O	J
P	O	W	E	R	F	O	G	U	S	N	A	Y	I	C	D	S	Y	U	C	A	M	R	M
Y	D	T	P	N	C	S	T	R	U	G	G	L	E	F	Y	A	O	Y	T	G	A	D	B
N	Q	J	I	Y	C	B	O	F	E	E	Y	I	M	E	R	A	F	U	T	U	R	E	W
W	B	M	E	R	B	N	A	C	I	P	Y	U	C	A	M	B	O	G	Y	X	I	R	Y

6.4.3 THE WELFARE STATE AND THE STATE TREATY – LEVEL 3

Write one word from the following table in each sentence (cross them out as you use them).

ENVIRONMENT SUSTAINABILITY	**BUILDING ALIANCES**	**PUBLIC SERVICES**
PUBLIC INCOME	**NEEDS**	**COMMON RESOURCES**
SOCIAL TRANSFERS	**DE-MERCANTILIZING**	**STANDARD**
SOCIOPOLITIC	**MOST DEVELOPED**	**SOCIAL WELFARE**
CONSERVATIVE AND CHRISTIAN	**DEMOCRATIC PARTICIPATION**	**SOCIAL DEMOCRACY**

1. The welfare state refers to a certain conception of the State according to which it must guarantee certain basic _____ of citizens.

2. It includes state interventions (both at the central level and at the autonomic and local levels) aimed at improving _____ and the population's quality of life.

3. State interventions that in a more explicit or direct way affect the quality of life of its citizens and residents are: _____ such as health, education, family assistance services, social services, social housing and others provided to people…

4. Old-age, widowhood and disability pensions constitute the most important parts of _____

5. Another of the state interventions aimed at protecting the citizen as a worker, consumer or resident, are _____ interventions.

6. Unlike the church and its political instruments that historically favored public intervention to care for the poor and vulnerable homeless people from marginalization due to lack of resources, the welfare state established by _____ is a universal state in which Social rights are for everyone, citizens and residents, without limitations or restriction of rights according to income level.

7. The _____ welfare state is that of the Nordic countries of social-democratic tradition with the highest expenditure on social protection.

8. On the contrary, the less developed state of well-being is in Southern Europe, specifically in Spain and Portugal, where the _____ forces have ruled for a longer time after World War II.

9. The Welfare State has also been encouraged by a _____ impulse, meaning that it has preserved spaces in society outside the market or mitigated its influence by some kind of social regulation according to criteria different from those of the mere private profitability.

10. The Welfare State is currently being asked to be complemented with new functions capable of facing new challenges: the socio-economic transition induced by the assumption of _____ and the recognition of diversity in increasingly multicultural realities.

11. The adequacy of the Welfare State to the needs and challenges posed will only be possible if _____ is enough, coherent state spending priorities, management is the best within those available, control processes reach maximum rigor, and the _____ of civil society is considered as central.

12. We therefore believe that without a solid _____ base that defends and develops the Welfare State there is a risk that it will be degraded.

13. Consequently, _____ becomes necessary between the different social sectors committed to the defense of the public and the construction and administration of spaces and _____.

6.4.4 SOCIAL AND GOVERNMENT INSTITUTIONS – LEVEL 2

Read the following concepts and relate each one to their matching institution group.

Classical Polis	⟶	Political institution
Marriage		Political institution
Banking		Social institution
Town hall		Mixed institution (social and economic)
Feudal monarchy		Economics institution
Parrish		Political institution
Liberal state		Economics institution
Private company		Social institution
Clergy		Political institution
Family		Mixed institution (social and economic)
Army		Economics institution
High justice court		Economics institution
School		Political institution

