



Ghid metodologic pentru implementarea curriculumului în învățământul profesional tehnic

Unitatea de curs

Limba engleză aplicată în domeniul TIC

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Prefață

Ghidul de față este o piesă curriculară importantă, care vine în ajutorul profesorului de *Limba engleză aplicată în domeniul TIC* din învățământul profesional tehnic. Acesta suplimentează curriculumul aferent, aducând informații utile și relevante, de ordin teoretic și practic, cu referire la procesul de predare-învățare-evaluare a limbii engleze viitorilor specialiști.

Pledând pentru abordarea constructivistă a conținuturilor și a metodologiei pedagogice, deopotrivă, autorii pun accentele didactice prioritare pe practicile de predare axate pe elev, pe învățarea problematizată, cu activități specifice de integrare a peste 100 de tehnologii educaționale, dar și pe experiențele de învățare ale elevilor, pe valorificarea inteligențelor multiple în contexte vocaționale de soluționare a problemelor profesionale. Situațiile de învățare propuse sau create ad hoc de către profesor, în cooperare cu elevii, vor stimula însușirea funcțională a cunoștințelor din domeniul TIC în limba engleză, ca limbă internațională a tehnologiilor informaționale, facilitând, astfel, învățarea în procesul de muncă, cu echipamente familiare viitoarei cariere.

Mediul de învățare fundamentat pe oferirea de servicii este văzut ca o condiție psihopedagogică de tratare constructivistă în învățământul profesional tehnic, fiind constituit din următoarele faze/etape acționale, cu o logică didactică orientată spre impact și rezultate:

- Investighează!
- Pregătește și planifică!
- Acționează, deserveste și învață!
- Reflectează, demonstrează și celebrează/sărbătorește succesul!

Evaluarea autentică a competențelor de comunicare ale elevilor este o altă condiție psihopedagogică din filosofia constructivistă a învățării, pe care autorii o încadrează în exemple concrete, însoțite de comentarii și explicații, bazate pe practici educaționale de succes, care trebuie să asigure reușita verbală, comunicarea firească a celui ce însușește o limbă străină ca instrument de exercitare performantă a profesiei, dar și de avansare inerentă în carieră, pe piața muncii din țară și/sau din străinătate.

Mostrele de proiecte didactice sunt structurate conform cadrului de proiectare și învățare *ERRE – Evocare, Realizare a sensului, Reflecție și Extindere*, având ca generic unitățile de învățare din curriculum, secționare pe lecții, dar și conținuturi atractive de interes profesional din domeniul TIC propuse de manieră interactivă, incluzând situații de practicare pe viu a comunicării în limba engleză.

Elaborate în baza conceptului învățării centrate pe elev, planurile de lecții promovează independența, încurajând subiecții să fie activi și implicați, să împărtășească responsabilitățile, să coopereze, să lucreze în perechi și în grupuri, să comunice autentic despre experiențele lor, dezvoltând abilitățile de comunicare prin sarcini interactive de vorbire, ascultare, citire și scriere în limba engleză.

Îndemnăm profesorii să utilizeze în mod creativ recomandările metodologice date și să își valorifice gândirea critică prin aplicarea selectivă sau integrală a acestora în contexte vocaționale inedite, antrenând situațional toate procesele psihice, inteligența și cultura profesională. Doar astfel cadrele didactice vor contribui la formarea unui vorbitor avizat de limbă engleză în sfera TIC și a unui expert competitiv pe piața muncii.

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Preface

The current guide is an important curricular document that helps the English language educators in teaching applied English in the field of ICT within the secondary and postsecondary vocational education. It comes to complement the related curriculum, providing useful and relevant theoretical and practical information concerning English language teaching, learning, and evaluation process while preparing the future IT specialists.

Based on the constructivist approach, the authors emphasize the educational priorities related to student-centered learning practices (learning based on student's interests and needs, and on reciprocal instruction); problem-based learning (involving activities integrating more than 100 educational technologies and student learning experiences; considering the individual learning styles and the use of multiple intelligences in vocational problem solving context).

The learning situations proposed, or created by the teacher in cooperation with students will stimulate the functional acquisition of ICT knowledge in the English language as an international language of information technologies, thus facilitating work-related learning through the use of the equipment familiar to its future careers.

The service-based learning environment is treated as a psycho-pedagogical condition of constructivist approach aimed to balance the didactic logic in the relationship between the impact and the result in VET, implemented through the following phases/action steps:

- Investigate!
- Prepare and Plan!
- Act, Serve and Learn!
- Reflect, Demonstrate and Celebrate Success!

Authentic assessment of pupils' communication skills is another psycho-pedagogical condition of the constructivist philosophy of learning. The authors fit this approach to learning through experiential practices, accompanied by professional commentaries and explanations. These practices will ensure learners' acquisition of the English natural communication competencies as a tool of professionally performing their job, and of their career advancement on the labour market from the country and/or abroad.

The samples of didactic projects are well structured and aligned by the authors to the ERRE design and learning framework – Evocation, Realization of Meaning,

Reflection and Extension, presented through learning units of the curriculum. Divided into lessons with attractive ICT profession content, all lesson plans propose activities in an interactive manner, containing live-language communication situations in English.

Being designed to follow the concept of the learner-centered learning, the lesson plans empower the learning independence, encouraging students to be active and engaged, to share responsibilities, to cooperate, to work in pairs, in groups, to communicate authentically about them and their experience, building communication skills through English purposeful speaking, listening, reading and writing tasks.

We urge teachers to creatively use these methodological recommendations and capitalize on their critical thinking to the selectively or integrally apply these educational practices in the unprecedented vocational contexts; situationally involving all student mental processes, including intelligence and his professional culture. Thus, the teachers will contribute to the formation of an English language proficient speaker in the ICT sphere, and a competitive expert on the labour market.

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Glossary

Authentic assessments: forms of assessment that measure learning that is meaningful to the learner and can be applied in real world situations outside the classroom walls.

Cognitive apprenticeship: an instructional model that draws upon authentic classroom activities and guided experiences that enable the development of mental skills through reflection, articulation, collaboration, and practice, and that are situated in authentic contexts.

Contextual learning: learning that occurs in the context or situation in which knowledge is to be applied.

Learner-centered teaching: instruction that focuses on the learner's goals for learning as well as the teacher's drawing attention to the unique qualities each learner brings to the learning environment.

Problem-based learning: learning that occurs as individuals strive to solve problems for which there is no set answer, often by working together in small teams.

Service learning: a form of contextual learning that involves learning by doing and engages the learner in critical analysis through workplace experiences and reflective practice in a service or non-paid capacity.

Situated learning: a form of contextual learning in which learning is grounded in real-world actions and situations, and that involves the social processing of information within a community environment.

Work-based learning: a form of contextual learning in which learning is centered in the workplace and that includes a planned program of formal training and/or mentoring and paid work experience.

Chapter 1. Approaches and Methods in Teaching the “English for IT” Course

1.1 CONSTRUCTIVIST PEDAGOGY – THE MAIN APPROACH TO TEACHING ENGLISH IN VET

Nowadays, vocational pedagogy focuses on meeting constructively the students’ needs and matching them with the market requests, thus preparing specialists for real lives. These should be workers able to think critically and resolve creatively the work-related problems, with less efforts and resources. Such professionals need to be ready to explore each opportunity for improving their skills and for developing the new abilities to meet the dynamic changes of their professional field of ICT.

Following this idea, the traditional classroom cannot meet these requirements anymore in order to prepare qualified experts. In this context, the only solution that nowadays’ VET pedagogy offers is applying the constructivist approach.

To start with, we would like to illustrate the main differences between the traditional and constructivist classrooms, which main elements are presented in detail below (see Table 1).

Table 1. *Traditional vs. Constructivist Classroom (Amineh & Asl, 2015)*

Nr.	Traditional Classroom	Constructivist Classroom
1.	<i>Curriculum is presented part to whole, with emphasis on basic skills.</i>	<i>Curriculum is presented whole to part with emphasis on big concepts.</i>
2.	<i>Strict adherence to fixed curriculum is highly valued.</i>	<i>Pursuit of student questions is highly valued.</i>
3.	<i>Curriculum activities rely heavily on textbooks and workbooks.</i>	<i>Materials include primary sources and manipulatives.</i>
4.	<i>Students are viewed as “blank slates” onto which information is etched by the teacher.</i>	<i>Students are viewed as thinkers with emerging theories about the world.</i>
5.	<i>Teachers generally behave in a didactic manner, disseminating information to students.</i>	<i>Teachers generally behave in an interactive manner, mediating the environment for students.</i>
6.	<i>Teachers seek the correct answer to validate the students’ learning.</i>	<i>Teachers seek the students’ point of view in order to understand students’ present conceptions for use in subsequent lessons.</i>

7.	<i>Assessment of student learning is viewed as separate from teaching and occurs almost entirely through testing.</i>	<i>Assessment of student learning is interwoven with teaching and occurs through teacher observations of students at work and through student exhibitions and portfolios.</i>
8.	<i>Students primarily work alone.</i>	<i>Students primarily work in groups.</i>
9.	<i>Students are passive learners.</i>	<i>Students are active learners.</i>
10.	<i>The classroom atmosphere is competitive.</i>	<i>The classroom atmosphere is cooperative.</i>

In keeping with a constructivist viewpoint and its appli-ance in the VET context, the essential role of vocational education in ICT is to “facilitate construction of knowledge through experiential, contextual, and social methods in real-world environments” (Lynch, 1997). “The end product is self-directed learners who make connections to workplaces and other environments based on personal and social experiences” (ibidem).

To engage the IT students in the constructivist practices, the following *experiential practices* might occur in the learning context:

(1) When students reach an impasse during a computer lab, the teacher plays a logic game as a scaffold until students can articulate the logic of the electronic circuit for themselves;

(2) An IT student is matched with a repair shop where she accomplishes her school tasks through regular repairs assigned by the shop owner; or

(3) Students are asked to learn why the nearby IT company is not producing successfully the cables and computer’s parts, a problem where more than one answer may be correct (as cited in Brown, 1998).

These examples outline the importance of ensuring differentiated instruction, inquisitive learning, and ongoing collaboration within work-based practices. In such a way, the English for Specific Purpose (ESP) classrooms bring the new role to the English language itself- the one of a means, not a purpose. As a result, the English competencies the student will develop in class in the process of exploring the job-related content (e.g. linguistic, pragmatic, socio-cultural, etc.) will target the main educational goal - to strengthen the student vocational competencies acquisition useful in the everyday IT-connected occupational life.

To ensure the constructivist approach in the “English for IT” classes, the teacher needs to develop learning environments that incorporate 5 educational experiences as follows:

1. *learner-centered teaching practices,*
2. *problem-based learning,*
3. *contextual teaching and learning experiences,*
4. *integrated academic and vocational curriculum, and*
5. *authentic assessments* (Brown, 1998).

While analyzing each of the above-mentioned experiences, we would like to mention that all five approaches are already put into practice in the Moldovan

educational system, but not so much in teaching English for Specific Purposes in VET. For this reason, in the following guide we will try to approach holistically and separately each of them, offering concrete teaching models, tips, strategies and techniques inspired from the successful international and national EFLT¹ and VET educational practices.

Most importantly, the fact that we are writing now this guide meant to be a methodological tool for EFL teachers in the process of applying the new “English for IT” curriculum in VET settings, strongly proves that one of these five constructivist elements, namely the “integration of the academic and vocational curriculum” has been already put into VET practice. It is for the first time when the EFL pedagogy blends constructively with the Computer Science pedagogy into an educational market-oriented setting.

That said, in the following sections we will try to analyse and bring practical models of how to ensure the learner-centered teaching practices, the problem-based learning, the contextual teaching and learning experiences, and the authentic assessment, and most importantly, how to successfully integrate all of these approaches into the EFL for IT context.

1.2 LEARNER-CENTERED TEACHING PRACTICES

The Learner-centered Teaching Practices place the teacher in the role of *facilitator*, one who assists students in their knowledge and skill development by modeling (demonstrating), scaffolding (supporting), fading (gradually decreasing assistance) and coaching (suggesting, challenging) the learner.

The vocational teacher’s role is not to set tasks, but to organize experiences that allow learners to develop their own knowledge and understanding. Using the methods of cognitive apprenticeship, the teacher is a coach who provides guidance that gradually decreases as learners become more proficient, and who models, mediates, diagnoses, and scaffolds. The learning environment should reproduce the key aspects of communities of practice: authentic activities sequenced in complexity, multiple experiences and examples of knowledge application, access to experts, and a social context in which learners collaborate on knowledge construction.

As Learner-centered Practices “focus on the needs and development of students in class, rather than the course material, as an endpoint”, it is worth investing time in “putting students themselves in the classroom driving seat” to take the place of the lecturer (cited in Parker, 2017). They can teach each other, produce their own assessment sheets and even grade themselves in summative assessments - a task which can be a learning experience in itself for them.

There are 4 steps you could ensure that “the sage-on-the-stage becomes the student” (ibidem):

1 *English as a Foreign Language Teaching*

- A. Teaching and learning from one another;
- B. Let students decide the textbook answers by offering assignments requiring multiple possible, creative answers for a real problem from the ICT domain;
- C. Let students grade themselves, by developing a self- and peer-assessment system of their own needs and acquired skills (for e.g., using the EFL needs' assessment tools, such as the Self-assessment checklist of the European Language Portfolio, the Needs Assessment and Learner Self Evaluation tool, or the rubric generator);
- D. Students can collaboratively build their teaching resources, by encouraging their learning autonomy and motivation.

The previous consulting sessions we had with the EFL teachers regarding the relevance and efficiency of the “English for IT” curriculum showed that out of these 4 steps, the one that needs much support to implement relates to how to efficiently provide teaching and learning from one another. So, in the next lines, we will try to analyse the ways the English instructor could provide students’ teaching and learning from one another - the most important element of a learner-centered environment.

1.2.1 Teaching and Learning from Each Other

The icebreakers, commonly known also as “openers” are the classic solution to let students take the lead. In addition, they learn better through a relaxing atmosphere as “*learning is directly proportional to the amount of fun you have in the classroom*” (Pike, & Busse, 1995). These opening and energizing activities develop the students’ identity, their communicative skills, promote teamwork, lead the audience through a spirited review session, or address the special concerns of the IT work-related topic.

The Icebreakers serve as vehicles for getting participants to introduce themselves or for putting students into the right “frame of mind” for the coming session. They may obviously vary according to the type of lesson being conducted, group size, and group cohesion. Thus, we have to choose our openers carefully, as the way we start the lesson mostly influences the way we lead it generally, because it represents the degree of students’ focus, motivation and readiness to work (Morozan, 2013).

The following exercises might represent good examples of this kind of activities.

The IT Missing Person Announcement is an interactive activity, providing designing the missing announcement for each member of the group.

Materials required: Photos of famous people from IT industry equal to the number of students in the class; English newspapers with missing person announcements; blank papers; and felt-tip-pens.

Procedure:

1. Talk to your class about when and why missing person announcements are needed, and what goes into the making of a missing person announcement.

Thus, it usually includes a physical description - height, weight, colour of hair, age if known, colour of eyes, identifying marks – typical mannerisms, typical pastimes, dress when was last seen etc. (criteria depending on students' knowledge).

2. With the whole class the students analyse different pictures of famous people from the IT industry. Each of them will have to choose one character.
3. Working in pairs, the students need to create a missing person announcement of each other, considering the aspects of the chosen character. It is necessary also to draw a picture of their missing person without writing the name of the missing person. Thus, they may refer to the missing person as X, using only *positive terminology* in the descriptions, without using words and/or expressions, that would make anyone feel bad.
4. Students post their missing announcements on the walls of the class.
5. Students walk about reading the announcements and guessing who the missing persons are.
6. From their seats students call out their guesses and other students either verify or negate them.
7. Posters are taken down and volunteers call out descriptions they remember, while students guess whom the descriptions refer to.

M&M Game

This game is an icebreaker that allows people to get to know each other. Each person grabs some M&Ms and shares facts about himself or herself.

Recommended number of people: Groups of 3-12.

Materials required: A large bag of M&Ms or any candy with multiple colours (e.g. Skittles).

Procedure:

1. The teacher pours M&Ms or any other multicoloured candy into a bowl.
2. He/ she has everyone in the group grab as much or as little as they like from the bowl.
3. He /she makes sure that no one eats their candy right away.
4. For each piece of M&M candy they took, they will have to answer a question, depending on the same colour. For example, you can designate:
 - Red candy: favourite hobbies;
 - Green candy: favourite foods;
 - Yellow candy: favourite movies;
 - Orange candy: favorite places to travel;
 - Brown candy: most memorable or embarrassing moments;
 - Blue candy: wild cards (they can share anyone they choose).

The teacher can be creative and choose any questions you think will fit the group of learners. The facilitator will then call out the color topic and everyone will go around the room sharing one answer per M&M. As an example: if you choose two red pieces of candy, you will have to name two of your favorite hobbies.

5. After, the individuals share that colour with the group, and present some facts about themselves, but from the perspective of the IT experts. As soon as they do this, they may then eat the candies.
6. The students continue to go around the room until each colour topic has been shared.

Homemade Pictionary Game

This is a classic icebreaker game in which the goal is to get your team to correctly identify something that is drawn within the time limit.

Recommended number of people: Teams of 3+ people.

Materials required: Several sheets or two large pads of paper, note-cards, pens, a stopwatch/timer.

Procedure:

1. In advance, a judge (someone who is not playing) should prepare several words written on individual note-cards. These are the words that will be drawn, and that teammates will try to guess. Each word(s) should be labeled as one of the following five categories (or be creative and come up with other ones):
 - *Person, Place*- A person or a place connected to their future job (e.g. Silicon Valley).
 - *Action* - Something that can be done or performed within their future job related to IT (e.g. web page maintenance).
 - *Object* - Something that can be seen or touched (e.g. a hard disk).
 - *Challenge* - Something difficult (e.g. coding).
 - *All play* - A word from any of the above categories. Both teams draw simultaneously.
2. After the judge finishes preparing several cards, he or she shuffles the pile.
3. The group is divided into teams of at least three and being given each team a name.
4. The teacher distributes a large pad (or sheets) of paper and a pen to each group. (Instead of paper, he/she can also draw on chalkboards or whiteboards).
5. He/she decides which team goes first. On a team's turn, they choose someone to draw.
6. The judge prepares a one-minute timer (or stopwatch) and gives the player a card. The judge says "Go!" and starts the timer. The player begins to draw a picture of the word(s).
7. The goal is for the team to correctly guess the word (or basic idea of the word) within the allotted time limit. If the team correctly guesses the word, they receive a point.
8. Then it is the next team's turn.

Rules:

- The artist may not make any hand gestures or audible noises.
- The pictures drawn cannot have any numbers or letters.

- After a team member successfully says part of the word(s) on the card,
Variations:
- In the original Pictionary game, if the team correctly guesses the word, they go again.
- The teacher can use a standard 6-sided die to determine which category a team must draw from. For example, 1: Person, or Place; 2: Action, 3: Object, 4: Challenge, 5: All Play, 6: Wild (you choose).
- Instead of having a judge prepare the clues in advance, the leader can have each player write a few clues in the beginning and then shuffles them all up.

License Plate

This is an adapted version of the game presented in the *101 Games for Trainers: A Collection of the Best Activities from Creative Training Techniques Newsletter* (Pike, & Busse, 1995).

Summary: a game to creatively and visually get participants to speak about themselves.

Recommended number of participants: a large group

Materials required: A blank “License plate” prepared in advance by the teacher, Net acronyms website (Fun with Words, 2018), the Leet language (Simple English Wikipedia, 2018), and the Netiquette rules (Shea, 2011), Markers for the entire group.

Procedure:

1. At the beginning of the session the students will be introduced to the Net language, the abbreviations and the LEET language the Internet users use frequently nowadays. They will have some practices translating the Net and Leet Language into a standard English language, using the universal Leet Converter (Ecker, 2015).
2. They discuss the Netiquette rules, their use and advantages of following them online.
3. The teacher gives each participant a form designed in the likeness of a blank license plate and asks them to create their own personalized plates, using more than seven letters or numbers from the Net acronyms and Leet language. While deciding their own plate code, they will need to consider the Netiquette rules that consider most important for behaving online;
4. He/she asks participants to introduce themselves to the rest of the group using their new “Vanity” plate as a starting point;
5. Each participant gives the group a few minutes to “decode” the plate before explaining it, as some can be fairly tricky;
6. After the plate message is decoded the student will need to decide what Netiquette rules represent his own values of Internet behaviour.

The exercise ends up when each participant’s plate is decoded, when everyone explained the meaning of the code and the Netiquette rules they expect people to follow while communicating with them online. Some sample ideas are:

b3p0l1730nl1n3: be always polite online as a hero, l0v3 n33d f0r 5p33d 64m3: love Need for Speed game.

Using the activities mentioned above, the teacher may state not only the general friendly class atmosphere, but also may familiarize the audience with the new lesson topic, just adapting certain activities to the necessary Computer Science content.

Energizers

Besides the openers responsible to involve students in a cooperative activity, and breaking the ice from the beginning of the lesson, the teacher could use energizing activities designed to actively involve a group, anytime when the teacher senses group's attention might be waning. Often, these games take the form of energetic review sessions or stimulating brain-teasers, or even a physical activity that gets people up and moving. A good example of such energizers could be "The Computer Upgrading Machine", "The Running Dictation" (Hess, 2007), and "Special Brain Teasers".

Computer Upgrading Machine

This game is an adapted version of Car Washer activity (Moldovanu, Culea et al., 2000).

Summary: a game to encourage everybody's affirmation and group integrity, by improvising a computer upgrading process.

Recommended number of participants: 10-20 people/participants

Materials required: None

Procedure:

1. The teacher discusses with students the processes and stages of a computer upgrading, getting students familiar with the special English vocabulary;
2. The students align themselves face-to-face into two rows, so that each member could find a partner. This way, they will form a system, called "a computer upgrading" machine.
3. Each participant starts to move as being a part of this imaginary machine, using their hands to caress, rub, and gently pat the "computer" – a person who passes through the tunnel;
4. After this person is "cleaned and upgraded", he "re-enters" the system and another one starts moving between the rows;
5. The game ends when all participants (computer) are upgraded.

After that the teacher initiates the discussion on the game procedures and also on feelings, difficulties and facilities pupils have playing the game.

Running Dictation

This is an activity to write dictation in a running way.

Recommended number of participants: a large group

Materials required: enough copies of a passage that the teacher wants to review or introduce the entire class connected to Computer Science topics.

Procedure:

1. Students sit in three rows: readers at one end of the class; runners in the middle; writers at the other end.
2. Runners get up and approach the readers, who have the text. The readers read one sentence to the runners.
3. The runners run to the writers and dictate the sentence they have heard. And as quickly as possible return to the readers for the next sentence.
4. The game continues until one group is finished with the whole passage, so, the teacher declares that group winner.
5. The teacher asks the whole class to check the original text to see how closely they followed it.

Variation: Instead of a text it may be used a passage made of geometrical figures. Also, to make the technique more lively, occasionally during the process of dictation, the teacher might shout “switch” and let students exchange roles (readers become runners; runners become writers).

Special Brain Teasers

These are energizing activities that include problems requiring logical thinking processing. This way, the student cognitive intrigue to decipher or decode the riddle drives their motivation to work further.

The following items can serve good examples of brain teasers:

1. A barrel of water weighed 10 pounds. A man put something into the barrel, and now it weighs less than 10 pounds. What did the man put in the barrel?
(*A hole*)
2. A big Eskimo and a little Eskimo were fishing on the ice at the North Pole. The little Eskimo was the big Eskimo’s son, but the big Eskimo was not the little Eskimo’s father. Who was the big Eskimo?
(*The big Eskimo was the little Eskimo’s mother*)
3. An IT engineer, a lawyer, and a psychiatrist were walking down the street together. Which man was wearing the largest hat?
(*The man with the largest head*)
4. Mrs. Brown has an IT company with 9 employees. Half of them are women. How can this be true?
(*The other half were also women*)
5. If Jack Sprat, who is a Computer genius, married a princess, what would he become?
(*Her husband*)
6. If 10 blackbirds were sitting on the power conducting cable lines leading the energy to an Internet provider company, and you shot one of them, how many would be left?
(*None. They would all fly away*)
7. If George Window’s wife went to Washington, while Window’s washwoman washed Window’s windows, how many W’s would there be in all?
(*None. There are no W’s in all*)
8. When is your uncle’s sister not your aunt?
(*When she is your mother*)
9. Which burns longer, pink candles on a little girl’s birthday cake, or blue candles on a little boy’s birthday cake?
(*Neither. They both burn shorter*)

In addition to these energizers and icebreakers presented above, the teachers could explore together with their students the activities presented in the articles like: Twelve Brainteasers (ELT Teacher Corner, 2009), Icebreakers for Classroom and Group Dynamics (Muller, 2003), and Brain teasers students can solve in classes (Madic, 2018).