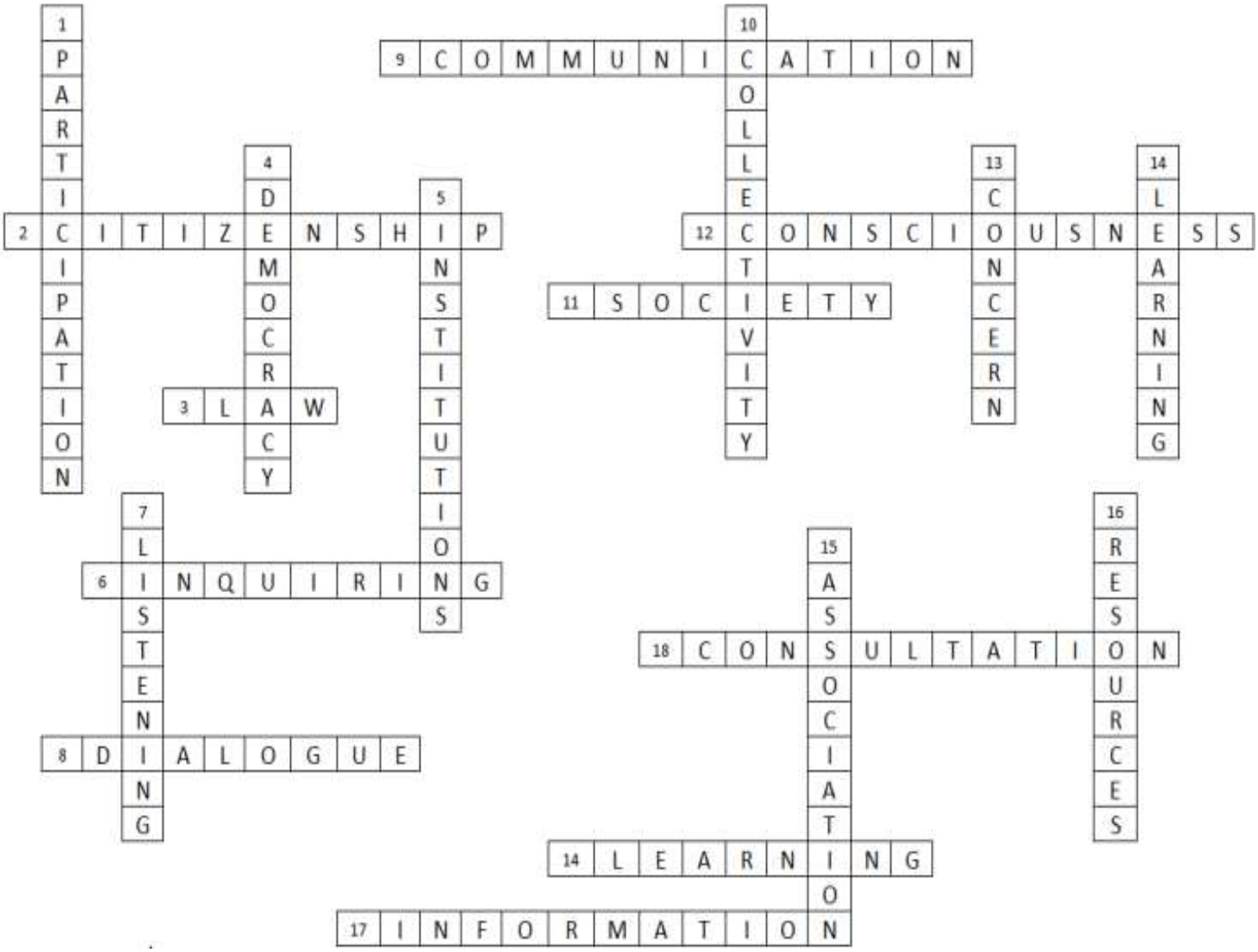
SOLUTIONS TO THE ACTIVITIES – LEVEL 1

SOLUTIONS TO: RIGHTS AND DUTIES OF THE CITIZEN: PARTICIPATION – LEVEL 2

CROSSWORD PUZZLE

Read the definitions in this section and write the word in the box with the matching number:

19. **Citizenship** - The condition that allows those who belong to a community to have their rights, as well as fulfill their corresponding duties.
20. **Participation** - Becoming involved in the development of an activity, project or collective affairs.
21. **Law** - Power to do or demand justice, everything that the law establishes in our favor for the full development of people.
22. **Democracy** - Political doctrine in favor of the system of government in which the people exercise sovereignty through the free election of their leaders.
23. **Institutions** - Organization that performs a public interest function, especially educational or charitable.
24. **Inquiring** - Getting information about something.
25. **Listening** - Paying attention to what is heard.
26. **Dialogue** - Action of speaking between two or more people who alternately express their ideas or affections.
27. **Communication** - Action and result of communicating or communicating
28. **Collectivity** - A group of individuals to whom a relationship joins or pursues the same goal.
29. **Society** - A group of people who live and relate within the same space and cultural field.
30. **Consciousness** - Knowledge that the human being has about himself, about his existence and his relationship with the world. Detailed, accurate and real knowledge of something, in this case about citizenship.
31. **Concern** - Restlessness, shock, inclination of mind towards something.
32. **Learning** - Action and effect of learning. Acquisition for the practice of lasting behavior.
33. **Association** - Set of associates for the achievement of the same purpose.
34. **Resources** - Medium of any kind that, if necessary, serves to achieve what is intended.
35. **Information** - It constitutes the first grade, that is, it is considered as pedagogy of participation. It is defined as the attention paid by the authorities to the opinions of its citizens.
36. **Consultation** - Mechanism for obtaining the opinion of citizens, this can be legally perceptive or voluntary.



SOLUTIONS TO: THE IMPORTANCE OF THE INDIVIDUAL IN THE CONSTRUCTION OF SOCIETY – LEVEL 1

WORD SEARCH

The objective is to find in the 14 words related to the content of this section, related to the relationship between the individual and society. Remember that the words located in the word search are read from left-right (horizontal) and top-down (vertical).

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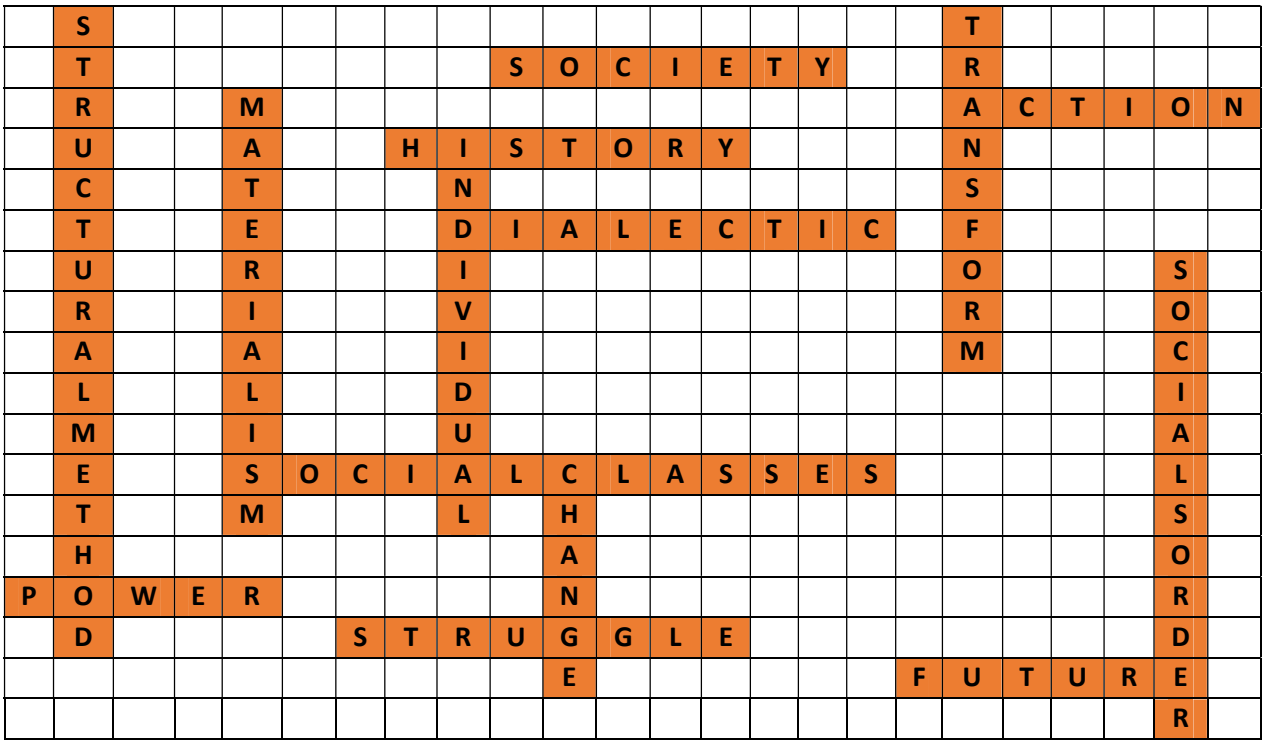