In conclusion, we could state that using the icebreakers and energizers could help the EFL teacher organize a good lesson for the IT students by fostering their abilities to teach and learn from each other in a friendly collaborative atmosphere. This prepares strong fundamentals for students' learning autonomy and responsibility empowerment, so that they become able to decide the textbook answers, to accurately run their self-/peer-assessment, and to collaboratively build the teaching resources for their learner-centered English classes.

To supplement these practices, here is a list of other learner-centered teaching activities, each presented in accordance with the learning strategies it relies on (see Table 2).

Table 2. Activities for Learner-Centered Teaching (Baker College, 2009)

Learning Strategy	Possible Activities
Check for Understanding <i>(Ways to review material; can be graded or not graded. Emphasis is on "Have students learned?")</i>	Background Knowledge Probe Comparative Advance Organizer Exam Preparation Journals Quiz Show Reconsidering Scavenger Hunt Think / Write / Pair / Share Visible Quiz What? So What? Now What?
Classroom Assessment Technique <i>("Helping learner assess their critical thinking abilities")</i>	Concept Review Data Analysis Defining Features Matrix Directed Paraphrasing Index Card Match One Minute Paper / Muddiest Point Creative media
Critical Thinking <i>(Helping students develop higher order thinking skills)</i>	Analytic Memo Article Abstract Categorizing Grid Failure Analysis Question Creation
Discussion <i>(Engages students in learning through interaction with each other and the material)</i>	Academic Controversies Class Discussion Fishbowl Pro and Con Grid Rotating Trio Three Step Interview

Journaling <i>(Opportunities to reflect through writing)</i>	Contemporary Issues Journals Double Entry Journal Focused Free Writing Frame Sentence Semi-structured Journals
Reflection / Debriefing <i>(Reflecting on the learning that is taking place, and connecting to future learning)</i>	After Action Review Laboratory Notebook Open-Ended Journals Pairs Check Round Table

To create a more detailed picture of the learning activities presented in Table 2, we will describe below one activity called the “Listening Teams” (see Table 3). For additional activities, see Appendix 1.

Table 3. The “Listening Teams” activity

Activity Name:	Listening Teams
Category:	Check for Understanding, Reflection / Debriefing
Suggested duration:	10-30 minutes after a short lecture, video, presentation
Intent:	To help students stay focused and alert during lecture, video, presentation
Implementation:	<ol style="list-style-type: none"> 1. Assign students to one of four roles: <ol style="list-style-type: none"> a. Questioner – students who will ask at least 2 questions about the lecture after it is complete. b. Team Player – students who will identify 2 areas of agreement with the lecture content and explain why; c. Devil’s Advocate – students who will identify 2 areas of disagreement with the lecture content and explain why. d. Example Giver – students who will give example or specific applications of the content. 2. Give your prepared lecture, video, presentation. 3. Group the roles together (all questionnaires, all team players, etc.) and give 10 minutes to formulate their responses to their assigned tasks. 4. Break the students into groups containing one of each role and allow them time to discuss their questions, examples, etc.
Notes:	You can also conduct this activity as a large group session, by reconvening the group after the teams have had time to formulate their responses and discussing each item as a large group.

1.3 PROBLEM-BASED LEARNING

In addition to student-centered learning, the constructivist perspective relates to creating the Problem-based Learning environment too. The teacher will use instructive activities and approaches like cases, simulations, progressive problem-solving, anchored instruction, and action research. There are four critical features of problem-based learning the teacher would need to consider:

1. There has to be a problem that challenges students to start the investigation. The problem addresses real issues from the students' personal world, and the world related to his vocation (in our case, informational technology).
2. The problem has no one "right" answer.
3. Students are the problem solvers who generate solutions. Students "own" the problem; they engage in observation, inquiry, and investigation of a hypothesis; they have major responsibility for shaping their own thinking and formulating solutions.
4. Assessment is used as a structure for student reflection on the impact the problem investigation has had on their knowledge, skills and values. While assessing, the teacher will consider the reasoning process and the computer science knowledge (Brown, 1998).

The next section will introduce/present/deal with the practical aspects of how the teacher might consider all these aspects in his/her classroom setting, and what exercises will benefit the student problem-solving development.

1.3.1 Problem-based Learning Activities

Even though the EFL pedagogy offers a vast collection of the problem-solving activities and methods, we decided to select the most relevant to Computer Science content. Among these could be named the following: "Barnga", "Mindmapping", "Failure Analysis", "Pass a Problem", "Role Play", and "Thinking about Thinking" (see Appendix 2).

In addition to this, the teacher could use other techniques and activities that benefit student problem solving abilities, can improve their reading and comprehension skills, and instruct how to access and use the resources and information available on the Internet. These are: the *Internet Scavenger Hunts*, *Web Quests* and *Virtual Field Trips*, that we will characterize, describe, enumerate below.

Internet Scavenger Hunts or Treasure Hunts

It represents an interactive searching activity which is both fun and informative for students. Besides, the hunts can be geared to virtually any IT curriculum area. Moreover, this activity can be used as a whole class activity, as a team activity, or as a means of providing individual students with review or challenge activities. Scavenger hunts can be as simple or involved as circumstances dictate. Elementary level students (in our case, A1 and A2 levels) may be provided with only a few questions, along with the links or URLs necessary for finding the answers, while

more advanced (B1-B2) may be given only a topic related to IT and asked to find their own sources for obtaining necessary information. As a sample of this activity might serve “How Computers Work” (The Educator’s Network, 2018), or “Is It Copy Right?” (The Educator’s Network, 2018).

The Web Quests

It is “an inquiry-oriented activity in which some or all of the information that learners interact with comes from resources on the Internet. Students not only collate and organize the information they’ve found on the web, but they also orient their activities towards a specific goal they’ve been given, often associated with one or more roles modelled on adult professions” (Benz, 2001). One of the Web Quests that the EFL teacher could use in the IT classes might be the “Fingerprint expert” Quest (Teachology, Inc., 2018). It engages students in an imaginary role simulation of a secret agent solving an IT crime; thus, exploring several sites, the participants will have to produce a digital handbook on “Using Fingerprints to Solve an IT Crime”.

Virtual Field Trip

The game is designed to be a guided exploration through the Web, and organizes a collection of pre-screened, thematically based web pages into a structured online learning experience. As relevant examples of such kind of online travelling could serve the First Thanksgiving Virtual Field Trip (Scholastic, 2018), Discovery STEM Day (Discovery Education, 2018), “Career Connections: Transforming Passion into Career on Facebook” (TGR Foundation, 2018), or “Pi Day Virtual Trip” (Discovery Education, 2015). Thus, the students will be able to virtually explore topics ranging from the historical roots of American discoveries to life inside of the Silicon Valley or the analysis of the smallest of technologies – the nanoscale devices.

1.3.2 Integrating Educational Technologies to Meet Student Learning Styles and Multiple Intelligences in the Vocational Problem-based Learning Environment

Today’s EFL classrooms in the vocational education must teach students not only to speak English fluently, but think critically; analyse and synthesize information to solve productively the problems connected to their specialty, keeping their individual style in accomplishing these tasks. To support the development of these skills the teacher should create in his/her classroom active student-centered learning environments which will encourage the development of students’ multiple intelligences. The informational resources and processing features of the Internet have great potential for creating such kind of environment, fostering learning that goes beyond information retrieval to individualized problem solving strategy and unique style in processing of ideas. Thus, what makes the Internet advantageous for supporting teaching and learning in the classroom is not only its capability of

supporting a number of media features – such as text, graphics, animation, audio, video, or hyperlinks, – but also its support of a number of pedagogical methodologies that can provide teachers with valuable and necessary tools for implementing Multiple Intelligences theory in teaching and learning process.

To start with, it is necessary to mention that multiple intelligences reflect “the capacity to solve problems or to fashion products that are valued in one or more cultural setting” (stated in Smith, 2008), including a set of skills that make it possible for a person to solve problems in life and the potential for finding or creating solutions for problems, which involves gathering new knowledge. People “have a unique blend of intelligences” which can be nurtured and strengthened, or ignored and weakened during their life (ibidem); thus, offering new educational perspectives to be considered. To be specific, each individual has eight intelligences such as: (1) Verbal-Linguistic Intelligence, involving well-developed verbal skills and sensitivity to the sounds, meanings and rhythms of words; (2) Mathematical-Logical Intelligence, meaning the ability to think conceptually and abstractly, and capacity to discern logical or numerical patterns; (3) Musical Intelligence, which reflects the ability to produce and appreciate rhythm, pitch and timbre; (4) Visual-Spatial Intelligence, regarding the capacity to think in images and pictures, to visualize accurately and abstractly; (5) Bodily-Kinesthetic Intelligence, which implies the ability to control one’s body movements and to handle objects skillfully; (6) Interpersonal Intelligence, referring to the capacity to detect and respond appropriately to the moods, motivations and desires of others; (7) Intrapersonal Intelligence, that regards the capacity to be self-aware and in tune with inner feelings, values, beliefs and thinking processes; and (8) Naturalist Intelligence which is the ability to recognize and categorize plants, animals and other objects in nature (Educational Broadcasting Corporation, 2004).

The multiple intelligences theory challenged traditional beliefs in the fields of education and cognitive science, as these eight kinds of intelligence would allow eight ways to teach, rather than one. So, during a class period different students think and learn the same content in many different ways. That happens because the “powerful constraints that exist in the mind can be mobilized to introduce a particular concept (or the whole system of thinking) in a way that children are most likely to learn it and least likely to distort it” (stated in Smith, 2008). Consequently, the teacher has to teach and assess differently based on individual intellectual strengths and weaknesses of each student, structuring learning activities around an issue or question and connect subjects. They have to develop strategies that allow students to demonstrate multiple ways of understanding and value their uniqueness. These could be achieved by: (1) *case-based* learning which fosters students to imagine themselves in the situation described by the case, make decisions, and explain their rationale for their choices; (2) *project-based* learning which involves students to work together to explore a topic and to create something as the end product; (3) *collaborative* learning which gives students the opportunity to choose from a variety of resources to complete their assignments; or (4) *problem-based* instruction where

students learn about a subject in the context of complex, multifaceted, and realistic problems (Educational Broadcasting Corporation, 2004).

To incorporate all enumerated above strategies into a single context, there might be provided Web-enhanced instruction, which provides a learning environment mediated and supported via the Internet/Intranet. According to Davis (1991), “computers can be a valuable and vital tool when combined with Gardner’s Multiple Intelligences to enable educators to reach students with a variety of learning styles.” To be specific, using the World Wide Web, students have access to virtual libraries, electronic databases, and powerful search engines. They can manipulate and generate information in artificial or exploratory learning environments. The Internet also permits interaction and communication among peers and with experts outside the local classroom, both synchronously and asynchronously. Internet technologies support interaction and collaboration that allow students to share ideas, ask questions, and discuss classroom projects (Mills, 2006).

Integrating Technology in Multiple Intelligences will offer the teacher a variety of activities to use for each type of Intelligences. To be specific, the recommended examples and their online links are as follows (Sharp, 2009):

1. Linguistic. Use of word processing programs can help teach language, writing, editing, and rewriting skills. Also, the Internet is an invaluable tool in learning. Using e-mails, students can improve their language skills as well.

The applications children may benefit from are those that encourage to:

- Write stories, essays, and reports (<http://www.readwritethink.org/files/resources/interactives/essaymap/>);
- Create posters, brochures (<http://www.zoho.com/>);
- Create crosswords, quizzes, word finds, cloze sentences and tests (<http://plasq.com/downloads/mac/>);
- Write scripts and make podcasts (<http://audacity.sourceforge.net/>);
- Write and record online (www.blogger.com/);
- Create digital books (<http://www.magmypic.com/>);
- Turn photos into virtual tools including interactive maps, images, and comments (<http://www.mapwing.com/>);
- Create funny newspapers (<http://www.fodey.com/generators/newspaper/snippet.asp>);
- Design a new magazine cover (<http://bighugelabs.com/magazine.php>);
- Generate “word clouds” from a provided text (<http://www.wordle.net/>);
- Convert English text to any several comic dialects (<http://rinkworks.com/dialect/>);
- Make movies (<http://www.xtranormal.com/makemovies/>);
- Design quizzes (<http://www.mystudiyo.com/>);
- Create diagrams (<http://www.drawanywhere.com/>);
- Tell digital stories (<http://www.pimpumpum.net/bubblr/>);
- Create cartoons (<http://toonlet.com>, <http://www.bitstrips.com>);
- Create a timeline (<http://www.dipity.com>).

2. Logical-Mathematical. The recommended applications are:

- Mind-mapping software to realize brainstorming, mind mapping, idea generation, conceptualizing online application (<https://bubbl.us>, <http://www.wisemapping.com>);
- Flashcards and quizzes software (<http://quizlet.com>, <http://www.quibblo.com>);
- The application creating interactive multiple-choice, short-answer, jumbled-sentence, crossword, matching/ordering and gap-fill exercises (<http://hotpot.uvic.ca>);
- Creating spreadsheets (<http://www.google.com/google-d-s/spreadsheets>);
- Building software to create jigsaws (<http://www.jigsawplanet.com>);
- Logic games (<http://games.ztor.com/tang>, <http://www.jigsawdoku.com>);
- Survey maker software (www.surveymonkey.com).

3. Visual/Spatial. These are graphics programs that help develop creativity and visual skills. In this manner, browsing the Internet, organizing files, folders will develop some spatial understanding.

The applications children may benefit from are the ones which provide:

- Draw programs (CorelDraw);
- Photo editing software (<http://fotoflexer.com>);
- Slideshow creator for embedding in Wikis or Blogs (<http://www.photoshow.com/hom>);
- Microsoft Picture Manager;
- Creating digital books (<http://bookbuilder.cast.org>);
- Creating timelines and embed into blogs and Wikis (<http://www.dipity.com>);
- Creating cartoons and comics (<http://www.toondoo.com/Home.on>, <http://www.bitstrips.com/landing>);
- Drawing painting (http://www.crayola.com/coloring_application, <http://www.picassohead.com/create.html>);
- Image composing programs (image composer) (<http://www.psykopaint.com>);
- Paint programs (Photopaint, Microsoft Paint).

4. Musical. Programs that help write or play music are:

- Music composing software (<http://www.threechords.com/hammerhead/introduction.shtml>);
- Downloadable music (<http://www.jamendo.com/en>);
- Programs which allow creating a podcast (<http://www.podomatic.com>);
- Programs to present music (www.teachertube.com);
- Programs integrating stories with songs and instruments (<http://www.storytimesongs.com/activities.html>);
- Word processors (to write about a movie or song).

5. Bodily-Kinesthetic. Using computers will help to develop hand-eye coordination. Working with a computer will allow children to become actively involved in their learning,

The applications children may benefit from are:

- Building software (<http://www.jigzone.com>);
- Tools to take photographic evidence (camera); to record or act for the camera (video cameras); to record voices, survey or take notes (iPods);
- Creating models software (<http://sketchup.google.com>);
- Applications allowing creating a video documentary (<http://animoto.com/education>).

6. *Interpersonal*. Students can work in groups of two to four on the computers. Working in groups will strengthen children's communication and cooperation skills.

Applications children may benefit from are:

- Computer games which require two or more people;
- Programs that allow to create group presentations (PowerPoint, Prezi, Keynote);
- Applications which allow to present personal research and invite others to comment (www.voicethread.com, www.slideshare.com);
- Software providing interviewing other persons in a remote location (<http://polldaddy.com>);
- Simulation/Virtual Worlds Software (<http://www.nationstates.net>);
- Software allowing to create a collaborative Wiki or Blog page, inviting editing and contributing (<http://www.wikispaces.com>);
- Collaborative mind-mapping software (<http://www.mindmeister.com>).

7. *Intrapersonal*. The computer can help children build up individual skills. It allows for differences in children's learning styles and abilities, as they may work on their own pace. Applications children may benefit from are:

- Mindmapping and flow diagrams software (<http://www.wisemapping.com/c/home.htm>);
- Applications allowing to create timelines and embed into Blogs and Wikis (<http://www.dipity.com>);
- Digital books software (<http://www.mixbook.com>);
- Slideshow software (<http://www.slide.com>);
- Application to design quizzes and flashcards (<http://www.classmarker.com>);
- Web tools for researching and recording (<http://www.ibreadcrumbs.com>);
- Instructional games (http://www.herridgegroup.com/instructional_games.html);
- Developing multimedia portfolio (<http://evernote.com>);
- Video editing (Adobe Premier).

8. *Naturalistic* applications involve:

- Virtual encyclopedia/ museum on all living species (<http://www.exploratorium.edu>);

- Surveys and questionnaires (<http://www.kwiksurveys.com>);
- Software allowing to turn photos into virtual tours including interactive maps, images, and comments (<http://www.mapwing.com>);
- Movies software and the tools that make a movie (video camera, iPods, etc.) (<http://explore.live.com>);
- Nature games (<http://www.freerice.com/index.php>);
- Simulation/ Virtual Worlds software (<http://www.dizzywood.com>);
- Surveys and Questionnaires software (<http://www.quibblo.com/create>);
- Applications to build a personal natural environment (<http://www.webearthonline.com>);
- Virtual Exploration software (<http://www.stopdisastersgame.org/en/home.html>).

It is important to mention that the online tools we presented in the previous chapter will not only serve to meet the student learning styles, but also to develop their 4 Basic English language skills, namely reading, writing, listening and speaking. The “Secret Messages” activity presented below will be a good example of how the teacher could integrate these tools in teaching English (see Table 4).

Table 4. *The “Secret Messages” activity*

Title: Secret Messages

Short activity description: Hiding a quote in the film the learners make.

Language skills involved: Listening, reading, speaking, writing.

Tools: Movie creator sites: <https://animoto.com/>, <https://biteable.com/>, <https://moviemakeronline.com> / the course blog.

Technique:

- 1. Propose students to watch 4 movies on Computer Science subjects (Morgan, 2017), for example:*
 - a. The Circle (2017),*
 - b. Risk (2016),*
 - c. Snowden (2016),*
 - d. Steve Jobs: the Man in the Machine (2015), and have each discussed in the class. You can use the “What? So What? Now What” technique for this purpose.*
- 2. Prepare a list of film quotes that you think are interesting and suggestive from these movies. You should have one quote per each student. The list below might be useful:*
 - a. “I think the greatest freedom that I have gained, the fact that I don’t have to worry about what happens tomorrow, because I’m happy with what I’ve done Today” (Snowden, 2016).*
 - b. “Under observation, we act less free, which means we effectively are less free.” (Snowden, 2017),*
 - c. “Because of Cell Phone Everyone is Now a Reporter” (The Circle, 2017),*

- d. *"Secrets are lies. Secrets make crimes possible...Secrets need accountability." (The Circle, 2017),*
 - e. *"Every day you live your life, you lose another day. You don't have that many. So if you're not fighting for things you care about, then... you're are losing" (Risk, 2016),*
 - f. *"The thing that I care about is the whole world" (Risk, 2016),*
 - g. *"The greatest artists like Dylan, Picasso and Newton risked failure. And if we want to be great, we've got to risk it too." (Steve Jobs: the Man in the Machine, 2015)*
 - h. *"Everything around you that you call life was made up by people that were no smarter than you, and you can change it, you can influence it, you can build your own things that other people can use." (Steve Jobs: the Man in the Machine, 2015).*
3. Invite students to research each quote to find the movies each quote was extracted.
 4. Tell students that they are each going to create a movie. Give them instructions and necessary tutorials on how to use a movie maker site.
 5. Tell them they can have anything they like in their movie, but it must include the quote you will give them. They must submit their movies links to the course blog.
 6. You watch the student video and offer feedback to improve the language, if necessary.
 7. You ask all students to watch the peers' movie and try to find the hidden quotes in the movie. They post their guesses to the course site.
 8. Summarize and provide feedback if necessary (Hockly, Clandfield, 2010).

1.4 CONTEXTUAL TEACHING AND LEARNING EXPERIENCE

The Contextual Teaching and Learning Experience is connected to the educational experience the student gets in the family, community, and workplace as well as to in-school purposes. The emphasis is on the application of knowledge and skills in the context of real-life experiences, problems, and events, where higher-order thinking, real-world application of knowledge, and the collection, analysis, and synthesis of information occur from multiple sources.

Four contextual teaching and learning practices such as: *situated learning, cognitive apprenticeship, service learning, and work-based learning*, acknowledge that knowledge and skills are best taught in contexts that reflect how they will be applied in real-life and work-related situations.

1.4.1 Situated Learning

The main elements of situated learning are content, context, community, and participation through which the student is offered a number of opportunities to

engage in meaningful learning. Cooperative and participatory teaching methods are the main ways of helping students acquire knowledge created or negotiated through the environment and from the interactions with others among the learning community. A solution for developing situational learning could serve gamification - an ideal approach for creating engaging learning environment. The game provides learners with permission to fail, encourage them to think out-of-box, and fosters a sense of control. These things create rich learning experience, where students could play different social roles, and simulate the reality into a constructive way; thus, assimilating new strategies to deal with everyday issues, while following the given game patterns (Kapp, 2012).

However, the EFL teachers could still face the challenge of selecting the right game for the IT classes, by avoiding the violent revenge or destruction so much present in virtual or video games.

The *“Activate: Games for Learning American English”* (American English for English Language Teachers around the World, 2015) series might offer students situational contexts to practice vocabulary, grammar patterns, and interaction skills in a learner-centered, low-stress environment. It provides opportunities to talk informally and to think creatively, which is very important in the EFL for IT classrooms.

In addition to the *“Activate”* series, a good tool for the teacher to use in his/her classes might be the *“New World”* game (Khazatyan, et al., 2016). *“It comprises a multi-dimensional approach of fostering either conflict resolution skills or the language competences”* (Morozan, 2016), all related to Computer Science domain. Thus, the game will not only challenge students to address work-related issues, but also to develop student soft skills, such as emotional intelligence, self-management, interpersonal skills, decision making, problem solving, negotiation and persuasive abilities.

Hence, the *“New World”* is an interactive team game, it takes the players on a 10-mission journey to discover North America, build there a community based on peace and harmony, and thus, set foundation for the nation of the United States of America. Therefore, one might want to create a special environment corresponding to the topic. This is most useful when the game is used during English language lessons, when a teacher /trainer (further called Game Master) can decorate the classroom with models of ships or other sailing-related items, US flags, the US map, Founding Fathers of the USA, the US Constitution, etc. (ibidem).

The teacher, who is a so-called Game Master, facilitates the game procedure, guiding the teams throughout the journey, providing materials and realia, and assessing the players’ performance and score. In this way, besides cultural elements of the English language, the game could be adjusted to technological context as well. For example, the imaginary characters migrating England could be the ones having occupations related to the technology domain from the past, current and future. Also, the *“Community Development”* chapter might include the task to develop

communities similar to Silicon Valley - the space that promotes the development of the world communication technology.

For the final Chapter of the game, entitled “Epilogue: Code of Laws” the teams could merge together to form a single “IT community”, discuss and vote maximum 10 laws they consider most relevant and useful for this community. This would be the IT Code of Behaviour each current and future specialist should consider and follow while working in this field.

Most importantly, the EFL teacher may use his/her creativity and imagination to make the game play more interesting, exciting, and valuable for learning each time, just keeping the similar game format. For example, the students could be challenged to *develop this board game as a virtual game*, keeping the same structure and missions, and making it more animated and engaging. As a result, the peace building activities will raise students’ global awareness and improve their conflict resolution skills; will strengthen their creativity, and empower their strategic and critical thinking- the necessary skills to succeed in the 21st century world.

Another game that we highly recommend teachers to use in the “English for IT” classes is Trace Effects (American English for English Language Teachers around the World, 2012). This innovative language learning video game designed by the U.S. Department of State will complement students’ classroom English language instruction through interactive 3-D multimedia learning adventures. The game provides 7 chapters of game play, 28 activities, 4 multiplayer practice activities, 7 graphic novels for extension activities, a point-based scoring system, an English language dictionary integrated into the game, an offline play option through a DVD, a mobile App for smartphone and social media connectivity.

Gamers interact and solve puzzles in a virtual world filled with diverse English-speaking characters. In the game, students take a dynamic journey through the United States, traveling to cultural locations like Kansas, New Orleans, the Grand Canyon, New York City, San Francisco, and Washington, D.C.

The main character of the game is Trace, who is a Computer Science university student from the year 2045 who has accidentally traveled back in time to the present. In order to get home, he must complete a challenging mission to change the future for the better by helping six different young people accomplish great things and have a positive impact on the future.

To introduce teachers to the Trace Effects game, the U.S. Department of State game offers The Trace Effects Teacher’s Manual (Bikowski, 2012). This is a resource that provides information to educators on teaching English using online games and gives ideas for extending beyond the game using easy, interactive tasks.

All in all, geared toward young people, Trace Effects exposes IT student gamers to American society and to themes related to technology, entrepreneurship, community activism, empowering women, science and innovation, environmental conservation, and conflict resolution- the topics of a decisive value for the “English for IT” classes.

1.4.2 Cognitive Apprenticeships and Work-based Learning

In the Cognitive apprenticeship and Work-based learning context/situation/approach, the learner is placed in job-related authentic settings in English. In this situation, settings they observe the work of others from the IT domain during the labs, and occupational internships, where he/she practices, acquires, develops, and refines his/her skills using cognitive tools. This represents a school-to-work transition that must involve students in action learning. Such a new role of the student demands an active learning and working style, whether the EFL instructor's activity should be based more on moderation, consultation and preparation of the learning situation, all in partnership with the Computer Science subject teachers.

In this way, the EFL teacher will collaborate with his/her Computer Science colleagues to develop learning situations for the students, by:

- Modelling their specialty behaviour in different professional contexts;
- Demonstrating how to cope with difficulties in practice;
- Treating students as experts;
- Providing hints and scaffolding;
- Evaluating how learners actually go about the process of learning and practice;
- Offering verbal and nonverbal encouragement;
- Helping students to set their learning and occupational goals;
- Providing an optimal level of help only in those steps that is tailored to the needs of the learner and are beyond the learner's ability - fading is the notion of slowly removing the support, giving the apprentice more and more responsibility;
- Working with learners to overcome weaknesses;
- Enabling students to compare their own problem-solving processes with those of an IT expert or of other students, and ultimately, an internal cognitive model of expertise; and
- Making students able to look back and examine their performances with a desire for understanding and improvement towards the behaviour of an expert (Brown & Holum, 1991).

The following section provides a brief description of a range of *work-based learning activities* (Kansas Public Schools, 2003):

1. *Career Awareness Activities* are designed to make students aware of the range of careers and/or occupations in an industry. These activities help students begin to understand the skills required for specific occupations and the expectations of the workplace. Career awareness activities may include workplace tours, field trips or informational interviews.
 - a. *Workplace Tours and Field Trips* in which students visit a workplace, learn about the business, meet employees, ask questions in English and observe work in progress.
 - b. *Informational Interview* in which students formally interview a workplace partner about his or her industry and chosen profession. The interview includes discussion in English of the career itself, duties and

- daily activities, and the level of education required to be successful. The students also explore growth opportunities in the industry and salary ranges for different occupations.
2. *Career Exploration Activities* provide students with the opportunity to explore fields of interest related to their career goals and academic learning. Students work closely with an adult supervisor and participate in appropriate hands-on workplace experiences using actively the English language. Career exploration activities may include job shadows, and career mentoring.
 - a. *Job Shadow* in which students observe the workday of a professional, interact with clients or customers and attend meetings and other appointments. Job shadows are designed to help students explore a field of interest while developing research skills and building occupational knowledge through a facilitated, active learning process.
 - b. *Career Mentoring* in which the student is matched one-to-one with an adult professional in a chosen field of interest to explore a career and related issues. The career mentor serves as a resource for the student by sharing insights and providing guidance about the workplace, careers, and education.

1.5 SERVICE LEARNING ENVIRONMENT – ONE OF THE CONDITIONS OF THE CONSTRUCTIVIST APPROACHES IN VET

The Service Learning is a form of contextual learning presented to supplement the student-centered, problem-based learning and contextualized teaching approaches. This integrates classroom learning with community service projects provided within the EFL learning setting part of the classroom, clubs or after-school activities. Specifically, the students have to complete a planned series of activities and to apply their competencies to meet a need in their school or greater community.

It is important to state that the service activities need to be meaningful and explicitly connected to the objectives of the course.

In order to provide the service learning in the classroom the teacher has to run 3 steps: (1) *Investigate*, (2) *Prepare and Plan*, (3) *Act, Serve, Learn*, (4) *Demonstrate and Celebrate*.

While describing each stage, we refer to three valuable resources that we highly recommend each teacher to consider while planning, implementing, monitoring and evaluating the service-learning project in the classroom. These are:

1. *A Teacher's Guide to Online Collaboration and Global Projects* (International Education and Resource Network, 2016),
2. *Youth Changing the World. Your Service Project Toolkit* (Youth Service America, 2012), and

3. *K-12 Service-Learning Project Planning Toolkit* (RMC Research Corporation, 2009).

1.5.1 The “Investigate” Stage

This stage provides students with the knowledge and skills needed to participate in and benefit from the service-learning experience. So, the teacher will:

- a. Invite students to identify the community need(s) they could address, based on the 17 UN Sustainable Development Goals (United Nations, 2018) that Moldova as the EU Partnership state aligns to accomplish through an international partnership by 2030,
- b. Get students familiar with the content related to the community problem you selected. This will imply teaching efforts to enrich student vocabulary related to the topic selected, to provide the ESP classroom discussions on a given topic and a research on the causes of the problem the community faces,
- c. Brainstorm possible ideas for the service to be completed, and select the one that better fit to their interests and needs,
- d. Identify and enlist the community service institutions from the neighbouring community that could collaborate with you (like NGOs, City Halls, Novateca Lab Centers, local IT enterprises, or Internet providers).

However, one of the biggest challenges for the teacher in this context will be to introduce students in the UN Sustainable Development Goals and to pre-teach the necessary vocabulary and content that will develop the student global vision on the problems their community faces.

To start with, the teacher has to keep in mind that the English for IT curriculum includes numerous places where sustainable development goals like *Goal 12. Sustainable Consumption and Production*, *Goal 13. Natural Resource Protection and Environmental Enhancement*, or *Goal 11. Sustainable Communities*, etc. can be embedded.

A good example of this connection could serve the fact that the daily IT activity could lead to irrational energy consumption. So, the students can be unaware of the large amount of energy needed to provide suitable physical environments (temperature and humidity) for server farms etc. Also, the demands for system upgrades (domestic and commercial) as well as the move to continuous provision of service (e.g. domestic devices that are always powered and available) could provoke the cyber security issues that become a responsibility of the IT experts.

Furthermore, the technology can alleviate a range of global problems due to the potential for IT use in modelling climate change, and in improving other systems (such as the logistics of transport, ways to protect natural resources e.g. through routing and optimization of other systems) (Gordon, 2015). These are just few examples the teacher could relate to while bringing the global problems into the classroom.

A wonderful resource for the ESP teacher to meet these issues will be the “World Largest Lesson” website² that offers a vast range of instructive materials and lesson plans to teach each UN Sustainable Development Goals. Another useful source will be the Study.com³ website that provides teachers with more than 130 video lesson plans on Information and Computer Science topics. To efficiently apply these materials in the “English for IT” classroom and student needs, the teacher might easily adjust them to the technology context. An example of such a lesson plan might serve the ‘Challenging Common Conceptions” lesson plan from the “World Largest Lesson” series (see Appendix 3).

Beside the fact that the ESP teacher introduces students into the global issues such as irrational consumption or the lack of developed infrastructure (UN Sustainable Goals 9, 11, 12), he/she can add few problem-solving tasks engaging the IT student knowledge and skills in dealing with these environmental, social and economic problems. This interdisciplinary exercise will make students more globally aware and socially responsible and will create their personal attitude and contribution to develop sustainable infrastructures and communities they live in.

Further, we propose several project ideas that students could perform dealing with service-learning content in the “English for IT” setting:

- Showing elementary school students how to create a website, a PowerPoint presentation, an animated video, and the like. Have students focus on their elementary school events, community service projects, or learning objectives to be shared with parents and perhaps the community.
- Developing a computer art-therapy game or program for the local senior centre, children’s hospital, or domestic violence shelter, using the magic of colours.
- Volunteering as IT assistants at nonprofit events on and off campus.
- Working with non-profit organizations to develop online brochures for use in recruitment and information.
- Create and produce informational videos for child educational centers.
- Host an Online Safety Fair on campus that is open to the public.
- Create educational games for kids and students on “greening” their rooms, homes, apartments, installation of low-flow water heads, composting, strategic planting trees, etc.
- Develop an online questionnaire that asks students why they do or do not get involved with volunteering in their community, and use it to interview 50 students and workers.
- Evaluate the findings and develop a plan that will motivate more IT students to volunteer. Implement this plan in your school.
- Create an informational portal to raise awareness for child abuse prevention,

2 *The World Largest Lesson website: <http://worldslargestlesson.globalgoals.org>*

3 *Study.com. Computer Lessons. Retrieved on November 3, 2018 from: <https://study.com/search/text/academy.html?q=computer#/lessons/computer>*

- Design a software for the local library book collections.
- Instruct elderly in handling Skype to communicate with their children from abroad.
- Provide technical and promotional support for a cancer research fundraising, and many other initiatives.

1.5.2 The “Prepare and Plan” Stage

This stage includes planning service activities, and the real inclusion of the service-learning in the ESP syllabus, together with a detailed further assignment that will help students understand what is expected of them. At this stage the students must understand what they can expect to accomplish with the service activity and how the service activity is related to the objectives of the course.

For this reason, the ESP teacher will need to consider for his/her unit planning:

1. the description of service-learning experience;
2. goals and objectives of these experiences for students and for community members;
3. projects/assignments related to the service experience;
4. readings/discussions/presentations (i.e. course content) related to the service experience;
5. assessment of service experience as an explicit component of determining grading for the course; and
6. opportunities for structured reflection on the connections between academic content and service provided.

As the teacher and the students engage in the “Prepare and Plan” stage , they will need to answer the following guiding questions:

1. *Once you and the students identify a potential problem area, what questions about the problem and possible solutions should they try to answer through their library and Internet research?*
2. *What is the specific service to be provided? How does the service relate to the overall purpose of the service-learning activity? How does it address the areas of impact that you hope it will have on the students and the community? Will it successfully address the area that you measured to establish the baseline of the problem?*
3. *How will you facilitate student decision-making about the specific type of service to be provided and the division of labor that is needed to implement the project?*
4. *What content standards and benchmarks will be met as students plan and provide the service activities?*
5. *What civic goals will the project address? What civic knowledge, skills (e.g., informed decision making, listening, expressing their opinions), and dispositions (e.g., tolerance, sense of responsibility for others, believing they can make a difference in the world) will be acquired?*

6. *What other learning do you hope students will gain from the project (e.g., social skills, career exploration, learning to manage conflict, and/or learning about themselves)?*
7. *How can you ensure that the community partners are part of the vision, planning, and preparation phases?*
8. *How will you assess the students' readiness for the project?*
9. *What do your students need to understand about the social problem, the community and organizations with whom they will work, the recipients of service, and themselves? What skills do they need to have (e.g., communicating with others, conducting experiments, planning activities)?*
10. *What attitudes and values should they have? What strategies will you use to ensure that students have the prerequisite knowledge, skills, attitudes, and values?*
11. *How will you weave reflection activities into this component?*
12. *What types of assessment will you use to determine progress toward meeting specific service-learning project goals and learning objectives while they are working on this phase of the project? (RMC Research Corporation, 2009).*

Based on the answers received to the guided questions, the teacher creates lesson plans for each step in the Service Activity phase of the project, following the worksheet presented in Appendix 4.

Moreover, making arrangements for students to carry out service-learning projects involves many administrative issues, such as scheduling (possibly getting permission for students to miss classes), gaining parent permission and involvement, and managing risk. For this, the teachers together with students will have to answer the administrative questions like:

- *What challenges do you anticipate related to each issue?*
- *What resources (people, financial, etc.) could help you and your students with these challenges?*
- *What are your final strategies for addressing each administrative issue? (see Appendix 5).*

1.5.3 The “Act, Serve, and Learn” Stage

This phase is the service activity implementation phase, when the teacher has to provide the curricular and motivational support to each student involved, to ensure that course concepts are being applied in the service-learning activity, and that academic goals are being met.

As for the students, at this point, they need to adhere to all established regulations and/or guidelines, along with adhering to agreed-upon scheduling and/or expectations. More details about this stage could be found in “*Youth Changing the World. Your Service Project Toolkit*” (Youth Service America, 2012), and “*K-12 Service-Learning Project Planning Toolkit*” (RMC Research Corporation, 2009).

1.5.4 The “Reflect, Demonstrate and Celebrate” Stage

This stage offers the opportunity for students to critically think about the service-learning experience and to apply insights to a broader academic and social context surrounding him/her together with the activities he/she performed. At this point, the instructor needs to explain that reflection is an integral component of the service-learning project and to stimulate students to think critically about the experience in their own words. A good model of reflecting might be the reflection exercise the teacher could do him/herself to review and later share with the whole group his/her own experience.

Even though some of the reflection activities have been presented in the “Learner-Centered Teaching Practices” and “Problem-Based Learning” units above, the service learning strategies will differ in content from these.

The most important difference is that at the basis of these strategies stands the “*What? So What? Now What?*” model specifically adapted to impact student understanding and attitude formation through service-learning analysis (See Appendix 6).

The following examples will represent some interesting reflection activities the teacher could use in the ESP classes while implementing the social initiatives in their communities (Sloan, 2018.):

1. *Critical Incident Journal* – This type of journal entry focuses the student on analysis of a particular event that occurred during the week. By answering one of the following sets of prompts, students are asked to consider their thoughts and reactions and articulate the action they plan to take in the future: *Describe a significant event that occurred as a part of the service-learning experience. Why was this significant to you? What underlying issues (societal, interpersonal) surfaced as a result of this experience? How will this incident influence your future behaviour?*

Another set of questions for a critical incident journal includes the following prompts: *Describe an incident or situation that created a dilemma for you in terms of what to say or do. What is the first thing you thought of to say or do? List three other actions you might have taken. Which of the above seems best to you now and why do you think this is the best response?*

2. *Three-part Journal* – Students are asked to divide each page of their journal into thirds, and write weekly entries during the semester. In the top section, students describe some aspect of the service experience. In the middle of the page, they are asked to analyse how course content relates to the service experience. And finally, an application section prompts students to comment on how the experience and course content can be applied to their personal or professional life.
3. *Free Association Brainstorming* – This reflection session should take place no earlier than the end of the first 1/3 of the project experience. Give each student 10-20 “posts” and ask them to write down all the feelings they

had when they first heard about their service-learning requirement. After they finish the first question, have them write down all of the feelings they had when they experienced their first “field encounter.” After finishing question two completely, have them write down all of the feelings they are having “right now” regarding their service-learning experience. Encourage them to write down as many different brainstormed thoughts as possible (one for each card). Have three newsprint papers strategically located and taped to the walls around the classroom. Have one with a large happy face, one with a sad face, and one with a bewildered face. Ask students to now place their words on the newsprint paper that closest fits their brainstormed feelings. Then, have them stand next to the newsprint that has most of their feelings.

This exercise involves both writing and speaking and is seen as non-threatening in an oral presentation sense.

4. Quotes in Songs – Ask the students to find a song where the singer uses lyrics that describe what he/she feels about the service-learning project. Emphasize that it does not need to be a whole song, but a lyric in a song. If they have access to the song, tell them to bring it to play at the end of the reflection session. Even if they do not have the song, ask them to “say” the lyrics that describe their feelings. This usually proves to be “fun” in a sense that it creates a casual atmosphere and bonds the group together. Many times others will help by trying to sing it with them. Playing the songs usually creates a celebratory atmosphere. You might also bring a bag a bag of candies, or something similar to keep the festive spirit going.
5. Experiential Research Paper – An experiential research paper is a formal paper that asks students to identify a particular experience at the service site and analyses that experience within the broader context in order to make recommendations for change. Mid-semester, students are asked to identify an underlying social issue they have encountered at the service site. Students then research the social issue and read three to five articles on the topic. Based on their experience and library research, students make recommendations for future action.

This reflection activity is useful in interdisciplinary courses and provides students flexibility within their disciplinary interests and expertise to pursue issues experienced at the service site. Class presentations of the experiential research paper can culminate semester work.

6. Service-Learning Contracts and Logs – Service-learning contracts formalize the learning and service objectives for the course. Students, in collaboration with their instructor and agency supervisor, identify learning and service objectives and identify the range of tasks to be completed during the service experience. Oftentimes, a service-learning contract cannot be completed until the student is at the agency for a couple of weeks and has a clear idea of how their skills and expertise can be of service. A service

log is a continuous summary of specific activities completed and progress towards accomplishing the service-learning goals. The contract and the log can become the basis for reflection when students are asked to assess their progress towards meeting the identified objectives and identify the obstacles and supports that had an impact on their ability to achieve the service-learning objectives. These items can also be submitted in a service-learning portfolio as evidence of the activities completed.

7. Directed Readings – Directed readings are a way to prompt students to consider their service experience within a broader context of social responsibility and civic literacy. Since textbooks rarely challenge students to consider how knowledge within a discipline can be applied to current social needs, additional readings must be added if this is a learning objective of the course. Directed readings can become the basis for class discussion or a directed writing.
8. Ethical Case Studies – Ethical case studies give students the opportunity to analyse a situation and gain practice in ethical decision making as they choose a course of action. This reflection strategy can foster the exploration and clarification of values. Students write a case study of an ethical dilemma they have confronted at the service site, including a description of the context, the individuals involved, and the controversy or event that created an ethical dilemma. Case studies are read in class and students discuss the situation and identify how they would respond.
9. Truth is Stranger than Fiction – This is an exercise that is best used toward the middle or end of the student’s experience. Have the students break into groups of three (no more). Ask them to share the most unusual story that happened to them during their service-learning experience. Some students will be hesitant at first. If they really can’t think of one, don’t let them off the hook. Tell them to take the assignment at home, write it and submit it at the next session. This usually motivates them to think of one rather quickly. In fact, most classes come up with some really interesting stories. Then, have the class come together as a whole and share them. It is surprising how animated all of the students get. Even if it is not their own story, they feel some ownership if the person was in their group. Usually, everyone ends up sharing a story.
As you move through the exercise, even the reticent ones usually find themselves sharing something. Be prepared to praise these students a little. If you happen to have a class that is filled with interesting stories, you might want to save these stories and submit them to the Service-learning Program for future use.
10. Student Portfolios – This type of documentation has become a vital way for students to keep records and learn organizational skills. Encourage them to take photographs of themselves doing their project, short explanations (like business reports), time logs, evaluations by supervisors or any other

appropriate “proof” which could be used in an interview. Require them to make this professionally. Keep reminding them that submitting it at the end of the term is only one reason for doing this. *“The real reason is to have documentation to present at future interviews. This could be a major factor in distinguishing them from other candidates.”* Student portfolios could contain any of the following: service-learning contract, weekly log, personal journal, impact statement, directed writings, photo essay. Also, any products completed during the service experience (i.e., agency brochures, lesson plans, advocacy letters) should be submitted for review.

Finally, a written evaluation essay providing a self-assessment of how effectively they met the learning objectives of the course is suggested for the portfolio.

11. *It’s My Bag* – Tell the students to find a bag at home (any bag). Then, tell them to fill it with one (or two-depending on time) item(s) that remind them of how they feel about their service-learning project. Tell them to bring this bag with the item(s) to the reflection session, and have them explain their items to the rest of the class. The items that they bring usually turn out to be inspiring visual aids that bring out some great comments.
12. *Small Group Week* – This is a simple alternative to full-class reflection sessions when you really want students to have a maximum amount of time to talk individually. Schedule the reflection sessions so that only a small number of students need to attend. The group should consist of no more than 10-12, if possible. The rest of the class will be scheduled to attend other class periods, using this period for whatever you want them to be doing outside of class. The students will feel more like sharing when you form the group in a small intimate circle and spend the period asking them questions related to their service-learning experience that encourages self-expression.
13. *E-mail Discussion Groups* – Through e-mail, students can create a dialogue with the instructor and peers involved in service projects. Students write weekly summaries and identify critical incidents that occurred at the service site. Students can rotate as a moderator of the discussion every two weeks. Instructors can post questions for consideration and topics for directed writings. A log can be printed to provide data about group learnings that occurred from the service experience.

In a nutshell, the above mentioned activities will help teachers to plan the reflection assignments he/she will use during all stages, specifying: (a) the concrete reflection assignment he/she expects students to complete for each stage; (b) assignment prompts, (c) the mode of student responding, and (d) the length (see Table 5).

Table 5. *Planning for reflection worksheet*

Service Learning Stages	Reflection assignment	Reflection prompt	Mode of responding/ answering/ reacting	Length/ timeframe
Prepare and Plan				
Act, Serve, Learn,				
Demonstrate and celebrate				

Any service-learning project should culminate with *demonstration and celebration* of learning and impact. It provides a public forum for students to display their knowledge, which encourages them to synthesize what they have learned through service, provides an authentic context for assessment, and builds community members' expertise with respect to the community problem. In an effective demonstration and celebration, students show others how they impacted the community and how they themselves have changed as a result of their service-learning activities. Finally, a high quality demonstration and celebration event engages participants in analyzing and developing potential solutions to the new set of social issues signaled by the end for the service-learning project, further enhancing their problem solving skills and dedication to service.

Teachers have several options for demonstration and celebration events, including:

1. Demonstrating the impact on the community (RMC Research Corporation, 2009):
 - a. *Measurement on a neighbourhood quality index,*
 - b. *Poster exhibition,*
 - c. *Showcase,*
 - d. *Portfolio fair,*
 - e. *Development of products such as oral presentations, websites, videos, booklets, before/after pictures of the community.*
2. Demonstrating impact on Self:
 - a. *Self-portraits,*
 - b. *Autobiographies,*
 - c. *Story Boards,*
 - d. *Pre/post measures of knowledge, skills, or behaviours,*
 - e. *Evaluation of student work by experts, community partners, recipients of service, or panels of judges,*
 - f. *Sharing insights through issues forums.*
3. Celebrating accomplishments:
 - a. *Recognition at a school-wide ceremony,*
 - b. *Awards,*
 - c. *A tour of the service site to observe progress,*
 - d. *Letters of recognition from community partners, elected officials, etc.,*

- e. *Service credits on the students' transcripts,*
- f. *Creation of a fund to support future service around the issue,*
- g. *Recognition during a traditional ceremony such as graduation.*

In addition to the service-learning activities, the teachers together with their students can also could join the international global learning networks, like International Educational and Resource Network (iEARN)⁴ that has an impressive extension also in our country (almost 1000 teachers and students⁵). The iEARN network engages participants in an online collaboration with over 30,000 schools and youth organizations in more than 140 countries. Teachers and young people work together in almost 200 projects, which are annually published and renewed in the iEARN Project Book (International Education and Resource Network, 2018). This vision and purpose is the glue that holds iEARN together, enabling participants to become global citizens who make a difference by collaborating with peers around the world, while working on the 17 UN Sustainable Development Goals.

An example of an iEARN project the IT students could collaborate in is the “3D Ideas” initiative coordinated by teachers from Taiwan and the Netherland (see Table 6).