1. Society
2. Individual
3. Structural method
4. Materialism
5. Social classes
6. Dialectic
7. Action
8. History
9. Power
10. Future
11. Struggle
12. Transform
13. Social order
14. Change

SOLUTIONS TO: THE WELFARE STATE AND THE STATE TREATY – LEVEL 3

Write one word from the following table in each sentence (cross them out as you use them).

ENVIRONMENT SUSTAINABILITY	**BUILDING ALIANCES**	**PUBLIC SERVICES**
PUBLIC INCOME	**NEEDS**	**COMMON RESOURCES**
SOCIAL TRANSFERS	**DE-MERCANTILIZING**	**STANDARD**
SOCIOPOLITIC	**MOST DEVELOPED**	**SOCIAL WELFARE**
CONSERVATIVE AND CHRISTIAN	**DEMOCRATIC PARTICIPATION**	**SOCIAL DEMOCRACY**

Co-funded by the Erasmus+ Programme of the European Union

VIRTUAL INCLUSIVE EDUCATION PLATFORM

1. The welfare state refers to a certain conception of the State according to which it must guarantee certain basic **NEEDS** of citizens.

2. It includes state interventions (both at the central level and at the autonomic and local levels) aimed at improving **SOCIAL WELFARE** and the population's quality of life.

3. State interventions that in a more explicit or direct way affect the quality of life of its citizens and residents are: **PUBLIC SERVICES**, such as health, education, family assistance services, social services, social housing and others provided to people ...

4. Old-age, widowhood and disability pensions constitute the most important parts of **SOCIAL TRANSFERS**.

5. Another of the state interventions aimed at protecting the citizen as a worker, consumer or resident, are **STANDARD** interventions.

6. Unlike the church and its political instruments that historically favored public intervention to care for the poor and vulnerable homeless people from marginalization due to lack of resources, the welfare state established by **SOCIAL DEMOCRACY** is a universal state in which Social rights are for everyone, citizens and residents, without limitations or restriction of rights according to income level.

7. The **MOST DEVELOPED** welfare state is that of the Nordic countries of social-democratic tradition with the highest expenditure on social protection.

8. On the contrary, the less developed state of well-being is in Southern Europe, specifically in Spain and Portugal, where the **CONSERVATIVE AND CHRISTIAN** forces have ruled for a longer time after World War II.

9. The Welfare State has also been encouraged by a **DE-MERCANTILIZING** impulse, meaning that it has preserved spaces in society outside the market or mitigated its influence by some kind of social regulation according to criteria different from those of the mere private profitability.

10. The Welfare State is currently being asked to be complemented with new functions capable of facing new challenges: the socio-economic transition induced by the assumption of **ENVIRONMENT SUSTAINABILITY** and the recognition of diversity in increasingly multicultural realities.

11. The adequacy of the Welfare State to the needs and challenges posed will only be possible if **PUBLIC INCOME** is enough, coherent state spending priorities, management is the best within those available, control processes reach maximum rigor, and the **DEMOCRATIC PARTICIPATION** of civil society is considered as central.

12. We therefore believe that without a solid **SOCIOPOLITIC** base that defends and develops the Welfare State there is a risk that it will be degraded.

13. Consequently, **BUILDING ALLIANCES** becomes necessary between the different social sectors committed to the defense of the public and the construction and administration of spaces and **COMMON RESOURCES**.

SOLUTIONS TO: SOCIAL AND GOVERNMENT INSTITUTIONS – LEVEL 2

Read the following concepts and relate each one to their matching institution group.