Table 6. Description of “3D Ideas” Project

<i>Project Title:</i>	<i>“3D Ideas”</i>
<i>Ages:</i>	<i>All</i>
<i>Language:</i>	<i>English, German, Dutch, Chinese</i>
<i>Project group on iEARN:</i>	<i>https://iearn.org/cc/space-2/group-473</i>
<i>Project website:</i>	<i>http://www.computerart.club/</i>
<i>Project coordinators:</i>	<i>Benjamin Mathews, Taiwan, Monique Dewachand, Netherlands</i>
<i>Project description:</i>	<i>Students experiment with free software to create 3D models, animations, games, VR experiences or even to design 3D printable objects. In this project students share their ideas and their achievements. They can share their early attempts and their hopes for what they would like to do with 3D in the future. The project also supports the student collaboration in creating animations and virtual games.</i>

To guide ESP teachers through the steps of planning and conducting an online, collaborative project with classrooms around the world, the iEARN proposes a “Teacher’s Guide to Online Collaboration and Global Projects” mentioned above. This resource equips them with all service-learning knowledge and skills to facilitate

4 *International Education and Resource Network (iEARN) website: <https://iearn.org>*
 5 *iEARN-Moldova website: <http://iearnmoldova.weebly.com/>, iEARN-Moldova Facebook page: https://web.facebook.com/groups/academiaaise/?ref=br_rs*

student cross-cultural interaction, global classroom projects, and new learning opportunities online. As a result, the IT students will be able to make meaningful contributions to the health and welfare of the planet by exploring real-world issues and working collaboratively with local and global peers to find solutions.

In conclusion, we could say that these international initiatives offer both cross-cultural and cross-curricular interpretations of the global problems related to technology, environment, education, architecture, communication, cultural exchange, and social interaction, helping students become more socially responsible as a person and a future IT specialist.

1.6 AUTHENTIC ASSESSMENT AS THE CONSTRUCTIVIST CONDITION IN VET

Since the “English for IT” curriculum (Păduraru, Moroza et al., 2018, p. 28-32) proposes already a set of useful tips and strategies to guide teachers along the assessment process, we will supplement this information with the ways to integrate the authentic assessment in the ESP environment, which is the last constructivist learning environment.

It is considered that the Authentic Assessment is the most challenging experience to ensure due to teachers’ perception that all learning activities need to be used as part of the student’s grade. However, the teacher needs to understand that in an active learning environment, just like the real market world, students can learn the most from their mistakes, without fear of the impact on their course grade.

Moreover, some activities like group work could be challenging for grading, since the teacher is often confronted by the “free-rider” problem of a group member who does not contribute, but shares in the group rewards. The solution for this might be the employment of a grading system that provides individual as well as group accountability.

Writing assignments and other projects could be quickly graded using a system of minus (-), check (✓), and plus (+). The minus symbol can be used to denote work that does not meet all standards, the check that the work is acceptable, and the plus for work that demonstrates excellence. For grading, these marks can be translated into points such as 0 for no work, 1 for a minus, 2 for a check, and 3 for a plus. Points from all journals or other work can then be totalled and integrated into the course grade (Angelo & Cross, 1993).

Here are some models for how to approach grading of learning activities to consider in the English for IT classes (ibidem, 1993):

- *Participation*: Students receive participation credit for participating in an activity.
- *Mastery Learning*: Students are required to demonstrate mastery of an activity before receiving credit.
- *Individual Assignments in a Group Project*: For a group project, each

individual can be required to produce their own project first as the basis for at least partial grading. The group then synthesizes the individual efforts into a common project.

- *Content, Form, and Function Outlines*: In an outline form, students analyse the “what” (content), “how” (form), and “why” (function) of a particular message (e.g. poem, newspaper story, billboard, critical essay), also called “What, How, & Why Outlines”.
- *Analytic Memos*: Students write a one- or two-page analysis of a specific problem or issue to help inform a decision-maker.
- *One-Sentence Summary*: Students answer the questions “Who does what to whom, when, where, how, and why?” (WDWWWWHW) about a given topic and then creates a single informative, grammatical, and long summary sentence.
- *Word Journal*: involves a two-part response; first, the student summarizes a short text in a single word and second, the student writes 1-2 paragraphs explaining the word choice.
- *Approximate Analogies*: Students simply complete the 2nd half of an analogy - a is to b as x is to y; described as approximate because rigour of formal logic is not required.
- *What’s the Principle?*: Students identify principle or principles to solve problems of various types.
- *Documented Problem Solutions*: Students track in a written format the steps they take to solve problems as if for a “show & tell”.
- *Audio- and Videotaped Protocols*: Students work through a problem solving process and it is captured to allow instructors to assess metacognition (learner’s awareness of and control of thinking).
- *Directed Paraphrasing*: Students paraphrase part of a lesson for a specific audience, demonstrating the ability to translate highly specialized information into familiar language the clients or customers can understand.
- *Student-Generated Test Questions*: Students generate test questions and model answers for critical areas of learning.
- *Human Tableau or Class Modeling*: Students transform and apply their learning into “doing” by physically modeling a process or representing an image.
- *Classroom Opinion Polls*: Students indicate a degree of agreement or disagreement with a statement or prompt, using <https://www.polleverywhere.com/>
- *Everyday Ethical Dilemma*: Students respond to a case study that poses a discipline-related ethical dilemma.
- *Course-related Self-Confidence Surveys*: Students complete an anonymous survey indicating their level of confidence in mastering the course material.
- *Focused Autobiographical Sketches*: Students write a brief description of a successful learning experience they had relevant to the course material.

- *Goal Ranking and Matching*: Students list and prioritize 3 to 5 goals they have for their own learning in the course.
- *Self-Assessment Ways of Learning*: Students compare themselves with several different “learning styles” profiles to find the most likely match.
- *Productive Study-Time Logs*: Students complete a study log to record the quantity and quality of time spent studying for a specific course.
- *Punctuated Lectures*: Students briefly reflect, and then create a written record of their listening level of a lecture. Repeat twice in the same lecture and 2-3 times over two to three weeks.
- *Process Analysis*: Students outline the process they take in completing a specified assignment.
- *Diagnostic Learning Logs*: Students “write to learn” by identifying, diagnosing, and prescribing solutions to their own learning problems.
- *Chain Notes*: On an index card that is distributed in advance, each student responds to an open-ended prompt about his or her mental activity that is answered in less than a minute.
- *Classroom Assessment Quality Circles*: A group or groups of students provide the instructor with ongoing assessment of the course through structured interactions.
- *Rubrics*: A rubric provides a detailed breakdown of what the criteria are for performance and what the different levels of performance are. This allows the assignment of a different grade for different projects in a way that is clear, fair, and objective to the students.

The platforms like Rubistar.4teachers (ALTEC, 2008) will help teachers to generate their own rubrics for grading students’ oral presentations, writing and reading skills, multimedia projects, and other student-designed products (web design, digital storyboards, posters, games, newspapers, etc.) (see Table 7 for a rubric example).

Table 7. Digital Storytelling Rubric, created on Rubistar.4teachers

Topic: My Daily Life as an IT Expert
Teacher’s name: _____
Student’s name: _____

CATEGORY	4 points	3 points	2 points	1 point
<i>Dramatic Question</i>	<i>Realization is dramatically different from expectation.</i>	<i>Realization differs noticeably from expectation.</i>	<i>Realization barely differs from the expectation.</i>	<i>Realization and expectation do not differ.</i>

<i>Point of View - Awareness of Audience</i>	<i>Strong awareness of audience in the design. Students can clearly explain why they felt the vocabulary, audio and graphics chosen fit the target audience.</i>	<i>Some awareness of audience in the design. Students can partially explain why they felt the vocabulary, audio and graphics chosen fit the target audience.</i>	<i>Some awareness of audience in the design. Students find it difficult to explain how the vocabulary, audio and graphics chosen fit the target audience.</i>	<i>Limited awareness of the needs and interests of the target audience.</i>
<i>Voice - Conversational Style</i>	<i>Uses a conversational style throughout.</i>	<i>Uses a conversational style the majority (85-95%) of the time</i>	<i>Uses a conversational style most (70-84%) of the time.</i>	<i>Presentation style is primarily monologue.</i>
<i>Voice - Pacing</i>	<i>The pace (rhythm and voice punctuation) fits the story line and helps the audience really \“get into\” the story.</i>	<i>Occasionally speaks too fast or too slowly for the story line. The pacing (rhythm and voice punctuation) is relatively engaging for the audience.</i>	<i>Tries to use pacing (rhythm and voice punctuation), but it is often noticeable that the pacing does not fit the story line. Audience is not consistently engaged.</i>	<i>No attempt to match the pace of the storytelling to the story line or the audience.</i>
<i>Soundtrack - Originality</i>	<i>All of the music is original.</i>	<i>Most (over half) of the music is original.</i>	<i>Some of the music is original.</i>	<i>None of the music is original.</i>
<i>Soundtrack - Emotion</i>	<i>Music stirs a rich emotional response that matches the story line well.</i>	<i>Music stirs a rich emotional response that somewhat matches the story line.</i>	<i>Music is ok, and not distracting, but it does not add much to the story.</i>	<i>Music is distracting, inappropriate, OR was not used.</i>

<i>Images</i>	<i>Images create a distinct atmosphere or tone that matches different parts of the story. The images may communicate symbolism and/or metaphors.</i>	<i>Images create an atmosphere or tone that matches some parts of the story. The images may communicate symbolism and/or metaphors.</i>	<i>An attempt was made to use images to create an atmosphere/ tone but it needed more work. Image choice is logical.</i>	<i>Little or no attempt to use images to create an appropriate atmosphere/ tone.</i>
<i>Economy</i>	<i>The story is told with exactly the right amount of detail throughout. It does not seem too short nor does it seem too long.</i>	<i>The story composition is typically good, though it seems to drag somewhat OR need slightly more detail in one or two sections.</i>	<i>The story seems to need more editing. It is noticeably too long or too short in more than one section.</i>	<i>The story needs extensive editing. It is too long or too short to be interesting.</i>
<i>Duration of Presentation</i>	<i>Length of presentation was 4 minutes.</i>	<i>Length of presentation was 3 minutes.</i>	<i>Length of presentation was 2 minutes.</i>	<i>Presentation was less than 2 minutes long OR more than 4 minutes.</i>
<i>Grammar</i>	<i>Grammar and usage were correct (for the dialect chosen) and contributed to clarity, style and character development.</i>	<i>Grammar and usage were typically correct (for the dialect chosen) and errors did not detract from the story.</i>	<i>Grammar and usage were typically correct but errors detracted from the story.</i>	<i>Repeated errors in grammar and usage distracted greatly from the story.</i>
<i>Point of View - Purpose</i>	<i>Establishes a purpose early on and maintains a clear focus throughout.</i>	<i>Establishes a purpose early on and maintains focus for most of the presentation.</i>	<i>There are a few lapses in focus, but the purpose is fairly clear.</i>	<i>It is difficult to figure out the purpose of the presentation.</i>

As a conclusion, we would like to stress upon the importance of ensuring the constructivist approach in VET environment. This will offer the English teacher the possibility to: model students how to “think”; create curriculum and instruction around the student needs to know; collaborate with students to create the rubric or scoring guide; let students choose their own project and media form that reflects the purpose of the instruction; or provide a continuous and constructive feedback to maintain the student learning progress- the constructivist activities that the teacher could find integrated into the “English for IT” Course lesson plans samples from Chapter 2.

Chapter 2. “English for IT” Course Lesson Plans Samples

2.1 ERRE: AN INCONTESTABLE METHODOLOGICAL FRAMEWORK PROMOTING ACTIVE, INDEPENDENT LEARNING AND CRITICAL THINKING

This chapter includes samples of lesson plans designed in ERRE framework, a model frame of thinking and learning, which enhances students’ critical analysis and critical reflection.

At the first stage, *Evocation*, which enables the transfer of knowledge, the students are encouraged to use their knowledge and experience on the subject. They anticipate the purpose of teaching and learning. This phase connects the previously acquired with the knowledge that is being acquired. Several methods and techniques have been used at this stage, such as *Clustering, Brainstorming, Word clouds, Word hunt strategy, Venn’s diagram, Pass a problem, Word associations, List-Group-Label*, etc.

Realization of meaning gets the students through a new text/information analysis, thematic presentations, new contents, integrating them into their own knowledge. At this stage, the information is acquired. Among the variety of methods, the following have been practiced: *DARTs (Matching exercises, Q&A, Fill-in-the-gap exercises, True/False), Diagrams / Tables, Group work, 6 Thinking Hats, Graffiti strategy, KWL table, Reciprocal teaching, Jigsaw reading, Graphic organizer, Possible sentences, etc.*

At the *Reflection* stage, the students think what they have learned, rearrange the existing knowledge, build/create a link between the current and new knowledge, creating a new quality. *Pyramid method, Cause-effect diagram, T-chart, Role-play, 3:2:1 technique, Think-Pair-Share, One minute sentence, Cinquain, Academic Controversies, Argumentative speech*, are some of the strategies recommended for this stage.

Extension is oriented towards creativity development and the promotion of the strategic vision, generation of ideas, activities of designing, planning, and production (Cartaleanu, 2017). At this stage, the authentic learning activities motivate students for new topics and experiences. They apply the knowledge in authentic problem-solving situations beyond the classroom: *Case study, Projects, Investigation, Interviews, Visits, Exhibitions*. An extension task is a further activity, providing more forms of practice, given as extra, more demanding work.

The project work is very useful for practicing the language. Students can choose the topic, work in groups and they develop their social skills to cooperate and communicate together. They choose the way of work, divide tasks and agree on the output of the project. They are responsible for their work on their project and for their

results. Although the responsibility for project work is given to students, a teacher's role is not insignificant. The teacher is acting as advisor and coordinator, proposing the stages of preparation for the project: Definition and development of the topic, development of the project plan, Distribution of tasks, roles, selection of material in various sources, designing the project outcomes, presentation, evaluation (see Table 8). At the end students present the result of their project and the teacher evaluates not only the project itself but also the work of each student on the project and the cooperation among the students in their groups. We proposed *6 Thinking Hats* as a project evaluation strategy, a unique method for creative thinking, teaching learners to be flexible thinkers. Students practice six different types of thinking they can apply to any situation, represented by different coloured hats and must remain "true" to the hat color throughout the project (see Lesson Plan 2.6.1).

Students from two different specialties (Tourism and ICT) are invited to participate in a *Roundtable discussion* (see Lesson Plan 2.4.1). The case study teaching method is a highly adaptable style of teaching that involves problem-based learning and promotes the development of analytical skills, facilitating the development of the higher levels of Bloom's taxonomy of cognitive learning, moving beyond recall of knowledge to analysis, evaluation, and application. Similarly, case studies facilitate interdisciplinary learning and can be used to highlight connections between specific academic topics and real-world societal issues and applications.

The lessons are based on **learner-centered learning**, which develops the learner independence, as well creates new roles for students and teachers and changes the roles between them. The teacher, in this case, is a partner in learning, a partner, a facilitator, stimulating the learner independence. The students are encouraged to be active and engaged, sharing responsibilities, to cooperate, to work in pairs, in groups, to communicate authentically about them and their experience, building communication skills through purposeful speaking, listening, reading and writing tasks.

Web tools create a more student-centered language learning environment, allowing students to become creators of their own knowledge rather than passive recipients, they are providing opportunities to enrich and support their students' learning. (see Figure 2.1) Among the variety of web tools used, such as *Vocaroo, Animaker App, Keynote App, Photoshop, Piktochart, Mindmeister, Canva, LearningApps*, and created outcomes, several could be mentioned: *PPT presentations, Digital posters, Mind-map, leaflets, videos, advertising audio podcast, online newspaper article, charts, CV, cover letter, diagrams, etc.*

Thanks to the actual, interesting contents, **authentic tasks**, learners have opportunities to develop and demonstrate their creativity, enabling each student to achieve his/her potential. They learn through a variety of contexts, within both in the classroom and other aspects of life beyond school. Authentic assessments ask students to analyze, to synthesize and apply what they have learned, developing practices and high-level thinking skills and proficiencies needed for success in the real world: *online newspaper article, case study, audio podcast advertising for selling an output*

or input device; an online job vacancy announcement on your blog/site, create product documentation; design your own technology invention, applying online for a job, Writing CV, cover letter, etc.



Figure 2.1 Benefits of using Technology in Education

Image Source: Created by the author

One of the goals of using **constructivist teaching** is that students learn how to learn taking initiative for their own learning experiences. They are actively involved and encouraged to be responsible and autonomous; the activities are interactive, dynamic and student-centered, focused on communication skills, collaboration and exchange of ideas.

The lesson plans samples follow the contents proposed by the “English for IT” curriculum and are suitable for use in secondary and postsecondary vocational education. The activities aim at the development of reading, listening, speaking, writing, and language skills and are designed to meet the needs of both teachers and students.

2.2 UNIT 1. A CAREER IN IT / WORKING IN THE IT INDUSTRY

Lesson 2.2.1 Back in Time: the History of Computers

Objectives

The students will be able to:

- 1. Use active and passive forms of Past Simple and Present Perfect referring to recently finished and past situations or to a specific time in the past;
- 2. Create a PPT Presentation applying 6-8 tips for a professional outcome;
- 3. Identify the advantages and disadvantages of IT technologies;
- 4. Justify the utility of an IT innovation;
- 5. Create and assess a short speech on a specific topic.

Materials required: blank papers, felt-tip-pens, post-it notes, Internet connection, interactive board, computer, flipchart paper, adhesive paper.

Number of hours: 2-4

Evocation

Activity 1. Word clouds

Tell students that they are going to create a word cloud sharing information about the ways people use computers at work and in their free time. Invite them to use the website: <http://www.wordle.net/>

Activity 2. T-chart

Set for pair work. Ask the following questions:

“How do you use ICT in your work or studies?”;

“What are the advantages?”;

“Can you think of any disadvantages?”.

Feedback ideas to the whole class. Formulate a binary statement and draw a T-chart. (see Figure 2.2)

Figure 2.2 T-Chart

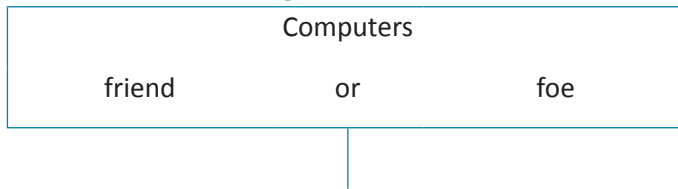


Image Source: Created by the author

Focus attention on the T-chart and ask students to list the advantages and disadvantages of computers.

Additionally, you may analyze the information A, B, C from the book (Esteras, 2007; p. 12) and *A digital era* (ibidem; p.11) to complete the chart.

Activity 3. Blank completion. Matching elements

Test students on the studied information. Set for individual work and pair work checking: exercises 1.1- 1.4 (ibidem; p.13).

Activity 4.

Refer students to the photographs from exercise B (Fitzgerald, 2011; p. 16). Discuss answers for the first question with the whole class. Set the remaining questions for pair work. (computer-assisted manufacturing - manufacturing is controlled by ICT systems; Video-conferencing-ICT is used for communication; Bar code scanning in warehouse-ICT is used to monitor stock; An EPOS till-scanning bar codes to calculate the customer's bill)

Realization of meaning

Activity 5. One-minute problem

Provide students with a question, problem, or prompt related to material in the lesson: “*Lifeless PowerPoint presentations are sure to put your audience to sleep*”.

Students work in groups of two to three to generate a list of arguments on the necessity of creating excellent PPT presentations. Give students time to discuss –

some prompts will require more than one minute. The group members record the arguments on a large sticky note or piece of paper and post it in the same area of the classroom. After all groups have posted their arguments, discuss the responses.

Activity 6. Digital posters

In groups, invite students to create a digital poster, using <https://www.canva.com/> platform. The poster should illustrate some tips for an awesome PowerPoint presentation (Nahaba, 2016; p. 67-70).

Activity 7. PowerPoint Presentations

Divided into groups, students read for specific information from the articles: *A Brief Computer History* (Steitz, 2006), and *Computer History: Classification of Computer Generations* (Amuno, 2018).

Then, the groups create PPT Presentations on *History of computers* and present the outcomes practicing Past Simple and Present Perfect.

Reflection

Activity 8. Cinquain

Draw students' attention to the question:

"Which of the ICT inventions do you think is/was most important to mankind? Why?"

Ask them to create a 5-line poem (rhythm and rhyme are not required):

1st line – A noun – the title or the start word: *Smartphone*;

2nd line – 2 adjectives defining/characterizing the title: *Innovative, accessible*;

3rd line – 3 verbs which refers to the title: *Text messages, access the internet, take videos and pictures*;

4th line – 4 words (nouns, adjectives, verbs, adverbs, numerals) that conclude the general image: *Keeps people globally connected*;

5th line - a noun equivalent to the one in the title (synonym, metaphor): *Indispensability*.

Activity 9. Argumentative speech

Preparing information for a talk.

Ask students to speak about their own invention/discovery. Propose them to use: *in my opinion..., thanks to this innovation, today we are able to..., the IT invention is very important to mankind, because...*

Extension

Activity 10. 1-minute speech

Refer students to the website <https://vocaroo.com/>. Then tell they have one minute to talk about an IT innovation they would miss most and why. Ask them to use Vocaroo platform to produce an audio podcast.

Lesson 2.2.2 Jobs in IT. Computers and Jobs, New Ways, New Profiles

Objectives

The students will be able to:

1. Use basic vocabulary to talk about routines and things that are permanent or happen all the time practicing the third person singular positive, negative and question forms of the Present Simple;
2. Roleplay a dialogue talking about job experiences;
3. Practice specific vocabulary to describe and talk about a range of IT jobs;
4. Exchange information presenting a dream job.

Materials required: blank papers, felt-tip-pens, post-it notes, Internet connection, interactive board, computer, flipchart paper, adhesive paper.

Number of hours: 2-4

Evocation

Activity 1. Focused listing

In small groups, students list several ideas related to IT jobs, which is helpful for starting new topics. Help them by asking:

“What do they do?”;

“Name typical jobs within a modern company.”.

Realization of meaning

Activity 2. Blank completion

Focus attention on exercise 2 (Olejniczac, 2011; p. 6). Get students to read the team introduction and to complete the description 1-4 with the IT jobs in the box.

Remind students that we use Present Simple to talk about routines and things that are permanent or happen all the time.

Activity 3. Role-play

Invite students to work in pairs, to speak about jobs. Invite them to use several possible questions:

“What do you do?”

“Where do you work?”

“What do you do?”

“What are your responsibilities?”

“How long have you done this job?”

“What are your working hours?”

“What do you do in your job, exactly?”

“Do you like your job? Why (not)?”

“Would you like to change anything about your job?”

Students prepare their conversations and practice in their pairs. Monitor and check for accurate tenses and question formation. You could ask some pairs to perform their conversations for the class.

Then, propose them to present their partner, using *She/He is ...*

Activity 4. Jigsaw reading

Focus attention on exercise 2 (Glendinning, 2006; p. 154).

Divide students into three groups. Give time to read the texts:

A. How to become a programming expert,

B. How to become a computer consultant,

C. How to become an IT manager.

If you wish, you may read Text A together as an example. You can provide additional practice in understanding vocabulary with the table included in the exercise (*ibidem*; p. 154). Ask students to complete it with the information required, and then share their information with the other groups.

Activity 5.

Focus attention on exercise 4 (*ibidem*; p. 156). Students do it individually, and then compare the answers in pairs. Make sure students justify their answers (*1B, 2A, 3D, 4A, 5A, 6B/C, 7B, 8C, 9D, 10C*).

Reflection

Activity 6. Language work

Requirements: *need to, have to, must, be + essential, critical* (*ibidem*; p. 156).

First, divide the board into two sections. Label one *Required* and the other *Not required*. Ask students to search the texts for examples of both. Write the examples they find on the board in the correct section.

Then, point out that *have to do sth* is similar to *must do sth* but the negative forms have different meanings. *Don't have to* = not required, *mustn't* = a warning or rule that it is important to do sth. Show that *need* can behave like a modal or an ordinary verb. You may also present the language used in job advertisements for desirable but not essential criteria. For example, *A knowledge of C++ would be an advantage*.

Activity 7. Blank completion

Ask students to do individually exercise 5 (*ibidem*; p. 157), filling in the blanks with the appropriate form of the verbs to make statements. Give them time to compare their answers with a partner before checking with the class.

Activity 8.

"What is your dream job? Write a job description in 35-50 words for the job of your choice." (*Job, company to work for, responsibilities*).

Extension

Activity 9.

As an extension, ask students to write a paragraph on how virtual communication can be beneficial to business people.

Lesson 2.2.3 Job Interview. Presenting Personal Skills to an Employer

Objectives

The students will be able to:

1. Introduce themselves and others practicing positive, negative and question forms of the Present Simple;
2. Express views and opinions when talking about technologies;
3. Roleplay a dialogue between an employer and a job applicant manipulating with Wh-questions to initiate and maintain a job interview;
4. Use key content points and more formal style to write an email to apply for a job;
5. Select necessary structures for requirements and apply terms used in job advertisements.

Materials required: blank papers, felt-tip-pens, post-it notes, Internet connection, interactive board, computer, flipchart paper, adhesive paper.

Number of hours: 2-4

Evocation

Activity 1. One-minute speech

Explain to students that they are going to make a short, one-minute speech, answering the questions:

“What do you want to be doing in ten years?”;

“How will you achieve it?”.

Activity 2. Carousel Brainstorming

Focus attention on the following: “Should information technologies and Internet availability make work from home the norm? Justify.”

Everyone in the group writes an argument and then passes the paper to the student on the left. This student records one possible answer or idea. At the signal, all papers shift to the left again, until the entire circle has seen each paper and they return to their original owners.

Realization of meaning

Activity 3.

Refer students to the requirements for different jobs in computing advertised on the internet, included in exercise 6 (Glendinning, 2006; p. 157). Make sure students are familiar with the abbreviations often used in advertisements such as *yrs, min, exp, &*.

Ask students to describe the requirements using *need to, have to, must, be + essential, critical*. Focus attention on the example: *You must be a technical specialist with a minimum of 2 years’ of work in systems programming; authority to work in the EU is essential.*

Activity 4. Problem-solving

Set for pair work. Draw students’ attention to the job requirements (ibidem; p. 158).

Ask them to match the requirements to the list of jobs that follows (*1b, 2f, 3e, 4a, 5c, 6d*).

When pairs have completed the task, ask them to write descriptions of the requirements of some of the posts in full sentences.

Activity 5. Game: Twenty questions

Put students in pairs and invite them to choose one of the computer careers

from the list provided.

- A: *Systems Analyst, Software Engineer/Designer, Computer Service Engineering Technician, Computer Engineer* (ibidem; p. 189);
- B: *Computer Salesperson, Application Programmer, Systems Support Person, Hardware Engineer* (ibidem; p. 195).

Accentuate that students must find out what the job is by asking only *yes/no* questions. They can not ask: *Are you a programmer?* They can ask only *yes/no* questions to identify their partner's occupation. When they are fairly sure they know they can say: *you are a programmer / I think you are a programmer /you must be a programmer.*

Activity 6. Advertisement

- Create an online job advertisement using the Piktochart platform (<https://piktochart.com/>).

Reflection

Activity 7. Job interview. Role-play

In pairs, students choose an IT job and make notes on:

Student A. Applicant.

What information should you give in your CV?

Why do you want this job?

What questions might you be asked?

What questions should you ask the person who interviews you?

Student B. Interviewer.

What kind of person do you want for this job?

What questions might you ask?

What questions might you be asked?

Then, get them to roleplay a dialogue between an employer and a job applicant.

Activity 8. Brainstorming

Tell students they are going to talk about finding the perfect job. Select a student to write notes on the board.

Possible questions:

How do you decide what job is best for you?

Where do you find information about your chosen job?

Where do you find out about the necessary training and qualifications?

How do you go about getting the first job?

Activity 9. Applying online for a job

Remind students that the Europass documents have been designed in such a way as to help people chronicle their skills and competencies in a coherent manner, whether they are planning to enroll in an education or training programme, looking for a job, or getting experience abroad.

Give the following tasks:

“Study the Europass CV example, following the link below: <https://europass.cedefop.europa.eu/sites/default/files/cv-example-1-en-gb.pdf>”

“You are giving advice to a friend who wants to apply online for a job. Write a

series of instructions to help your friend remember the most important points; give tips on how to write a CV and a Cover letter.”

Remind of the imperative form using both positive and negative examples. “*Arrange your ideas into a logical order! Check your grammar! Don’t send your CV without checking it again!*” Elicit other imperative sentences from your students. Explain that this structure is used when we want to tell someone to do something (most commonly for advice, suggestions, requests, commands, orders or instructions).

Extension

Activity 10. Online CV and Cover letter

- Apply online for a job. Write your CV and Cover letter using the website <https://europass.cedefop.europa.eu/>. You can invent experience and assume you have passed all your examinations.

2.3. UNIT 2. COMPUTER ARCHITECTURE / AN OVERVIEW OF IT DEVICES

Lesson 2.3.1 A Typical PC

Objectives

The students will be able to:

1. Describe the types of computer essentials, using common and demonstrative adjectives;
2. Contrast and compare computer devices by using comparative and superlative degrees of adjectives;
3. Analyze devices and their functions, practicing the Simple Passive forms of the verbs;
4. Write a description of a process applying basic knowledge of computer hardware and software.

Materials required: blank papers, felt-tip-pens, post-it notes, pictures, Internet connection, interactive board, computer, flipchart paper, adhesive paper.

Number of hours: 2-4

Evocation

Activity 1. Picture

Focus attention on the picture which introduces the computer essentials (Esteras, 2007; p. 14) and on exercise 2.1(ibidem; p. 15) and ask students: “Which computer essential the sentences refer to?” Once the students have completed the task, let them compare their answers in pairs.

Activity 2. Matching

Invite students to make a list of computer hardware they use in their study and to label the diagram with the correct items (Olejniczac, 2011; p. 12). Additionally, ask them to describe the functions of the items.

It is a good opportunity for the students to tell you about something in which they should be experts. Vary the questions: *What is it for? What does it do? What is it used for? What is its function?* For example, *RAM holds data, or the monitor is used for displaying the output from a computer on a screen, or a keyboard is used to input data through keys like a typewriter.*

Realization of meaning

Activity 3. Guided notes

As a cooperative-learning exercise, students are assigned a section from a text and asked to compose a set of Guided Notes based on its content.

Point out that the students have to read text B (Esteras, 2007; p. 14). Draw students' attention to the highlighted vocabulary in the text. They will have to use it in exercise 2.3 (ibidem; p. 15).

Using picture C (ibidem; p. 1). Ask students to enumerate the functions of a PC and to describe the *Information processing cycle*.

Activity 4. Role-play

- In groups, create a list of steps to be followed in installing a computer.
- Then, practice a conversation with a home user about how to install a computer.

Activity 5. Think-Pair-Square

- Work in pairs. Make a list of computer software you use in your work and study.

Have students write a response to the question. Then, tell students to pair up and share their responses. Finally, have partners "square" with another pair to discuss their ideas, making a group of 4.

Activity 6. Graffiti strategy

- List as many uses as you can for computers in these areas: *supermarkets, hospitals, airports, police headquarters.*

During this strategy, students brainstorm ideas and record them on large sheets of paper. Place students in groups. Provide each group with a large piece of paper with a topic written in the middle. Give students three minutes to think and record their ideas on their paper (see Figure 2.3).

Figure 2.3 Example of Computer uses

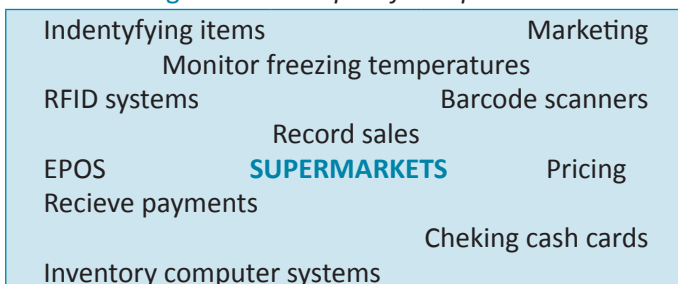


Image Source: Created by the author

Activity 7. Reading activities

Pre-reading tasks:

- Study the diagram (Glendinning, 2006; p. 18). Using the diagram, try to list each stage in the operation of the computerized speed trap to make an explanation of how it operates. Use the vocabulary: *to record the time, to identify vehicles, number plate, OCR software, to relay the information, microprocessor, police headquarters, and mail merge.*

While-Reading tasks:

Ask students to read Part 1 and Part 2 of the text about the operation of the computerized speed trap (ibidem; p. 18-19) and invite them to use the texts to complete the stages in their previous explanation.

Language work: Make them highlight the passive form of the verbs.

Explain that the present passive is often used to describe a process, where actions are the important features.

After-reading tasks

Assess and enhance the comprehension of the text, asking students to practice vocabulary and structures in exercises 5 and 6 (ibidem; p.19):

- Describe the operation of the new speed trap by converting each of the statements to the Present Passive (Exercise 5).
- With the help of the diagram, sequence the steps in the operation of an EPOS till (Exercise 6).

Reflection

Activity 8.

- Work in pairs. Describe the process shown in the diagram (fig. 3 and fig. 4) (ibidem; p. 184 and p. 190) to your partner. Take notes on the process described to you. Additionally, choose another computing process you are familiar with.

Extension

Activity 9. Problem-solving

- Assuming cost is not a problem, what computer applications would make cars safer, more comfortable, and more efficient? Would having cars that drive themselves be a good or bad idea? Justify (see 1.3 and Appendix 2).

Lesson 2.3.2 Types of Computer Systems

Objectives

The students will be able to:

1. Illustrate the use of IT technologies in an online mind map;
2. Demonstrate basic knowledge of computer hardware and software through written and oral learning activities;
3. Formulate 3-5 *Wh*-questions to describe pictures;

4. Listen for key information in a description of Types of ICT systems and make a brief summary, using the best forms of notes.

Materials required: blank papers, felt-tip-pens, post-it notes, pictures, Internet connection, interactive board, computer, flipchart paper, adhesive paper, audio CD.

Number of hours: 2-4

Evocation

Activity 1. Mind Map

- Answer the 3 following questions:
 - When do you use ICT or see ICT being used around you in your everyday life?
 - What are the benefits of ICT to your life?
 - Are there any disadvantages?
- Create a Mind map, using the website <https://www.mindmeister.com/folders> (see Appendix 7).

Activity 2. Pictures

- Study the pictures (Fitzgerald, 2011; p. 23). What aspects of life do they show?
(1. Automated teller machine-ATM, 2. Online shopping, 3. Alarm system, 4. Wireless application protocol-WAP, 5. Remote control, 6. Biometric passport, 7. Monitoring device, 8. Global positioning system-GPS)

Realization of meaning

Activity 3. Listening activities

- Lecture: Introduction to ICT systems

Pre-listening tasks. Brainstorming

Part 1: Transcript 1.11 from audio CD 1 (Fitzgerald; 2011)

Ask students the following:

“What do you expect to hear in the lecture?”

“Write down several keywords you expect to hear.”

Part 2: Transcript 1.12 from audio CD 1 (ibidem)

Focus students’ attention on the pictures about ICT systems. (Fitzgerald, 2011; p. 24). Ask to describe them and answer the question: “What do you expect to hear?”

Part 3: Transcript 1.13 from audio CD 1 (ibidem)

Play only the first 2 sentences. Ask students the following:

“How could you write notes for this part?” (*spidergram or a table with keys*)

“What two components of ICT systems are discussed?”

Part 4: Transcript 1.14 from audio CD 1 (ibidem)

Tell students that this is the last part of the lecture. It summarizes the two types of ICT systems. Ask them about what they suppose to hear.

While-listening tasks

Play Part 1: Transcript 1.11 from audio CD 1 (ibidem)

Ask students to do the following tasks:

- Listen carefully to Part 1 and make notes, organizing the information with a method of note-taking (ibidem; p.9 C) (*a spidergram or headings and bullet points could be used*).
- In Exercise B (Fitzgerald, 2011; p.24) tick the topics you hear.
- What does the lecturer give definitions of?

Play Part 2: Transcript 1.12 from audio CD 1 (ibidem)

Invite students to write brief notes.

Play Part 3 and 4: Transcript 1.13 and 1.14 from audio CD 1 (ibidem)

It is a chance for students to check their definitions as they listen. Propose them to correct hem and complete their notes.

Post-listening tasks

Part 1: Transcript 1.11 from audio CD 1 (ibidem)

Ask students the following:

“What does the lecturer give definitions of?”

“Give examples of two types of ICT systems.”

Part 2: Transcript 1.12 from audio CD 1 (ibidem)

Ask the questions from exercise C (Fitzgerald, 2011; p.24):

“What is the main idea of this section?”

“What example of an information system does the lecturer give?”

“What does a control system do?”

“What three examples of communication channels does the lecturer mention?”

“What do you expect to hear in the next part of the lecture?”

Part 3: Transcript 1.13 from audio CD 1 (ibidem)

Ask students: “What are the definitions of the two components of ICT systems?”

Part 4: Transcript 1.14 from audio CD 1 (ibidem)

Invite students to say whether the sentences from Exercise F (Fitzgerald, 2011; p.24) are true or false according to the lecture (1T, 2F, 3T, 4F, 5F, 6F).

Reflection

Activity 4. Wh~ questions

In pairs, students ask each other their questions according to the task:

- Look at the pictures again. (ibidem; p. 24) Think of three questions you could ask about the photos using *Wh~* question words such as *What...? Why ...?* etc. (*What does this do? How does it work?*)

Activity 5. Joining elements

- Make a description of how the GPS works and its uses (Glendinning, 2006; p. 112). Link each set of sentences to make one sentence.

Extension

Activity 6.

- What applications software do you use in your everyday life? Choose one to explain how it works.

Lesson 2.3.3 Interacting with Your Computer

Objectives

The students will be able to:

1. Identify and describe the functions of 10-15 input and output devices in a diagram;
2. Produce and dramatize a dialogue between a technician and a customer, demonstrating fluency in the target vocabulary;
3. Develop a comparative analysis of 2 devices, using linking words for expressing contrast;
4. Explain the technical specifications of devices by using computer-related vocabulary;
5. Distinguish different points of view on a problem and practice representing a position.

Materials required: blank papers, felt-tip-pens, post-it notes, pictures, Internet connection, interactive board, computer, flipchart paper, adhesive paper.

Number of hours: 2-4

Evocation

Activity 1. Venn's diagram

- Make a list of IT devices, classifying them into input and output devices, or both (see Figure 2.4).

Figure 2.4 Examples of IT Devices

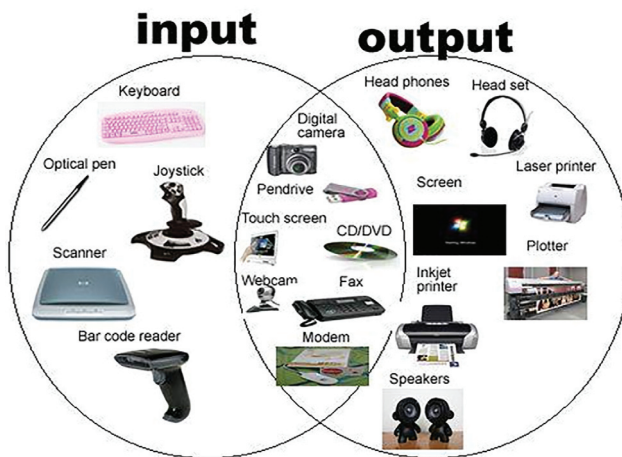


Image Source: <http://computersciencementor.com/examples-input-output-devices/>

Ask students the following:

«What is the difference between input and output devices?»

«Which input device would you use for the tasks proposed in Exercise 4?»

(Esteras, 2007; p. 19).

Realization of meaning

Activity 2. Graphic organizer

Set for group work. Allow students time to read the texts:

The keyboard (ibidem; p. 18),

The mouse (ibidem; p. 18),

Scanners (ibidem; p. 20),

Digital cameras (ibidem; p. 20).

Ask them to create a summary chart or graphic organizer and to present it to other groups.

Reflection

Activity 3. Blank completion, puzzle, dual-choice

You can provide additional practice in understanding vocabulary from context with the exercises 4.2-4.4 (ibidem; p. 19) and exercises 5.1-5.3 (ibidem; p. 21).

Ask students to complete the sentences from Exercise 4.2 with the devices: *touch screen*, *trackball*, *touchpad*, *webcam*. In Exercise 4.3 they are asked to identify the keys described, and in Exercise 4.4 students should complete the gaps with the correct mouse action.

Encourage students to complete the puzzle with words (exercise 5.1), to decide if the sentences are True or False (exercise 5.2), and to complete the gaps (exercise 5.3).

Activity 4. Role-play (see Appendix 2)

Describe to each student his or her role. Then ask students to act out the scenario:

Student A: you are a customer and want to buy the latest keyboard for your PC.

Student B: you are a technician working for Microsoft Mouse and Keyboard Center.

Activity 5. Academic Controversies (see Appendix 1)

- Privacy vs. security: For or Against CCTV cameras? (in public places, at home, at work, etc.)

Extension

Activity 6. Internet Scavenger Hunts (see 1.3.1)

- Check websites for the latest digital cameras. What is the best digital camera of the year? Study the relationship price-quality and enumerate its technical specifications. What digital camera accessories do you recommend?
- Smartphone or camera? Make a comparative analysis between them.

Lesson 2.3.4 Technical Specifications of Computers

Objectives

The students will be able to:

1. Classify devices and indicate their characteristics, using specific IT vocabulary;
2. Interpret the technical specifications of devices, based on authentic materials analysis;
3. Identify and solve a problem related to ICT practicing imperative sentences;

4. Search the web for specific information and select key facts about a given topic;
5. Practice computer-related vocabulary describing 2 pictures.

Materials required: blank papers, felt-tip-pens, post-it notes, pictures, Internet connection, interactive board, computer, flipchart paper, adhesive paper, pictures, authentic materials (technical specifications of IT devices, user's guides, product documentation, etc.)

Number of hours: 2-4

Evocation

Activity 1. Pass a problem (see Appendix 2)

List the problems.

1. *Some keyboard keys are not working. How to fix them?*
2. *When typing a key, a wrong letter or symbols appear.*
3. *Mouse not working at all.*
4. *Mouse cursor does not relocate smoothly.*
5. *Scanners: poor image quality, job queue issues, paper jams.*

Realization of meaning

Activity 2. Possible sentences

Divided into 2 groups, ask students to define the words and pair related words together: Examples: *output-printout, program-printer driver, speed-ppm, screen size-inches, refresh rate-Hertz (Hz) etc.*

1st group: *printout, printer driver, program, print spooler, dpi, ppm, output, speed, store files, resolution.*

2nd group: *screen size, resolution, pixels, dot pitch, brightness, number of colors, cd/m² (candela per square meter), refresh rate, inches, sharpness of images, Hz, color depth.*

Ask students to write sentences using their word pairs. Their sentences should be ones they expect to see in the text as they read. Have students read the text and compare their possible sentences with the actual sentences within the text. If your students' possible sentences are inaccurate, ask them to rewrite their sentences to be accurate.

Activity 3. Graphic organizer

- Use the texts (Esteras, 2007; p.22/24) to highlight the technical specifications of devices in a table.

Encourage students to search the web to present the latest devices.

- Impact and Nonimpact printers.
- Display screens: CRTs, Flat Panel monitors, Touch Screen monitors.

Reflection

Activity 4. True/false, matching elements, blank completion

You can provide additional practice in understanding vocabulary from context with the exercises 6.1-6.3 (ibidem; p.23) and exercises 7.1-7.3 (ibidem; p. 25).

Activity 5. Think-Pair-Share

Set for pair work. Focus attention on the pictures. Ask the following:

“What is in the pictures?”

“What message do they transmit?”

Students think individually, discuss ideas in pairs, and then share their thinking with their classmate (see Figure 2.5).

Figure 2.5 CRT vs LCD

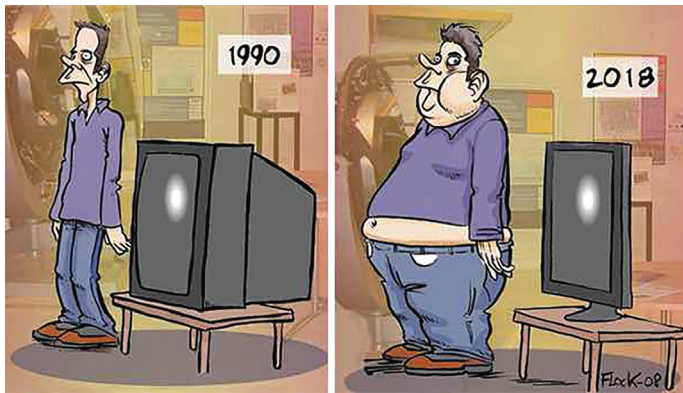


Image Source: [Bilmiyorsan](http://bilmiyorsan.com/eski-gunler-ile-simdiki-gunlerin-arasindaki-15-fark/). Retrieved from: bilmiyorsan.com/eski-gunler-ile-simdiki-gunlerin-arasindaki-15-fark/

Activity 6. Authentic materials

Invite students to study various authentic materials, such as technical specifications of IT devices, user’s guides, product documentation, etc.

- Work in groups. Present the material in brief. Focus on keywords and phrases that are worth noting and remembering.

Activity 7. Ticket out the Door

At the end of class, ask students to summarize the lecture today, or provide one new personal significant learning outcome (in 3-5 sentences), and give their response to the teacher for their ticket out of the door.

Extension

Activity 8. Creating product documentation

- Create a digital user guide for a software product designed to set up a computer network within SounDrop Company.
- Place videos on your group blog.

2.4 UNIT 3. SURFING SAFELY / HEALTH AND SAFETY IN IT

Lesson 2.4.1 The Impact of ICT on the Environment

Type of the lesson: Roundtable discussion. Outcomes evaluation.

Assignment: Case study - The impact of ICT and Tourism on the environment.

Objectives

The students will be able to:

1. Present 5-7 advantages of ICT and Tourism Industry in a PPT presentation;
2. Identify the actions people can take to reduce the negative impacts on the environment;
3. Elaborate videos and posters displaying the devastating consequences of ICT devices and tourism have on the environment;
4. Create leaflets and videos suggesting solutions to protect the environment from the negative effects of ICT devices;
5. Evaluate each other's presentations giving constructive feedback.

Materials required: blank papers, felt-tip-pens, post-it notes, Internet connection, interactive board, computer, flipchart paper, adhesive paper, and outcomes evaluation sheet (Appendix 17).

Number of hours: 2-4

Evocation

Activity 1. Picture Prompt

Set for pair work. Focus students' attention on the pictures then ask them the following:

"Write down everything you can think of about the first picture."

"What's the link between these two items?"

"What do the colors suggest?"

"What message do you think the author has written on the picture?" (see Figure 2.6.1)

Figure 2.6.1 Apple Fruit versus Apple iPhone



"Below you see another picture. Compare your ideas with the original picture."

“What is different and what is similar?”

“Do you agree with the statement? Comment on.” (see Figure 2.6.2)

Figure 2.6.2 Apple Fruit versus Apple iPhone

*In the past,
children went to school with an apple.*



1980



2018

*Nowadays, it has not changed.
Except the price of the apple...*

Image Source: Adapted from Le Cahier des Francais. Retrieved from: http://francahier.blogspot.com/2013_02_01_archive.html

Realization of meaning

Activity 2. Introducing teams

Two teams are invited to participate. Students from IT and Tourism specialties analyze the impact of their profession on the environment.

The teams present their name, logo, motto, and objectives.

Activity 3. PowerPoint Presentation

Each team will divide itself into two groups. One group will present the advantages of their profession; the second group will direct the attention to the disadvantages.

- Tourism Team (the first group) presents Environmental positive impacts of Tourism in a PPT presentation.
 - Protection and preservation;
 - Environmental awareness raising;
 - Improved environmental management and planning;
 - Financial contribution;
 - Employment opportunity;
 - Enhancement of local environments;
- ICT Team (the first group) presents the advantages of ICT in a PPT Presentation.
 - Dematerialization and online delivery;

- A reduction in the need for travel;
- A host of modeling, monitoring and management applications;
- Greater energy efficiency in production and use, and recycling.