Classical Polis	→	Political institution
Marriage	→	Social institution
Banking	→	Economics institution
Town hall	→	Political institution
Feudal monarchy	→	Political institution
Parrish	→	Religious Institution
Liberal state	→	Political institution
Private company	→	Economics institution
Clergy	→	Religious Institution
Family	→	Social institution
Army	→	Mixed institution (social and economic)
High justice court	→	Political institution
School	→	Mixed institution (social and economic)

6.5 RESOURCES – LEVEL 1

6.6 EVALUATON – LEVEL 1

The competence worked on in this topic (autonomy and personal initiative) refers to attitudes and values such as responsibility, perseverance, and self-esteem, creativity, self-criticism, the ability to face problems, as well as the strategies to learn from mistakes and taking risks.

It involves transforming ideas into actions; that is, to set objectives and plan and carry out projects. In addition, analyze possibilities and limitations, know the stages of development of a task, plan, make decisions, act, evaluate what has been done and self-evaluate, draw conclusions and assess the possibilities for improvement.

It requires maintaining the motivation to achieve success in the tasks undertaken, with a healthy personal, academic and professional ambition; likewise, being able to relate the available academic, work or leisure offer with the capacities, desires and personal projects.

In addition, it involves a positive attitude towards change, adapting constructively to them, facing problems and finding solutions in each of the vital projects that are undertaken, which requires having social skills to interact, cooperate and work as a team.

Dimensions	Competences	Evaluation criteria
Self-concept	1. Being aware of your own strengths and weaknesses in the various aspects of life.	Knowing your strengths in each of the different aspects in life.
		Knowing your weaknesses in each of the different aspects in life.
		Linking your strengths and weaknesses to diverse aspects.
		…
	2. Having self-confidence and assertiveness.	Expressing your own opinions.
		Assuming tasks with good disposition.
		Being able to overcome mistakes or difficulties.

		Identifying and regulating your own emotions.
		…
Decision Making	3. Choosing with your own criteria between the different possible options to solve a problem.	Having in mind each of the possible options before a problem.
		Encompassing and expanding the information available to solve a problem.
		Choosing an option that solves the problem.
		...
	4. Being actively involved in group decision making.	Making contributions to the group.
		Valuing the contributions of others.
		Accepting the decision made collectively.
		…
Creation and development of personal and group projects	5. Planning and carrying out personal projects.	Envisioning feasible goals.
		Carrying out the planned tasks properly and with consistency.
		Having in mind the possible consequences for others of your personal projects.
		Planning personal projects that yield community benefits.
		Looking for solutions for possible difficulties.

		…
	6. Being actively involved in carrying out group projects.	Suggesting goals for group projects.
		Promoting group projects that yield community benefits.
		Making suggestions to plan the different tasks.
		Complying with the assigned functions and tasks properly and with consistency.
		Complying with the planned schedule.
		Looking for solutions for problems linked to the project.

VIRTUAL
INCLUSIVE
EDUCATION
PLATFORM

DIDACTIC UNIT 7

THE ERASMUS PLUS PROGRAMME

COURSE FOR ADULTS

7.1 INTRODUCTION – LEVEL 1

The guide you are using to develop your educational skills has been created through the efforts of many people and entities, but it has been made possible thanks to the support of the Erasmus Plus Programme.

This program is a European initiative that supports the structure of a common space and offers its participants, especially adults, good opportunities to improve their studies and to have experiences that increase their future opportunities.

That is why we have decided to include a Didactic Unit that allows you to learn more about this program and encourages you to benefit from it in the future, perhaps by staying abroad (through volunteering or youth mobility) or by actively participating in a project that helps improve the working capacity of an association or learning center.

Both in the sections that you will find below and in the downloadable contents, we will try to help you to understand what this program is, what it is for, how you can participate in it and where to find more information about it.