Activity 4. Posters

- Tourism Team (the second group) shows the negative impacts of Tourism on the environment in a sheet poster.
 - Loss of natural habitat;
 - Inappropriate development;
 - Air, water, soil pollution;
 - Noise;
 - Traffic;
 - Deforestation;
- ICT Team (the second group) shows the negative impacts of ICT on the environment in a digital poster.
 - The production and distribution of ICT equipment;
 - Energy consumption in use (directly and for cooling);
 - Short product life-cycles and e-waste;
 - Potentially exploitative applications.

Realization of meaning

Activity 5. Leaflets / Video

- Tourism Team shows *Ways to protect the Environment* in a leaflet, suggesting strategies for reducing the negative effects of tourism, to raise people’s awareness of environmental issues caused by the tourism industry.
- ICT Team shows *Ways to protect the Environment* in a video, suggesting strategies to reduce the negative impact of ICT devices (e-waste).

Activity 6. One minute sentence

First, students are invited to write down the main ideas from today’s lesson. Then, they take these ideas and compose one sentence to summarize the most important idea from today’s lesson.

You may set a timer for one minute and ask students to compose their sentence. Then, students share the sentences with a partner or the class.

Activity 7.

Students assess each other’s outcomes, giving constructive feedback (Appendix 17).

The platforms <https://rubric-maker.com/> or http://rubistar.4teachers.org/index.php?screen=NewRubric§ion_id=2#02 will help you to generate rubrics for grading students presentations.

Lesson 2.4.2 Computer Ergonomics

Objectives

The students will be able to:

1. Use imperatives to produce a set of appropriate recommendations on the

health risks related to the use of technology in terms of threats to physical and psychological well-being;

2. Watch a video for key information, distinguishing 8-10 fundamental ergonomic rules for better work performance;
3. Design the most comfortable workstation for future IT activity, using the Simple Future and Future Progressive tenses;
4. Evaluate computer workstation applying the learned ergonomic principles.

Materials required: blank papers, felt-tip-pens, post-it notes, Internet connection, Interactive board, computer, flipchart paper, adhesive paper, video, worksheets (Appendix 8, Appendix 9, Appendix 11), sets with domino cards (Appendix 10).

Number of hours: 2-4

Evocation

Activity 1. Word hunt strategy

- Work in pairs. Study the definitions (Appendix 8). Find and underline target vocabulary words and use them to write your own definitions of ergonomics. Record the words on a poster or on the board for a whole-class display, or, ask students to generate a word cloud, using the website <https://wordart.com>.

Realization of meaning

Activity 2. Reciprocal Teaching

Working in small groups, students read the text *Computer ergonomics* (Esteras, 2007; p. 30) and complete the tasks according to their roles. Allocate a role to each student:

- *Summarizer* – List main ideas.
- *Questioner* - Generate questions, related to the main ideas.
- *Clarifier* - Answer the questions posed and clarify the meaning of any words or phrases that are unclear. Search the internet for additional information.

Activity 3. Matching elements

Exercise 10.1 enumerates some tips for a user-friendly workstation (ibidem; p. 31). Make students match the numbers in the picture to the correct tips in the checklist.

Reflection

Activity 4. Video watching

- Invite students to watch the video: *Ergonomic video* on the website <https://www.youtube.com/watch?v=rcZMfSFzFwM>
Divide it into 3 parts. Stop at each part and ask students to do the exercises on ergonomic advice (Appendix 9).
Watch Part 1. (0:00-0:28)
 - Exercise 1. Matching elementsWatch Part 2. (0:29-1:14)
 - Exercise 2. Arranging elementsWatch Part 3. (1:15-2:10)
 - Exercise 3. Gap-fill sentences (*avoid, adjust, place, raise, bend, make sure, put, keep, add, place, and take*).

Activity 5. Dominoes

- Explain that students are going to play a game of dominoes where they match sentence halves to make full sentences. Teach: *shuffle, deal (cards)*.
- Divide students into groups of three or four. Give each group a set of domino cards. Students shuffle the dominoes and then deal them out so that everyone has an equal number. One student puts a domino down. The next student tries to make a sentence by adding a domino before or after the first domino. If they can't, the next student should try.
- The first student to put down all his/her dominoes is the winner. Check that their answers are correct (use the order of cards on the original worksheet as your answer key) (Appendix 10).

Extension

Activity 6.

- Insert a photograph that represents you using your computer at your workstation. List areas of improvement based on the learned ergonomic principles (Appendix 11).

Activity 7.

- Design an ICT classroom with 15 networked PCs, Internet access and peripherals, taking into consideration all the necessary safety precautions presented below: room conditions: *space, desks, chairs, lighting devices and windows*; ergonomic devices; electrical safety: *layout of cables and connectors, hotspots for a wireless network*; notice boards and posters with health and safety recommendations. Use any familiar means/ways to represent your work (picture, poster, diagram, tables, 3D image, etc.). Present your product to the class.

Lesson 2.4.3 IT Security and Safety

Objectives

The students will be able to:

1. Read for main ideas and exchange information by producing a short summary;
2. Ask and answer questions about the impact of mobile phones on safe driving practicing positive, negative and interrogative forms of tenses;
3. Write explanatory arguments on safe driving applying sequencing vocabulary and modals;
4. Create online newspaper articles applying elements of writing a newspaper article.

Materials required: blank papers, felt-tip-pens, post-it notes, Internet connection, Interactive board, computer, flipchart paper, adhesive paper, pictures, worksheets (Appendix 13), and cards (Appendix 12).

Number of hours: 2-4

Evocation

Activity 1. Word associations

Divide students into groups and give each group a set of cards (Appendix 12).

In groups, students work together to sort the words into categories. Remind to use one card per word.

The task is to assign the words and word combinations to a particular group. Once the groups have classified all the words, ask them to write some tips to avoid computer injuries for each group.

Realization of meaning

Activity 2. Provocative pictures

Set for group work. Give each group of students a different picture (see Figure 2.7).

Ask the questions:

“What do you see in the picture? Describe it.”

“Predict what the following task will be about.”

Figure 2.7 Driving and mobile phones



Images Source: Davis, Ch. S. *Smartphone Dangers : Could your Cell Phones Be Badd for Your Health*. Onlind Health. Retrieved from: https://www.onhealth.com/content/1/dangers_cell_phone_health

Activity 3. Vocabulary preparation

Divide your class into groups and give them each four or five lexical items to research and explain to the rest of the class. Your students can then demonstrate that they have understood these words and expressions by putting them into sentences of their own.

Examples: *ban (n)*, *fine (n)*, *whilst (conj)*, *contravene (v)*, *endanger (v)*, *license (n)*, *handle (n)*, *go to court (v)*, *hazard (n)*, *due to*, *boredom (n)*, *huge (adj)*, *forbid (v)*, *provide (v)*.

Activity 4. Jigsaw reading (Group of Experts)

Divide the article *Mobile phone driving bans in Europe* into 2 parts (see Appendix 13).

Give each group only a part of the article. Re-mix groups with one planted “expert” on each topic, who now has to teach his new group.

Reflection

Activity 5. Multi Processual investigation.

Ask questions based on the article:

Memory questions (recall of information)

- What are some drivers tempted to do whilst driving?*
- Which European country has steeper penalties for using devices while driving?*
- What other gadgets are banned in France and Spain while driving?*

Translation questions (different form of communication)

- Each word has two different meanings. Write a sentence for each one.

Can _____

Fine _____

- How are the words that share the same written form, but have a different meaning called?
- Is the word “Google” a noun or a verb? What distinguishes nouns from verbs?

Interpretation questions (drawing relationships among facts, definitions, and values)

- What is your opinion about high fines drivers pay for using mobile phones at the wheel in European countries?*
- Why is it considered that phones have a negative impact on driving?*

Application questions (transfer concepts/everyday life)

- How does Chris, the digital co-driver with artificial intelligence, work?*
- What would happen if there were no fines for using mobile phones while driving?*
- Do you think high fines would change the situation in your country?*





Analysis questions (identify the logical steps)

- Who benefits from using Chris?*
- Adverts in newspaper articles: When it works and when it doesn't?*

Synthesis questions (create a new idea)

- In your opinion what should be done to reduce people's desire to use their mobile phones when driving?*
- Create a 30-second video about the danger of using mobile phones driving a vehicle.*

Evaluation questions (judgments)

- Comment on: “No  ,  ,  ,  is more important than life.”
- The fear of being apart from your phone has even got a name – it is called nomophobia, which is an abbreviation of no-mobile-phone phobia. Propose 5-6 ways to fight phone addiction.*

Extension

Activity 6. Online newspaper article

- Conduct a research (experts on the topic, websites, contravention codes, The Road Safety Act, etc) and create a newspaper article about restrictions on mobile phone use while driving in your country. Use the website <https://www.fodey.com/generators/newspaper/snippet.asp> to create an online newspaper article.

Agree on the structure of the article: *title, introduction, specific purpose statement, content, and conclusion.*

Lesson 2.4.4 Data Protection

Objectives

The students will be able to:

1. Create presentations on IT security, illustrating safety issues, and data protection concepts;
2. Act out, in pairs, a dialogue between an IT expert and a computer user, practicing various types of questions and modal verbs;
3. Present a problem related to computers and examine causes in a diagram;
4. Use imperatives to produce a set of appropriate recommendations for data protection;
5. Offer suggestions on the best use of any kind of IT security software or tool (anti-virus, anti-spam, firewall, etc.) in order to protect private computers and data, using adverbial phrases of degree/extent, probability, and the modal verbs *might, may, will, probably.*

Materials required: blank papers, felt-tip-pens, post-it notes, Internet connection, Interactive board, computer, flipchart paper, adhesive paper, pictures, and worksheets (Appendix 14).

Number of hours: 2-4

Evocation

Activity 1. List-group-label

List

- Identify words you think relate to the topic of *Data security.*

Group them by similarities.

- In groups, cluster the class list of words into subcategories. Explain your reasoning for placing words together or discarding them.

Label

- Suggest a title or label for the groups of words you have formed. These labels should relate to your reasoning for the grouping.

Realization of meaning

Activity 2. Security threats

Make students match the words to the descriptions listed in Exercise 2 (Olejniczac, 2011; p. 60). Discuss could be done to stop security problems.

Activity 3. Virus alert (see Appendix 14)

- Fill in the blanks with suitable words (Exercise 1).

The vocabulary items listed below may be new. Before reading the text, divide your class into groups and give them each 3-5 lexical items (*software, programmers, networks, damage, harm, email attachments, updating, corrupting, disastrous, files*) to research and explain to the rest of the class.

Then, ask students to do exercise 2, 3 and 4 (see Appendix 14)

Activity 4. Video presentation

- Create a video presentation on ways of safeguarding computers against viruses.

Reflection

Activity 5. Cause-effect diagram

Invite students to present the causes of a slow-running computer in a diagram.

Write the problem to be solved (the effect) on one side of the workspace, then draw a horizontal arrow pointing to the right, and then add categories, as shown below (see Figure 2.8). Students can use the website <https://realtimeboard.com/examples/fishbone-diagram/> to create a digital diagram.

Figure 2.8 Cause & Effect diagram

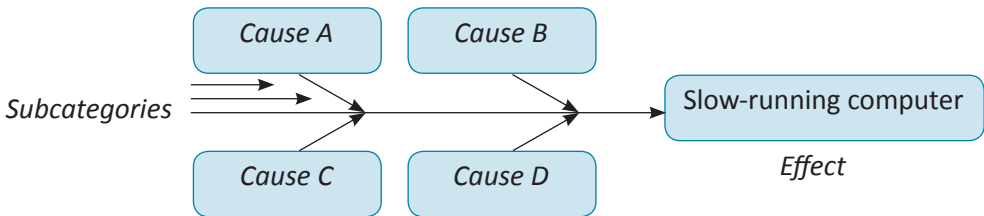


Image Source: Created by the author

An effective Diagram will have many potential causes listed in categories and sub-categories. The detailed sub-categories can be generated from:

- Brainstorming by group/team members based on prior experiences;
- Data collected from different sources.

Activity 6. Role-play

- When using a browser, like Chrome, it saves some information from websites in its cache and cookies. Clearing them fixes certain problems, like loading or formatting issues on sites. With a partner, act out the roles below. Use *What should I do to.., You should..., It might/may.*

Student A. You are a Chrome user and you need help to clear the browser.

Student B. You are an IT expert giving advice on clearing cache and cookies.

Extension

Activity 7. Security solutions

- Match a security solution to its purpose. Find the solutions in exercise 5 (Olejniczac, 2011; p. 61).

Activity 8. Case study

- Passwords have become a ubiquitous requirement for consumers who want to perform any online activity in a secure environment. Unfortunately, password-only authentication is often broken. What alternatives do you recommend to protect data and passwords? Produce a set of instructions.

2.5 UNIT 4. COMMUNICATION WITHOUT BOUNDARIES / INTERACTING THROUGH TECHNOLOGIES

Lesson 2.5.1 Types of Communication

Objectives

The students will be able to:

1. Identify the benefits and disadvantages of modern communication technology;
2. Describe the basic features of virtual communication;
3. Compare and contrast various forms of communication technology;
4. Formulate 8-10 netiquette rules to be followed when communicating online;
5. Apply different types of lecture organization, and then convert notes into full sentences and paragraphs.

Materials required: blank papers, felt-tip-pens, post-it notes, Internet connection, interactive board, computer, flipchart paper, adhesive paper, and worksheets (Appendix 15, Appendix 16).

Number of hours: 2-4

Evocation

Activity 1.

Write *information and communication technology* on the board. Ask students about:

“The origin of the word *technology*”;

“Any other related words or phrases, (e.g. *technical, technician, technological, technologically, technologist*)”;

“Where the words *information* and *communication* come from”;

“Find the root of each word and provide definitions (*inform* and *communicate*)”.

Remind students that many English scientific words have been borrowed from Latin or Greek, e.g., *technology* comes from Greek, while *information* and

communication both come from Latin. Ask students if their native language has borrowed words. You may find that this is particularly true of ICT, where many languages have borrowed English words.

Realization of meaning

Activity 2. Graphic organizers

Start the activity with the question: “How can you organize and record information during a lecture?”

Remind students that there are many pairs and patterns in presenting information, e.g., *question and answer, a sequence of events in chronological order, etc.*

Set for pair work. Feedback orally.

Get students to match the beginnings and endings: Exercise B (Fitzgerald, 2011; p.9) (*1i, 2h, 3b, 4c, 5a, 6d, 7e, 8g, 9f*).

Set for individual work and pair work checking.

- Match the illustration with the words and phrases in the box: Exercise C (ibidem; p.9).

(1 flowchart, 2 tree diagram, 3 two columns, 4 table, 5 headings and notes, 6 timeline, 7 spidergram)

- Match each organization of information in B with a method of note-taking from C (*B1–C5, B2–C5/C3, B3–C2/C7, B4–C3, B5–C4, B6–C7, B7–C6/C1, B8–C1 (or circle if it is a cycle), B9–C5/C3*).

Activity 3. Reading activities

Silent reading (see Appendix 15).

Set for group work. Assign a set of notes with different topics to each group:

1. *Types of Communication Technology and Communication Devices.*
2. *Types of Communication Software. Modern Types of Communication.*
3. *The impact of Technology on Communication.*

Give students time to read the information.

Diagram construction

Ask to draw a diagram/scheme/chart for the texts that describes the types of communication and their impact, indicating their basic features.

Activity 4. Post-reading activities

Encourage students to do the tasks based on learning and practicing the new vocabulary related to communication (see Appendix 16).

Reflection

Activity 5. Speaking game

Set for group work.

“The invention of the millennium” is an award for the most important innovation in the last 1000 years. In groups, ask students to talk about nominating an invention of a communication technology. Use the headings: *What is the invention? When was it discovered or invented, and by whom? What are its benefits? Why do you think this invention should win the award?*

In their groups, students discuss and award the points.

Voting instructions: Give the most important invention 3 points, 2 points to the second most important invention, and 1 point to the third (see Figure 2.9).

Figure 2.9 Votes for the best invention

Invention	Points
1 st _____	_____
2 st _____	_____
3 st _____	_____

Image Source: Created by the author

Then, the students read out their votes to the class and explain why they made that choice. “What invention won the most votes?”

Extension

Activity 6. Student-Generated Test Questions

In groups, create a fun review game in the style of *Who wants to be a Millionaire*.

The application <https://learningapps.org> has all the tools needed. Play the game in the classroom.



2.5.2 Net Language

Objectives

The students will be able to:

1. Provide research on various types of networks to distinguish elements and grammar rules of the English Net Language as an informal language;
2. Outline the impact of the Net Language on communication effectiveness, including ways to improve the informal online language;
3. Watch 2 videos for key information, generating a pyramid of netiquette rules and justifying various points of view.

Materials required: blank papers, felt-tip-pens, post-it notes, Internet connection, interactive board, computer, flipchart paper, adhesive paper, quotes on A4 paper, videos, worksheets, a blank “License plate” prepared in advance by the teacher, Net acronyms website, the Leet language, and the Netiquette rules.

Number of hours: 2-4

Evocation

Activity 1. Quotes

Focus attention on the quotes, written on A4 paper and placed in any corner of the study room or on the wall, in different places.

“The web is a hub of neologisms”.

“These days it is as if teens have their own language...”

“The internet is changing the language.”

Ask students to read them aloud. They will choose the quote they would like to comment. The students with the same option form a group. The groups discuss the quotes and then choose a member to summarize and present the main ideas. Ask questions and provide immediate feedback.

Realization of meaning

Activity 2.

- Search the internet for slang words.
- Write a message to your desk mate and ask to interpret it.

Activity 3. License Plate (see 1.2.1)

Reflection

Activity 4. Video watching

Set for group work.

Pre-watching task:

- Define the word *Netiquette*.
 - (the rules of etiquette that apply when communicating over computer networks, especially the Internet)
 - Origin of netiquette
1980–85; the blend of network + etiquette
- Watch and analyze 2 videos, one for each group, concerning *Core rules of Netiquette*. The videos can be found on the websites:

https://www.youtube.com/watch?v=FWMk_Zv7nB8

<https://www.youtube.com/watch?v=80uRE972uQ0>

While – watching tasks: Activities to improve comprehension:

Give students cards with 4 questions and ask them to answer them while watching the videos.

1. What? (the topic)	2. Why? (the public addressed to)
3. Who? (The purpose)	4. When? (to apply)

Check the answers with the groups.

Activity 5. Pyramid method

After-watching tasks:

- Watch the videos again. Write some key netiquette rules on a post-it, one on each sheet, and place them at the center of the table.

In groups, the learners have to agree on the most important of the eight netiquette rules.

- Hierarchy of ideas: the groups read all the rules and hierarchize them (from 1 on top to 8).

They then join with another group and have to agree again, on the most important of the eight netiquette rules and make a common list of netiquette rules and explain how to follow them.

Pyramid discussions are useful for practicing a range of functions; including agreeing and disagreeing, negotiating, summarizing, and putting forward an argument.

Activity 6. 3:2:1 Technique

Three – After the lesson, have each student record three things he or she learned from the lesson.

Two – Next, have students record two things that they found interesting and that they'd like to learn more about.

One – Then, ask students to record one question they still have about the material.

Finally, review the students' responses. You can use this information to help develop future lessons.

Extension

Activity 7.

- Research on various types of networks (social networks, online game chats, public blogs, instant messages) to distinguish elements and grammar rules of the English Net Language as an informal language. Create a video presentation on the impact of the Net Language on communication effectiveness, including ways to improve the informal online language.

2.6 UNIT 8. DIGITAL GLOBALIZATION / INVENTING THE FUTURE OF TECHNOLOGY

Lesson 2.6.1 Technology Trends for the Future

Type of lesson: Project

Objectives

The students will be able to:

1. Identify the benefits and disadvantages of modern information technology;
2. Describe the basic features of future information technologies;

3. Compare and contrast various forms IT trends making predictions and setting personal goals about the future of IT;
4. Evaluate 8-10 benefits of using technologies in business and daily life;
5. Use 5-6 IT tools and online platforms in designing outcomes.

Materials required: blank papers, felt-tip-pens, post-it notes, Internet connection, interactive board, computer, flipchart paper, adhesive paper, 6 colored paper hats, Project stages sheet, (Table 8), Project evaluation sheet (see Appendix 17).

Time allotment:

Project stages: 7-8 weeks

Project evaluation: 2 hours

Project stages

Table 8. Project stages

Stage	Activities	Strategies	Responsibilities	Weeks
1. Informing	<ul style="list-style-type: none"> • Choosing the topic Future trends, based on students' interest and abilities; • Discussing the problem from different perspectives; • Introducing the project method procedure; • Introducing the objectives; • Initiate discussions about what students know about the topic and have them write what they know in the K column. 	<ul style="list-style-type: none"> - Brainstorming - Debate - KWL table 	<p>Group work</p> <p>Individual work</p>	1 st
2. Planning	<ul style="list-style-type: none"> • Collecting information necessary for planning and performing tasks; • Discussing the subject; • Choosing appropriate research methodologies; • Dividing the group into teams, analyzing the description of the assigned color; • Writing down the whole programme of action stepwise; • Discuss what they want to learn and write down the specific questions they have about the topic in the W column. 	<ul style="list-style-type: none"> - Brainstorming - Starbursting - Group discussion - KWL table 	<p>Group work</p> <p>Individual work</p> <p>Teacher`s guide</p>	2 nd

3. Decision	<ul style="list-style-type: none"> ● Resources and time management; ● Selecting the team members for the project: Blue Hat, White Hat, Green Hat, Yellow Hat, Black Hat ● Project activities planning and scheduling; ● Planning the methods of outcomes development; ● Selecting the tools; ● Browsing <ul style="list-style-type: none"> - books - newspapers, magazines, - the internet; ● Stating the work; 	<ul style="list-style-type: none"> - Colored index cards - Discussions - T-chart 	<p>Group work</p> <p>Individual work</p> <p>Teacher`s recommendations</p>	3 rd
4. Implimentation	<ul style="list-style-type: none"> ● Performing the tasks; ● Elaborating the outcomes; ● Presenting the drafts; ● Organizing the ways of presenting the outcomes; 	<ul style="list-style-type: none"> - PPT presentation, - Discussions 	<p>Group work</p> <p>Individual work</p> <p>Teacher`s recommendations</p>	4 th -6 th
5. Evaluation	<ul style="list-style-type: none"> ● Project presentation and analysis; ● Dissemination of results; ● Evaluation of the activities; ● Peer evaluation; ● Feedback; ● Record a summary of what students learned in the L column; ● Lessons learned and recommendations. 	<ul style="list-style-type: none"> - KWL table - Summarizing 	<p>Group work</p>	7 th

Lesson plan

Evocation

Activity 1. Word clouds

- Ask students to list all the words that come to their mind about *Future IT trends*, according to the groups' roles.
- Define *Future IT trends*

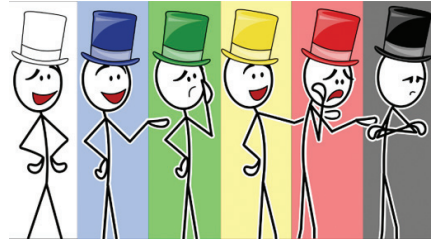
Activity 2. Six thinking hats

The teams present the 6 hats: the type of thinking, roles, and responsibilities.

- Blue Hat – Direction Giving,
- White Hat – Factual,
- Yellow Hat – Optimistic,

Black Hat – Judgmental,
Red Hat – Emotional,
Green Hat – Creative.

Image Source: <https://www.storyboardthat.com/blog/e/six-thinking-hats-in-the-classroom>



Realization of meaning

Activity 3. Project presentation.

The 6 teams show their outcomes.

Six distinct directions are identified and assigned a color:

1. BLUE HAT team - Managing Blue.

It is responsible for organizing and planning the activity: What is the subject? What are we thinking about? What is the goal?

Outcome: Digital Poster - **Welcome in Future Technologies**

2. WHITE HAT team - Information White.

This team presents information and data, general info about IT trends, considers purely what information is available, what are the facts?

Outcome: PowerPoint Presentation - **Facts about Future IT trends**

3. YELLOW HAT team - Optimistic response Yellow.

The team sees the brighter, sunny side of situations, identifying benefits, seeking harmony, advantages, solutions, issues, alternatives, possibilities:

Outcome: Video (<https://www.animaker.com/>) - **An original prototype**

4. BLACK HAT team - Discernment Black.

Black Hat team is practical, realistic. It identifies reasons to be cautious and conservative, highlights disadvantages, dangers, difficulties, risks, weaknesses.

Outcome: Infographic (<https://piktochart.com/>) - **The black side of technologies**

5. RED HAT team - Emotions Red.

The team describes feelings, gives personal opinions and thoughts, intuition on the subject:

Outcome: Leaflets - **Thoughts and feelings towards future trends**

6. GREEN HAT team - Creativity Green.

This team thinks creatively, outside the box, statements of provocation and investigation, seeing where a thought goes.

Outcome: Personal IT inventions.

Reflection

Activity 4 KWL

Record a summary of what students learned in the L column of the KWL chart.

Activity 5. Project analysis

- Peer evaluation;
- Assessing each other's outcomes, giving constructive feedback (Appendix 17);
- Dissemination of results;
- Lessons learned and recommendation.

References

- American English for English Language Teachers around the World. (2015). Activate: Games for Learning American English. U.S. Department of State. Retrieved from: <https://americanenglish.state.gov/resources/activate-games-learning-american-english>
- American English for English Language Teachers around the World. (2015). Trace Effects. U.S. Department of State. Retrieved from: <https://americanenglish.state.gov/trace-effects>
- American English for English Language Teachers around the World. (2012). Trace Effects. U.S. Department of State. Retrieved from: <https://americanenglish.state.gov/trace-effects>
- An Instructor's Not So Comprehensive Guide to Designing Instructional Support in an On-line Environment: What is Web-based Instruction? Retrieved from: http://www.proofofconcepts.com/web_guide/What_is_Web.htm
- Angelo, T. A. and Cross, K. P. (1993). Classroom Assessment Techniques: A Handbook for College Teachers. San Francisco: Jossey-Bass.
- Applying Amineh, R. J., & Asl, H. D. (2015). Review of constructivism and social constructivism. Journal of Social Sciences, Literature and Languages, 1(1), 9-16. Baker College. (2009). Activities for Learner-Centered Teaching. Effective Teaching and Learning Department. Retrieved from: <http://www.baker.edu/departments/etl/main.cfm>
- Benz, P. (2001). Webquests, a Constructivist Approach. Retrieved from: <http://www.ardecol.ac-grenoble.fr/english/tice/enwebquests.htm>
- Bikowski, D. (2012). The Trace Effects Teacher's Manual. Part One: Gaming in Education. U.S. Department of State. Retrieved from: <https://americanenglish.state.gov/resources/trace-effects-teachers-manual>
- Bocoş, M., Chiş, V. (2013). Instruirea interactivă. Iaşi: Polirom.
- Bocoş M, Jucan D. (2017). Teoria și metodologia instruirii. Teoria și metodologia evaluării, Pitești Paralela 45
- Brown, B.L. (1998). Applying Constructivism in Vocational and Career Education. Information Series No. 378. Columbus: ERIC Clearinghouse on Adult, Career, and Vocational, Columbus, Ohio State University. (ERIC Document Reproduction Service No. ED428298). Retrieved from: <https://eric.ed.gov/?id=ED428298>
- Cartaleanu, T., Cosovan, O., Goraş-Postică, V., Lîsenco, S., Sclifos, L. (2010). Formare de competențe prin strategii didactice interactive. Chişinău: Centrul Educațional PRO DIDACTICA.
- Cartaleanu, T., Cosovan, O. (2017). Formarea competențelor profesionale prin dezvoltarea gândirii Critice. Chişinău: Centrul Educațional PRO DIDACTICA.
- Cennamo, K. Learning Sciences Resource Guide. Virginia Tech. Retrieved from: <https://canvas.vt.edu/courses/62492/modules> Center for Adult English

Language Acquisition. Assessing Learner Needs in the Adult ESL Classroom Trainer Guide. Retrieved on October 23, 2018 from: http://www.cal.org/caela/scb/III_A_AssessingLearnerNeeds.pdf

- Centrul Educațional PRO DIDACTICA. (2018). Proiectul: proces de învățare, produs evaluabil. Chișinău.
- Cristea, S. (2017). Formele de organizare a instruirii / procesului de învățământ. Didactica Publishing House.
- Davis, R. (1991). Learning How To Learn: Technology, the Seven Multiple Intelligences and Learning. California: ERIC Clearinghouse
- Davoren, J, (2018). Types of Communication Devices. Retrieved from: <https://www.techwalla.com/articles/types-of-communication-devices>
- Discovery Education. Discovery STEM Day. Retrieved on October 29, 2018 from: <http://blog.discoveryeducation.com/discovery-stem-day/>
- Discovery Education (2015). Pi Day Virtual Field Trip. Retrieved from: <http://www.discoveryeducation.com/PiDay/>
- Ecker, R. (2015). Universal Leet Converter. Retrieved from: <http://www.robertecker.com/hp/research/leet-converter.php?lang=en>
- Educational Broadcasting Corporation. (2004). Workshop: Tapping into Multiple Intelligences. Retrieved from: <http://www.thirteen.org/edonline/concept2class/mi/index.html>
- ELT Teacher Corner. (2009). Twelve Brainteasers. Retrived from: <https://www.teachers-corner.co.uk/twelve-brain-teasers/>
- Esteras, S.R. (2007). Professional English in Use for ICT, Cambridge.
- FingerprintExpert. Retrieved on October 1, 2018 from: http://www.teachology.com/teachers/lesson_plans/computing/webquest1/FingerprintExpert.html
- Fitzgerald, P., McCullagh, M., Tabor, C. (2011). English for ICT Studies. Course book and audio CDs. Garnet Publishing.
- Fitzgerald, P., McCullagh, M., Tabor, C. (2011). English for ICT Studies. Teacher's book. Garnet Publishing
- Fun with Words. Acronyms and Initialism. Retrieved on October 14, 2018 from: <http://www.fun-with-words.com/acronyms.html>
- Gardner, H., & Hatch, T. (1989). Multiple intelligences go to school: Educational implications of the theory of multiple intelligences. Educational Researcher, 18(8), 4-9.
- Glendinning, Eric H, McEwan, J. (2006). Oxford English for Information Technology, Second edition. Oxford University Press
- Goraș-Postică V. coord. (2012). Competența acțional-strategică?!. Chisinau: Centrul Educațional PRO DIDACTICA.
- Gordon, Neil. (2015). Education for Sustainable Development in Computer Science, Innovation in Teaching and Learning in Information and Computer Sciences Volume 9, 2010 - Issue 2. Retrieved from: <https://www.tandfonline.com/doi/full/10.11120/ital.2010.09020003>
- Hartman, D. (2018), The effect of electronic communication. Retrieved from:

- <https://www.techwalla.com/articles/the-effect-of-electronic-communication>
- Hess, N. (2010). *Teaching Large Multilevel Class*. Cambridge University Press.
 - Hinton, L. (2001). *New Virtual Field Trips*. Cooper and Cooper.
 - Hockly, N., Clandfield, L. (2010). *Teach Online: Tools and techniques, options and opportunities*. Delta Publishing.
 - International Education and Resource Network. (2016). *A Teacher's Guide to Online Collaboration and Global Projects*. Retrieved from: https://iearn.org/assets/resources/32498_iEARN-Teachers-Guide.pdf
 - International Education and Resource Network. (2018). *iEARN Project Book*. Retrieved from: <https://iearn.org/pages/iearn-project-book>
 - Kansas Public Schools. (2003). *Quality Work-based Learning Kit: Introduction to the Toolkit*. Kansas City. Retrieved from: http://www.newwaystowork.org/qwbl/tools/kcktoolkit/print_toolkit.pdf
 - Kapp, K.M., *The Gamification of Learning and Instruction: Game-based methods and strategies for training and education*, 2012, San Francisco: Pfeiffer
 - Khazatyan, H., Borta, N., Maslenchenco, N., Morozan, O. (2016). *New World*. Chisinau: American Councils for International Education.
 - Lynch, R. L. (1997). *Designing Vocational and Technical Teacher Education for the 21st Century: Implications from the Reform Literature*. Information Series No. 368. Columbus: ERIC Clearinghouse on Adult, Career, and Vocational Education, Columbus, Ohio State University. ERIC Document Reproduction Service No. ED405499). Retrieved from: <https://eric.ed.gov/?q=Lynch%2c+Designing+Vocational+and+Technical+&id=ED405499>
 - Madic, M. *Brain teasers students can solve in classes*. Shane English Schools. Retrieved on November 3, 2018 from: <http://shaneschools.com/en/brain-teasers-students-can-solve-class/>
 - Moldovanu, I., Culea, L., Melnic, A., Cucuș, E., Coadă, C., Moldoveanu, V. (colegiu de redacție) (2000). *Cartea Mare a Jocurilor, Reprezentanta UNICEF în Moldova și Radda Barnen- Suedia*.
 - Mills, S. (2006). *Using the Internet for Active Teaching and Learning*, Pearson, New Jersey.
 - Morgan, S. (2017). *The Complete List of Hacker and Cybersecurity Movies, Version 1.0*. California: Merloc Park. Retrieved from: <https://cybersecurityventures.com/movies-about-cybersecurity-and-hacking/>
 - Morozan, O. (2006). "Opener" As an Interactive Exercise. In: APLE News., English Language Teachers Association from Moldova Newspaper, Vol.3, Nr. 10, March.
 - Morozan, O. (2013). *Energizing Techniques in Classes*. In: *Modern Trends and resources for teachers of Foreign Languages Journal*. Chisinau.
 - Morozan, O. (2016). *Developing EFL Student Conflict Resolution Skills through Online Games & Simulations*. In: *META-Magazine*, paper collection

of International Conference “Advancing Excellence on English Language Teaching”. Chisinau.

- Muller, N. (2003). Icebreakers for Classroom and Group Dynamics. Retrieved from: <http://www.nelliemuller.com/Icebreaking.activities.and.group.dynamics.htm>
- Murray, J. (2018). The Types of Communication Software. Retrieved from: <https://www.techwalla.com/articles/the-types-of-communication-software>
- Nahaba, L. coord.. (2016). Ghid de proiectare a activităților de formare în educația adulților. Chișinău: Centrul Educațional PRO DIDACTICA & DVV International.
- Olejniczac, M. (2011). English for Information Technology, Level 1 Coursebook. Pearson Education.
- Păduraru, R., Morozan, O., Beschieru, M., Beregoi, V. (2018). Curriculum pentru învățământul profesional tehnic postsecundar și postsecundar nonterțiar. Unitatea de curs *Limba engleză aplicată în domeniul TIC*. Chișinău: Centrul Educațional PRO DIDACTICA, 2018.
- Păduraru, R., Morozan, O., Beschieru, M., Beregoi, V. (2018). Curriculum pentru învățământul profesional tehnic secundar. Unitatea de curs *Limba engleză aplicată în domeniul TIC*. Chișinău: Centrul Educațional PRO DIDACTICA, 2018.
- Parker, Q. (2017) Student-centered Learning: 4 Ways Student can Take Over. Retrieved from: <https://tophat.com/blog/student-centered-learning/>
- Pike, B., Busse, Ch. (1995). 101 Games for Trainers: A Collection of the Best Activities from Creative Training Techniques Newsletter. HRD Press, Inc., Lakewood Publications Pub.
- RMC Research Corporation. (2009). K-12 Service-Learning Project Planning Toolkit. Scotts
- Sharp, J. (2009). Multiple Intelligences: ICT applications and tools. Retrieved from: <http://www.slideshare.net/sharpjacqui/multiple-intelligences-and-web20>
- Shea, V. (2011). Thre Core Rules of Netiquette. Albiom Home. Retrieved from: <http://www.albion.com/netiquette/corerules.html>
- Scholastic. (2018). The First Thanksgiving. Retrieved from: http://www.scholastic.com/scholastic_thanksgiving/webcast.htm
- Schneider, G. & North, B. (2000). Fremdsprachen können – was heisst das? (Self-assessment checklist of the European Language Portfolio). Chur/Zürich, Rüegger. Retrieved from: <https://www.laits.utexas.edu/fi/sites/laits.utexas.edu/fi/files/Self%20Assessment%20Checklist%20European.pdf>
- Simple English Wikipedia. (2018). Leet. Retrieved from: <https://simple.wikipedia.org/wiki/Leet>
- Sloan, D. (2018). What are Some Strategies for reflection Activities?“. Miami Dade College. Retrieved from: <http://www.umsl.edu/services/ctl/faculty/instructionalsupport/reflection-strat.html>
- Smith, M. K. (2002, 2008). Howard Gardner and multiple intelligences, the

encyclopedia of informal education. Retrieved from: <http://www.infed.org/thinkers/gardner.htm>

- Soars, Liz and J. (2009). *New Headway Elementary*. Oxford University Press. Technology, Inc.
- Soffar, H, (2016). The advantages and disadvantages of using WhatsApp. Retrieved from: <https://www.online-sciences.com/technology/the-advantages-and-disadvantages-of-using-whatsapp/>
- Soffar, H, (2018). What are the advantages and disadvantages of Skype ? Retrieved from: <https://www.online-sciences.com/technology/what-are-the-advantages-and-disadvantages-of-skype/>
- Starks, E, (2018). Modern Types of Communication. Retrieved from: <https://www.techwalla.com/articles/modern-types-of-communication>
- Steitz, B (2006). A brief computer history. Retrieved from: <http://people.bu.edu/baws/brief%20computer%20history.html>
- Szpak, A. (2018). Types of Communication Technology. Retrieved from: <https://www.techwalla.com/articles/types-of-communication-technology>
- The BBC. (2014). Viruses. Retrieved from: <http://www.bbc.co.uk/schools/gcsebitesize/ict/implications/virusesrev1.shtml>
- Tech4Learning, Inc. (2018). Rubric generator. Retrieved from: <https://rubric-maker.com/>
- The Educator’s Network. (2018). Scavenger Hunt: “Computers” Worksheet. Retrieved from: http://www.educationworld.com/a_lesson/hunt/hunt002.shtml
- The Educator’s Network. (2018). Scavenger Hunt: “Copyright” Worksheet. Retrieved from: http://www.educationworld.com/a_lesson/hunt/hunt040.shtml
- TGR Foundation. Virtual Field trips. Retrieved on October 4, 2018 from: https://www.tgreduexplore.org/careerconnections?utm_source=DiscoveryEducation.com&utm_medium=referral&utm_content=VFTpage
- Valley, CA: National Service-Learning Clearinghouse. Retrieved from: www.servicelearning.org/filemanager/download/K12_ServiceLearning_Project_Planning_Toolkit.pdf
- Vizental, A. (2014). *Metodica predării limbii engleze*. București: Polirom.
- United Nations. About the Sustainable Development Goals. Retrieved on October 16, 2018 from: <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>
- Weissert, K. (2017). Mobile phones driving bans in Europe. Retrieved from: <https://www.germanautolabs.com/blog/mobile-phone-driving-bans-in-europe>
- Youth Service America. (2012). *Youth Changing the World. Your Service Project Toolkit*. Retrieved from: <http://cdn.worldslargestlesson.globalgoals.org/2016/06/YouthChangingtheWorldToolkit2.pdf>

Webliography

- ALTEC. (2008). RUBISTAR: Create Rubrics for Your Project-based Learning Activities. University of Kansas. Retrieved from: http://rubistar.4teachers.org/index.php?screen=NewRubric§ion_id=2#02
- English Language Dictionary website: <https://www.dictionary.com/>
- International Education and Resource Network (iEARN) website: <https://iearn.org>
- iEARN-Moldova website: <http://iearnmoldova.weebly.com/>
- iEARN-Moldova Facebook page: https://web.facebook.com/groups/academiaaise/?ref=br_rs
- Resurse educaționale deschise naționale. Retrieved on November 3, 2018 from: <http://red.prodidactica.md/resurse-red/red-nationale/>
- Resurse educaționale deschise internaționale. Retrieved on November 3, 2018 from: <http://red.prodidactica.md/resurse-red/red-internationale/>
- Study.com. Computer Lessons. Retrieved on November 3, 2018 from: <https://study.com/search/text/academy.html?q=computer#/lessons/computer>
- The Tech Terms Computer Dictionary. Retrieved from: <https://techterms.com/>
- The World Largest Lesson website: <http://worldslargestlesson.globalgoals.org>

Appendix 1

Learner-centered Activities

Activity name:	Academic Controversies
Category:	Discussion
Suggested duration:	30 minutes
Intent:	Enables students to understand different points of view on a problem and practice representing a position.
Implementation:	<ol style="list-style-type: none">1. Select an issue that has two or more well defined positions such as pro and con.2. Pair up students and assign each pair a position.3. Assign each pair the following tasks:<ol style="list-style-type: none">a. Research and learn your assigned position's supporting arguments and information using instructor provided resources, the textbook, library resources, and additional resources as appropriate.b. Prepare a persuasive presentation in support of your position.4. Group pairs so that each group has one pair representing each position.5. Have each pair present their position to the others in their group.6. Provide times for the groups to discuss their opposing positions including asking challenging questions, asking for data to support opposing positions, and providing counter arguments.7. Have the pairs switch positions so that they now represent the opposing viewpoint as effectively as they can. Students should add additional information and identify what the strong points are in each viewpoint position.8. Assign each group the task of creating a report that synthesizes all perspectives. Students should no longer advocate for any position, but work together to reach consensus and appreciate the value of all sides. The report should identify the strongest arguments for all sides and present a consensus viewpoint supported by facts and data. All group members should sign the final report to show their agreement.9. Give a quiz that covers all perspectives to evaluate individual understanding of the perspectives.10. Students should review how well the groups functioned and what could be improved for working through other controversies.

Activity name:	After Action Review
Category:	Reflection / Debriefing
Suggested duration:	10-15 minutes
Intent:	An alternative structure for group reflection and debriefing after an activity (similar to What? So What? Now What?).
Implementation:	<ol style="list-style-type: none"> 1. Have students review events leading to the activity. 2. Have students give a brief statement of the specific activity. 3. Have students summarize the key events. Have students restate portions of their part of the activity. Encourage participation. 4. Do not turn it into a critique or lecture. The following will help: <ul style="list-style-type: none"> • Ask why certain actions were taken. • Ask how they reacted to certain situations. • Ask when actions were initiated. • Ask leading and thought provoking questions. • Exchange “war stories” (lessons learned). • Ask students what happened in their own point of view. • Relate events to subsequent results. • Explore alternative courses of actions that might have been more effective. • When the discussion turns to errors made, emphasize the positive and point out the difficulties of making tough decisions. <ol style="list-style-type: none"> 1. Summarize. 2. Allow teams to discuss the events in their teams. 3. Follow up on areas that need more review or practice.
Notes:	Especially well suited for use after problem based learning activities.

Activity Name:	Analytic Memo
Category:	Critical Thinking
Suggested duration:	Assignment
Intent:	Students write a one- or two-page analysis of a specific problem or issue to help inform a decision-maker.
Implementation:	<ol style="list-style-type: none"> 1. Select which analytic methods or techniques you wish to assess. 2. Locate or create a typical problem or situation for the students to analyze, including the required background information (or requiring them to research it).

	3. Develop an assignment sheet that explains the student’s role in writing the memo, the identity of the audience, the specific subject to be addressed, the analytic approach to be used, the length required (usually 1-2 pages), and the assignment deadline.
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Activity Name:	Double Entry Journal
Category:	Journaling, Reflection / Debriefing
Suggested duration:	Ongoing as appropriate
Intent:	This can be used for lectures, article reviews, videos, and other times when students are typically passive to make students more active and reflective.
Implementation:	<ol style="list-style-type: none"> 1. Have students first create an outline of the critical points and ideas of the presentation in one column. 2. Have the students write a response to each point in the second column that addresses their reactions, feelings, and questions.
Notes:	This is a great way to have students take notes, and reflect on their thinking and learning process.

Activity Name:	Fishbowl
Category:	Discussion
Suggested duration:	10-30 minutes
Intent:	To have a small group of students discuss an issue, topic, reading, etc. with other students observing and eventually joining the discussion.
Implementation:	<ol style="list-style-type: none"> 1. Select 3-4 students and have them bring their chairs to the front of the room; 2. Give the students a topic to discuss amongst themselves for 5-10 minutes as the class observes; 3. Before the discussion winds down, ask for volunteers from the audience to take a spot in the main discussion circle; 4. Give the students a new topic or allow the new participant to share their views on the previous discussion; 5. Repeat as desired.
Notes:	You can also conduct this activity as a multiple group activity, separating the students into 3 or 4 groups and having the entire group switch places to take the discussion in a new direction, etc. You may also want to consider giving more complex questions as the discussions continue.

Activity Name:	Guided Journals
Suggested duration:	Ongoing as appropriate
Intent:	Provides an opportunity for students to reflect on the course and on particular concepts identified by the instructor.
Implementation:	<ol style="list-style-type: none"> 1. Instructor provides very specific questions related to the content that week. 2. Students write a certain number of pages or for a certain time each week answering specific questions posed by the teacher. 3. Could have students share their findings with class or groups.
Notes:	The Generic Question Stems can be used as a starting point for generating questions for this activity.

(Reference: Activities for Learner-Centered Teaching, Baker College, 2009)

Appendix 2

Problem-solving Activities

Activity Name:	Barnga
Suggested duration:	45-80 minutes (be sure to leave enough time to debrief)
Intent:	To have students learn more about non-verbal communication, teamwork, personal biases, and intercultural awareness / diversity.
Implementation:	<ol style="list-style-type: none">1. Arrange the room so that there are separate places for each group (approximately 4 to 5 students per group) to play cards.2. Set a copy of the rules and a deck of cards (A-10 only, no face cards) at each table.3. Let the students play a few rounds to get used to the rules at the table, with talking allowed at each table.4. Then remove the rules from each table, but continue to allow talking. Walk around to each table, ensuring that each group understands the rules at that table. From now on, the winner of each trick will receive one poker chip (or token of your choice) BUT TALKING IS NOW PROHIBITED.5. After allowing a few rounds without talking, make the participant who won the most tricks move clockwise to the next table, and the participant who won the least number of tricks move counter-clockwise to the next table.6. Play continues at the new tables for a set number of minutes or rounds (WITH NO TALKING). It is up to the participants at the tables to figure out how to communicate to each other and which rules are correct. <p>What the players DO NOT KNOW, is that each table has been playing with a different set of rules (see below). Depending on the number of groups, you may choose to discard or alter the rules as you see fit.</p> <p>Table 1: Ace high, no trump Table 2: Ace low, diamonds trump Table 3: Ace low, clubs trump Table 4: Ace high, hearts trump Table 5: Ace high, spades trump Table 6: Ace low, no trump In all cases, other cards will be worth face value—10 high, 2 low</p>

	<p>Each table shares the following rules (ADD the table-specific rules to each table's set of rules; remember- they don't know it is different at each table!):</p> <ul style="list-style-type: none"> • <i>Players are dealt 5 cards each</i> • <i>Whoever wins the most tricks will move clockwise to the next table</i> • <i>Whoever loses the most tricks will move counter clockwise to the next table</i> • <i>Everyone else stays at the same table</i> • <i>Ties are resolved by paper rock scissors</i> • <i>Each round will be about 5 minutes long (longer if time allows) and each round will consist any number of games that the time allows. After the initial round, players will not be allowed to see the rules or speak to each other. Gestures and pictures are allowed, but players are not allowed to use words.</i> <ul style="list-style-type: none"> – The game “winner” will be the person who has won the most tricks in total. (Of course, once game play starts, winning will likely take a back seat to trying to figure out what everyone else is doing, as they are playing by different rules.) – Players can keep track of scores with popsicle sticks (one stick per trick won). – The dealer can be anyone at the table, the person who plays first will be to the right of the dealer . – The first player for each trick may play ANY suit. All other players must follow suit (play a card of the same suit). For each round, each player plays one card. – If a player does not have that suit, a card of any suit must be played. The trick is won by the person with the HIGHEST card of the ORIGINAL suit (players will begin to become confused when some players believe their card is trump, and others disagree or contradict this).
<p>Notes:</p>	<p>The debriefing is the most important part of this game, so be sure to devote enough time to it. Below are some potential questions that you can use for this process.</p> <ul style="list-style-type: none"> • If you could describe the game in one word, what would it be? • What did you expect at the beginning of the game? • When did you realize that something was wrong? • How did you deal with it? • How did not being able to speak contribute to what you were feeling?