7.2 COMPETENCES – LEVEL 1

In this seventh and last didactic unit of the course we want you to develop many of the key educational competences, but especially:

1. Learning to learn: one of the most important competences, since it influences your ability to start learning, organize your tasks and time, and work individually to discover content that will give you access to a world of opportunities and experiences across Europe.
2. Social and civic competences: they refer to everything you need to interact with people and to actively participate in social and civic life. This Didactic Unit brings you closer to a program that promotes social values, and will show you various ways to learn and develop mechanisms of participation and values of European citizenship and coexistence.
3. Initiative and entrepreneurship: these imply the skills needed to turn ideas into actions, such as creativity or the ability to take risks (like participating in mobilities and volunteer services in Europe) and to plan and manage European projects.
4. Cultural awareness and expression: we want to help you reach the capability of appreciating the importance of the cultural diversity and plurality of the EU, since it is one of its greatest wealth.

7.3 DESCRIPTION – LEVEL 1

Erasmus Plus is the EU program that supports education, training, youth, and sports in Europe. Its budget of 14700 million euros offers study opportunities, acquisition of experiences, and volunteering to more than 4 million Europeans.

This program was initiated in 1981 by initiative of AEGEE student association, and only managed at the time direct aids to support and facilitate academic mobilities of university students and professors within the member states of the European Economic Space, Switzerland, and Turkey. That is why its name - ERASMUS- is the acronym of its official name in English: European Region Action Scheme for the Mobility of University Students.

The program was integrated in 1995 into a larger plan called "Socrates" until the year 2000, and later into its follow-up, the "Socrates II" plan. In 2007, the Socrates II program entered its third stage, called LLP (acronym for Lifelong Learning Program), with a budget of 7000 million euros for the period from 2007 to 2013, and included adult training for the first time through the Grundtvig subprogram.

In 2014, Erasmus Plus kept its name, but was deeply transformed into the ambitious program it is today, as part of the Europe 2020 Strategy, and merging up to seven previous programs (encompassing formal and non-formal education and sports), offering opportunities to a wide variety of people and organizations. The program was initially planned to last until 2020, but its span will be extended at least until 2025, probably more.

Erasmus Plus expands the opportunities of everyone: students, teachers, volunteers, etc. It is not limited to Europe or Europeans, it offers opportunities to interested people from all over the world.

7.4 OBJECTIVES – LEVEL 1

Erasmus Plus contributes to the Europe 2020 Strategy for growth, employment, social justice and inclusion, and to the objectives of the strategic framework for European cooperation in the field of education and training (ET 2020).

This program also promotes the sustainable development of partner countries in the field of higher education, and contributes to the accomplishment of EU's youth strategy objectives.

Within the program, the following specific issues are raised:

- To reduce unemployment, especially among youth.

- To promote adult education, especially in the new competences and qualifications required by the current labor market.
- To encourage young people to participate in Europe's democratic life.
- To support innovation, cooperation, and reform.
- To reduce school dropout.
- To promote cooperation and mobility within EU partner countries.

7.5 DESCRIPTION OF THE PROGRAMME – LEVEL 2

In order to do this, the Erasmus Plus Programme finances specific projects in each of its areas (also called actions), which mainly promote:

MOBILITY OF PERSONS

Mobility activities in the field of education, training, and youth play an essential role when providing people of all ages with the necessary means to actively participate in the labor market and society in general.

The projects framed in this action promote transnational mobility activities aimed at learners (students, trainees, apprentices, youth, and volunteers) and educators (teachers in many levels, trainers, youth workers, and workers from organizations in the fields of education, training, and youth).

On the other hand, Erasmus Plus offers more space than previous programs to develop mobility activities that involve associated organizations with different origins, active in different areas or socioeconomic sectors (e.g. college or VET students in internships in companies, NGOs or public bodies, teachers in professional development courses in companies or training centers, experts from the business sector who give lectures or training in higher education institution, companies active in Corporate Social Responsibility that develop programs for volunteers with associations and social enterprises, etc.).

THE CREATION OF STRATEGIC PARTNERSHIPS

Strategic Partnerships aim to support the development, transfer, or implementation of innovative practices, and the development of joint initiatives to promote cooperation, peer learning, and exchange of experiences at the European level.

The projects supported by this key action are meant to have positive and lasting effects on the participating organizations, on the political systems in which they are framed, and on the organizations and persons directly or indirectly involved in the planned activities.

This key action is intended to deepen the development, transfer, or application of innovative practices at the organizational, local, regional, national, or European level.

At a systemic level, modernization is expected to be promoted, along with strengthening the response of education, training, and youth systems in the face of the main challenges of our world: employment, economic stability and growth, the need to promote social, civic, and intercultural competences, intercultural dialogue, democratic values and basic rights, social inclusion, non-discrimination and active citizenship, critical thinking, and the communicative competence through current means.

DIALOGUE BETWEEN YOUTH AND POLICY MAKERS

Support activities for policy reform are aimed at achieving the objectives of the European political agendas, especially the Europe 2020 Strategy, the Strategic Framework for European cooperation in the field of education and training (ET 2020), and the European Youth Strategy.

This action promotes the active participation of young people in democratic life, and encourages debate on the issues and priorities established in the Structured Dialogue and in the renewed political framework on youth issues. The term “Structured Dialogue” is the name given to the debates held among youth and youth policy makers in order to reach useful results regarding said policies.

The debate is structured according to priorities and schedules, and includes events in which young people talk to each other about agreed issues and discuss them with policy makers, youth experts, and representatives of the public authorities in charge of youth. More information on the Structured Dialogue can be found on the European Commission website.

JEAN MONET

The objective of Jean Monnet actions is to promote excellence in teaching and research in the field of studies on the European Union throughout the world. These actions also seek to promote dialogue between the academic world and policy makers, in particular with the aim of improving global governance and that of the EU.

Studies on the European Union include the study of Europe as a whole, with a special emphasis on the process of European integration, addressing both internal and external aspects. These promote European citizenship and address the role of the EU in a globalized world, improving the knowledge of the Union and facilitating future commitment and dialogue between people around the world.

SPORTS

Actions in the field of sports are intended to contribute to the development of the European dimension in sports by generating, sharing, and spreading experiences and knowledge on the different aspects of sports in Europe.

Ultimately, sports projects that receive support from Erasmus Plus must lead to higher levels of participation in sports, physical activity, and volunteering.

7.6 GENERAL RESULTS OF THE PROGRAMME – LEVEL 2

The results of the Erasmus Plus Programme are available in statistic reports and compilations, as well as in the Erasmus Plus project platform, which presents most of the initiatives financed by the program and a selection of good practices and achievements.

For this program, there are as many results as there are types of projects, and these differ greatly according to their scope of work and to the beneficiaries to whom they are intended. However, you can find two main types:

- INTANGIBLE RESULTS: These are results that do not materialize in any physical way and remain in *Know How*, improvements to the way of working, etc. These include, among others:

    - The knowledge or experience acquired by participants, learners, or educators.
    - An improvement in competences or achievements.
    - A greater cultural awareness.
    - The improvement in foreign language skills.

- TANGIBLE RESULTS: These are physical materials created within a project (often called “intellectual outputs” when they are of higher quality) and may include, among others:

    - An approach or model to solve a problem.

- A practical tool or product, such as manuals, curricula, or e-learning tools.
- Reports or research studies.
- Guides of good practices or monographic studies.
- Evaluation reports.
- Certificates of recognition.
- Newsletters or informative brochures.
- Courses or didactic schedules.

7.7 SPECIFIC OPORTUNITIES FOR ADULT PERSONS – LEVEL 3

MOBILITIES OF ADULT PERSONS – LEVEL 3

Erasmus Plus supports training exchanges in adult education organizations abroad. These activities can be structured courses, training periods, or periods of professional observation in training centers or other organizations.

These organizations can be, for example, adult training centers, higher education institutions, public organisms, research centers, or organizations that teach courses or training.

Adult training professionals can find more information on this in the Electronic Platform for Adult Learning in Europe (EPALE).

MORE INFORMATION – LEVEL 3

Ask your adult education organization if you can participate in these activities.

The Erasmus Plus Programme Guide offers detailed information on the existing opportunities.

- The B side explains admission and granting criteria, and funding rules.

National agencies can answer queries and help you with requests.