Copy the rules below for each table; be sure to add their specific “rule” to the list, but don’t let them know it is different!:

Table 1: Ace high, no trump

Table 2: Ace low, diamonds trump

Table 3: Ace low, clubs trump

Table 4: Ace high, hearts trump

Table 5: Ace high, spades trump

Table 6: Ace low, no trump

BARNGA RULES

- Players are dealt 5 cards each;
- Whoever wins the most tricks will move clockwise to the next table when directed;
- Whoever loses the most tricks will move counter clockwise to the next table when directed;
- Everyone else stays at the same table;
- Ties are resolved by “Rock, Paper, Scissors”;
- Each round will be about 5 minutes long (longer if time allows) and each round will consist of any number of games that the time allows;
- After the initial round, players will not be allowed to see the rules or speak to each other. Gestures and pictures are allowed, but players are not allowed to use words;
- The game “winner” will be the person who has won the most tricks in total. Players can keep track of scores with popsicle sticks, toothpicks, poker chips, paper clips, etc. (one per trick won).
- The dealer can be anyone at the table; the person who plays first will be to the right of the dealer;
- The first player for each trick may play ANY suit. All other players must follow suit (play a card of the same suit). For each round, each player plays one card.
- If a player does not have that suit, a card of any suit must be played. The trick is won by the person with the HIGHEST card of the ORIGINAL suit.

Activity Name:	Concept or Mind Mapping
Suggested duration:	10-20 minutes
Intent:	To have students identify a main concept and relating concepts about a particular topic in a visual manner. A concept map is a diagram showing the relationships among concepts. They are graphical tools for organizing and representing knowledge. Concepts, usually represented as boxes or circles, are connected with labeled arrows in a downward-branching hierarchical structure. The relationship between concepts can be articulated in linking phrases such as “gives rise to”, “results in”, “is required by,” or “contributes to”.

	The technique for visualizing these relationships among different concepts is called “Concept mapping”.
Implementation:	On a whiteboard, posted flip chart paper, or using online mind-mapping generator: www.mindmeister.com , www.mindmup.com/ . <ol style="list-style-type: none"> 1. Identify a main concept 2. Have students identify concepts that are related to the main concept. 3. Students should draw a line between related concepts and write the verb that relates the concepts on the connecting line. 4. Repeat this process connecting new concepts to the related concepts and so on.
Notes:	An alternative approach is to have students prepare a list of concepts on sticky notes and organize the combined group of notes into a map of related IT concepts.

Activity Name:	Failure Analysis
Suggested duration:	30-90 minutes (more if assigned as a group project outside of class)
Intent:	To have students work through a problem backwards, identifying why a solution or problem failed and determine solutions that will work.
Implementation:	<ol style="list-style-type: none"> 1. Provide students with a case study or scenario that presents the topic with an analysis of how it failed. 2. Have students research the scenario or case study. 3. Direct students to start from the failure and analyze the situation or scenario from the failure to identify the main causes of the failure. 4. Ask students to write a paper or make a presentation about why the scenario or case study failed and how it could have been avoided.
Notes:	The teacher can use the “What? So What? Now What?” to guide the analysis.

Activity Name:	Pass a Problem
Suggested duration:	20-60 minutes (depending on the number of groups you allow to review each problem)
Intent:	Identify and solve a problem related to course content.
Implementation:	<ol style="list-style-type: none"> 1. Divide students into small groups. 2. Have each group spend up to 10 minutes identifying a problem (or you can give them a problem to solve). 3. Have that group of students brainstorm and write down their solutions to the problem. Allow up to 10 minutes for this.

	<ol style="list-style-type: none"> 4. Have the groups pass their problem / solution to another group for review and then the second group can add to the original solutions. 5. Continue until all groups have had a chance to see/solve each problem. 6. Have the group that generated the problem initially review all solutions and either pick the best one or create a new one that synthesizes two or more of the solutions.
Notes:	You can also do this by posting flip chart papers on the walls around the room (one per problem) and have the groups rotate.

Activity Name:	Role Play
Suggested duration:	10-30 minutes (can be longer)
Intent:	To have students act out, in pairs, small or large groups, a topic or concept from the class
Implementation:	<ol style="list-style-type: none"> 1. Provide roles, positions, or perspectives to students or groups of students; assist with assigning roles or clarification as needed. 2. Direct students to research their topic or role and allow the students enough time to work through how they want to perform the simulation. 3. Have the students perform the role-play.
Notes:	<ul style="list-style-type: none"> • You can also provide a scenario or case and require students to negotiate or find a solution based on their role. • You can pair students so that everyone is involved in a role play at the same time. You can also add a third student as an observer of each pair to provide feedback to the role players. • The important portion of this activity is the reflection / debriefing afterward. Some suggested questions you can prime the audience to consider while the students are conducting the role play are: <ol style="list-style-type: none"> 1. <i>What did the participants do well?</i> 2. <i>What could they have done better?</i> 3. <i>What are other possible solutions to this issue?</i> <p>You can also use the “<i>What? So What? Now What?</i>” debriefing activity.</p>

Activity Name:	Metacognition (Thinking about Thinking)
Suggested duration:	Ongoing
Intent:	To have students express and document their thinking and problem solving processes.

Implementation:	<ol style="list-style-type: none"> 1. Have students talk through and develop a description of how to go about solving a specific problem. One context for this is to tell the students that they need to teach this to someone else who knows even less than they do. 2. Provide students with a sample of how an expert would approach the problem or the commonly accepted way of going about solving this problem. (Don't tell the students that they were wrong, because in the end they may have reached the same destination. The focus is on the <u>process</u>.) 3. Have students discuss how and why their approach is differed from the expert approach. 4. Have students identify how they would go about solving these types of problems in the future.
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Activity Name:	Problems-based Challenge
Suggested duration:	30-90 minutes (more if used as an out of class activity as well)
Intent:	Students apply knowledge learned through individual or group problem solving.
Implementation:	<ol style="list-style-type: none"> 1. Choose a central idea, concept, or principle in the course. List the learning objectives related to this concept that students should meet when they work through the problem. 2. Think of a real world context for the problem. Develop a story or case around the problem. Add complexity and ill-structured qualities to limit the ability of students to adopt a "plug and chug" approach. 3. Structure and plan the problem: <ol style="list-style-type: none"> a. <i>What will the first stage look like? What open-ended questions can be asked? What learning issues should be identified?</i> b. <i>How long will the problem be? How many stages? How much in and out of class time?</i> c. <i>What information will students receive in second and later stages as they work through the problem?</i> d. <i>What resources will students need? Will the students need to do additional research on their own?</i> e. <i>What end product will students produce at the completion of the problem?</i> 4. Write a guide for using the problem in class. Plan for mini-lectures, class discussion, and small group reporting to support the problem solving process.

<p>Notes:</p>	<p>The problems that you provide to the students can come in a variety of forms</p> <ul style="list-style-type: none"> • Logical Problems: apply logic to solving a puzzle; • Algorithms: apply a formula or series of steps; • Rule-Using Problem: apply rules; • Story Problems: a textual description of a problem told as a story; • Decision-Making Problems: make a decision; • Troubleshooting: determine what is wrong with a situation; • Diagnosis-Solution Problems: determine how to treat/respond to a situation; • Strategic Performance: perform a complex skill or task; • Situated Case-Policy Problems: analyze a case scenario; • Design Problems: design and develop a product to meet specifications; • Dilemmas: resolve an issue with two or more opposing perspectives; <p>Also, a set of problems can be considered the analysis problems such as:</p> <ul style="list-style-type: none"> • <i>Identify and order the sequential steps of a process;</i> • <i>Characterize a set of phenomena by their component elements;</i> • <i>Identify causes leading to an event or the consequences derived from an event;</i> • <i>Break an event into problems and the actions taken to solve them and the problems these actions created;</i> • <i>Determine cause and effect;</i> • <i>Examine parts of a whole and their relationships;</i> • <i>Determine the similarities and differences of a place, event, or people;</i> • <i>Break into and identify parts.</i>
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Appendix 3

“Challenging Common Conceptions” Lesson Plan



(Image courtesy of NASA Scientific Visualization Studio)

“The answers to our questions are everywhere; we just need to change the lens with which we see the world.”

Janine Benyus,
Biomimicry 3.8T

Challenging Common Conceptions

Seeing The Bigger Picture - Lesson 1

Total Time: Age Range:

Subject:

Economics, Geography, Environmental Systems, Sociology, Business, Citizenship, Technology

45-75
mins

12-19
year olds



Learning Outcomes:

- To understand that environmental issues can be intrinsically linked to economic issues
- To critique the flaws inherent in some common approaches to environmental education
- To begin to investigate a different way of approaching environmental, social and economic issues

Preparation:

- Pre-load the videos from YouTube
- Read the notes that accompany each video
- Sit the students in small discussion groups
- You can access all of the videos on YouTube from this address: <http://tinyurl.com/seeingthebiggerpicture>

Note

This lesson is the first of a series of lessons which introduce students to a different way of thinking about how our economy could work: a circular economy. The series builds up exactly how a circular economy is different from the status quo, and looks at the economic, environmental and social advantages of a new approach.

This particular lesson is one part of a series. The whole series looks like this:

- (1/5) Challenging common conceptions (this lesson)
- (2/5) Exploring the circular economy
- (3/5) Understanding the challenge of 'finite' resources
- (4/5) Designing for a circular economy
- (5/5) The circular economy and modern agriculture



**ELLEN
MACARTHUR
FOUNDATION**

This lesson was produced by the Ellen MacArthur Foundation, which exists to accelerate the transition to a circular economy. The Ellen MacArthur Foundation works with business, government and academia to build a framework for an economy that is restorative and regenerative by design.

More educational resources on circular economy can be downloaded for free from www.ellenmacarthurfoundation.org

Introduction For The Teacher

Education about improving the environment can often come to familiar conclusions such as 'reduce, reuse, recycle', but what if some of those conclusions have detrimental effects in other areas, such as employment, standards of living, and the economy? In other words, what if these conclusions fail to see the bigger picture? In this activity, a series of videos is used as a stimulus for classroom discussion about how environmental goals could be aligned with economic goals.

There are seven videos and each is no longer than 1 minute. The videos each end with a challenge for the viewer. We suggest you watch them in advance and read the notes below so you are prepared for the discussion.

You can access all of the videos on YouTube from this address:
<http://tinyurl.com/seeingthebiggerpicture>

Lesson Structure - Overview

Each video ends with a question, so watch one video, then ask the groups to discuss their response to the question posed. Students should take notes on individual or group sheets of paper.

The videos lead the students to conclude that some familiar environmental 'solutions' can cause damaging effects on jobs and the economy overall. The activity then goes on to investigate a different sort of economy: a circular economy, which is regenerative by design.

This activity could be completed in one hour, but we recommend you take longer so your class has time to digest the information and properly tackle each question raised.

Notes For Each Video

60+ mins

Video One: The Linear Economy

Link: <https://www.youtube.com/watch?v=PU-hevOX0Qo>

This video ends with the question: ***We can't sustain this 'take-make-dispose' model – what's the solution?***

Invite students to share their answers to this question, writing up their responses at the front of the class where everyone can see them

Some key points about the way the economy operates:

- 1) We do live in a modern, sophisticated, global economy that does bring benefits for many people.
- 2) The Industrial Revolution raised living standards for many people around the world through mass production and consumption.
- 3) There are clear downsides, as referenced in the film, including increased waste and pressure on finite resources, despite technological advances.

The following videos look at some familiar 'solutions' to the problems of the linear economy, but each has shortcomings if considered with the bigger picture in mind. We suggest you watch them in turn and allow your students to critique the ideas within.

Video Two: Recycling?

Link: <https://www.youtube.com/watch?v=RX14rA-tylo>

This video ends with the question: ***What would have to change to make recycling work better?***

RECAP: Ask your students to recap the key points of the video to check their understanding.

Evidently recycling is useful, but it is less effective with short-cycle products, such as aluminium cans and other packaging. The problem is that **small losses multiply rapidly over time.**

If you want to understand the mathematics behind the 90% figure, here is a link: en.wikipedia.org/wiki/rule_of_72. In practice, though, all you have to do is divide 70 by the percentage loss per year (if the loss is, for example 50% use 50 rather than 0.5) to give you the number of cycles before half the quantity is lost.

In the video, we learned that today's stock of aluminium cans would last for approximately 14 cycles until the whole stock is in landfill, and bear in mind that's with a vastly increased recycling rate – we don't recycle anywhere near 90%. And note this: nobody reasonably expects 100% recycling to be possible, so it's always going to mean some losses.

DISCUSS: Encourage students to think beyond the example – why might aluminium cans be easier to recycle than other products? Are most of the products that students use this simple, or are they more complex? What about packaging, even?

Video Three : Use Less?

Link: https://www.youtube.com/watch?v=mJFdW_Y4JDY

This video ends with the question: ***What would have to change to allow for using less to be ok?***

It's an attractive moral position to suggest we can all change our lifestyles and use a little less. But one person's income results from another person's expenditure, so, as the video suggests, **using less can ultimately lead to recession.**

As with the last video, when we look at the bigger picture, beyond the individual, you get a different result. Moderation by one person is fine, moderation by everybody leads to problems...

DISCUSS: Return to the question: ‘What would have to change to allow for using less to be okay?’ Suggest we need to consider the way businesses operate. Is there a way of keeping money flowing around the system whilst not depleting more resources? Perhaps the idea is to not sell products, but to sell the services which come from them, e.g. subscribing to a car-sharing service rather than buying a car. And perhaps we need to design those cars in a way that allows us to use the materials again...

Advanced question: Why might it be hard for a politician to campaign for us to ‘use less’?

Video Four: Last Longer?

Link: <https://www.youtube.com/watch?v=a4dbNnIfcbc>

This video ends with the question: ***Could longer lasting products work? How?***

DISCUSS: What are the challenges of making longer lasting products successful?

We want new products, but we also want the materials and components within those products to have another use. To keep up with technology, products that are likely to become obsolete very rapidly – like a mobile phone – need to be designed in such a way that they can be upgraded and the materials can be recovered. Perhaps products should have a **defined use period**. In other words, it is expected that they will be moved on and the materials be reutilised. Longer lasting products could work but there is a danger that a drop in consumption will result in a drop in spending in the economy as a whole (which affects jobs and, ultimately, standards of living).

Advanced question: What would be the effect on businesses, employees and the government if products were designed to last longer?

Video five: More Efficient?

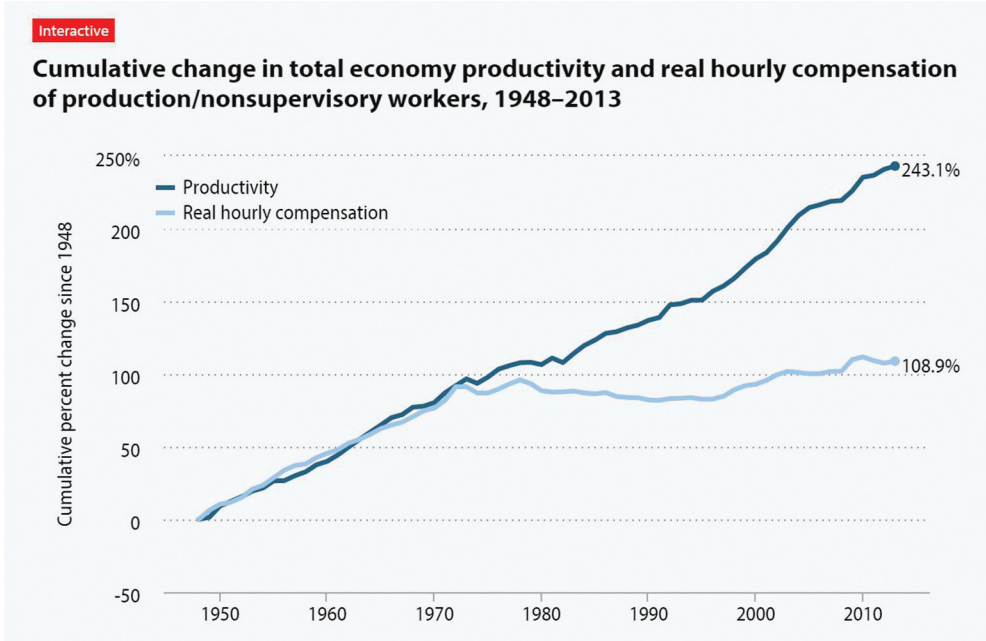
Link: <https://www.youtube.com/watch?v=u-qCn2tRp0w>

This video ends with the question: ***What would we have to change to make efficiency really helpful?***

Introduce the idea that this puzzle is called the ‘paradox of efficiency’. From an **environmental** perspective, more spending on more stuff – aided by efficiencies – is a bad thing if the stuff still uses the linear, *take, make and dispose* system.

After all, in this scenario the ‘stuff’ is still wasteful of finite resources, and has related negative externalities, such as environmental spoiling. So, the impact per unit may be going down, but the overall negative effect still increases.

But if the system was effective – i.e. it worked well – then our stuff would be made in a way that considered how to use resources again and again, using non-toxic materials and substances, and is powered by renewable energy. Efficiencies within *that* system would be a good thing.



Graph from Forbes. Note the disconnect between productivity and wages, which began in the 1970s.

You can access the graph here: <http://www.forbes.com/sites/scottwinship/2014/10/20/has-inequality-driven-a-wedge-between-productivity-and-compensation-growth/#187d40556078>

From an **economic** perspective, there is no problem with efficiency *unless wages don't keep up*. Recently they have not: wages have been stagnating in many countries for several decades, and increasing levels of credit (loaned money) are required to bridge the gap between what people earn and what they spend...so what happens when credit is no longer available?

What people need is income, not just lowered prices. If we designed a system that cycled and cascaded resources (products and materials) then people and businesses could make use of them, add value to them, and sell them to each other to create income.

Efficiency has to be balanced by opportunities for income generation. Material flows have to be *effective* to close the loop – this keeps materials in circulation and creates new economic opportunities.

Advanced questions: (1) Why might the overall negative effect on the environment increase, even if the process of production becomes more efficient, and prices drop?
(2) What is the difference between an *efficient* system and an *effective* system?
Which is most sensible to aim for?

Video Six – Green?

Link: <https://www.youtube.com/watch?v=LS7d2ZHEpQM>

This video ends with the question: ***Although many green products are moving in the right direction, what does the destination look like?***

DISCUSS: If this question is too tricky for your class, you might want to use the following questions instead:

- What is the purpose of ‘green’ products?
- Do ‘green’ products always help us meet that purpose?
- Is it easy to make the ‘right’ choices as a consumer?
- Does the ‘green’ label help us choose, or do we need to become experts in every product to understand their environmental and social impact?
- Is it really fair that unless you can afford to pay a premium you *have* to choose unhealthy food, damaging products and polluted skies?
- What if we changed the system instead, so that all products had a positive impact?

And how can we change the system? Well, that’s what we’re going to get onto soon...

Advanced questions: (1) Are ‘green’ products always good for the planet? Or are they often *‘less bad’*?

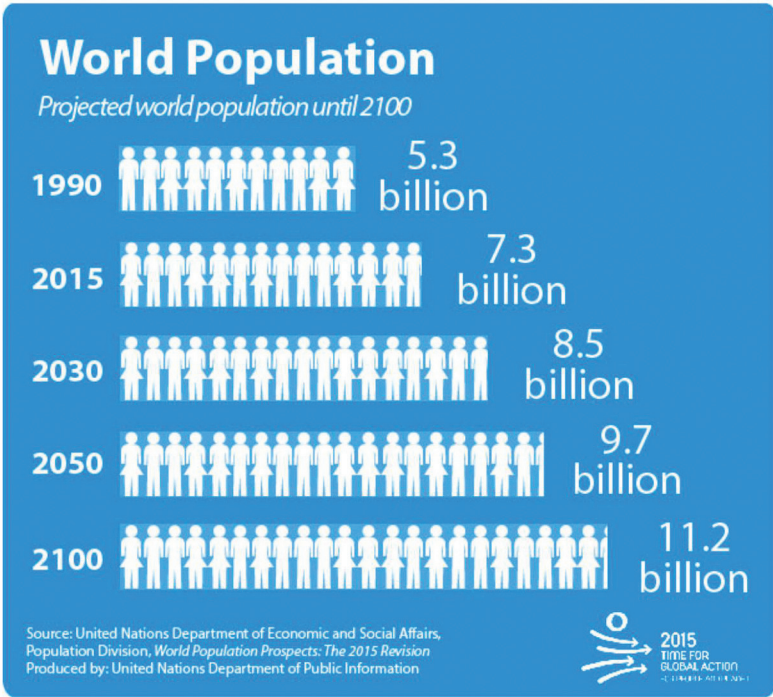
(2) Are companies acting hypocritically when they produce a ‘green’ range alongside their regular products?

What will happen when there are even more people?

Your students might point out that world population is also increasing, and that this factor should be taken into consideration. It could lead to increasing demand, potentially leading to rising prices and, ultimately, fewer resources.

It is estimated that the world population will grow from the current estimate of 7 billion today to 9 - 11 billion by 2050. (see diagram on the next page).

The question then, is how can we change things to accommodate for the rising demand and welcome these new people to the planet?



(Image sourced from United Nations: <http://www.un.org/apps/news/story.asp?NewsID=51526#.Vz3lh5Mrlp8>)

We recommend you show the graphic to your students and ask them to imagine what effect these three scenarios would have on the use of finite materials:

1. A growing world population
2. A stable world population
3. A shrinking world population

Ask your students: if you think about the long term, did any of the scenarios *solve* the problem?

The answer of course is that they do not, because even in scenario 3, fewer people may still individually increase their use of finite materials, with the net effect being the same or worse as the other scenarios.

Now encourage your students to think hypothetically: If we had a system where production and consumption were benign, at worst, why would we be concerned about the number of people?

Recap and reflect: What links all of the ‘eco-friendly’ concepts explored in this lesson? They tend to only consider the short-term, they can have negative economic impacts and they all rely on isolated actions, rather than considering the whole system.

We’ve got to bring the bigger picture and a longer-term perspective to the table, in a way that still makes economic sense and spins off social and environmental benefits. And we can do this by learning from living systems, especially since we know living systems have an impressive 3.8 billion year-old track record.

The next video explores this point...

Video Seven – How Do Other Species Live?

Link: <https://www.youtube.com/watch?v=N6GNb0zTc2s>

This video ends with the question: ***What are the rules [for benign production]?***

The different elements of the lesson all point to the idea that there is a different way of seeing production and consumption. Support your class to reach conclusions from the lesson, by applying what they have learnt to consider why ants might be a good model for production and consumption. How is this different to the way our system currently operates?

Key points include:

- Their biomass is greater than that of humans, yet their impact on the environment is **positive**.
- They are **adapted** to the **system**, i.e. all their waste is food for something else, they live off renewable energy, they are diverse in their functions, and they restore natural capital by, for example, rebuilding soils.
- They are an **effective** species (not just efficient) – they make the whole system thrive, as well as guaranteeing their own survival.

Extension activity: The Global Goals

15
mins

1. Remind students of the Global Goals for Sustainable Development by showing the Goals Matrix (downloadable here: <http://www.globalgoals.org/resource-centre/the-basics/>)
2. Ask students to identify which of the Global Goals today’s lesson linked to.
3. Ask the students if they would modify any of the Global Goals – or add new Goals – to match with what they have learned today.
4. Note that each Goal contains a set of targets – these can be accessed at www.globalgoals.org. If your students are happy with the Global Goals they have chosen for this lesson, ask them to suggest targets for their Goals, and then check their targets against those on the website.

One possible response to the challenges we face is a circular economy. The next lesson in this series – **Exploring the circular economy** - explores that concept.

TAKE ACTION FOR THE GLOBAL GOALS



As an educator you have the power to channel students’ positive energies and help them believe that they are not powerless, that change is possible, and that they can drive it.

How To Take Action – Right Now:

- **Write** to your local government representative, **tell** them how the circular economy can help achieve the Global Goals and **ask** them what action they are taking toward Goal 12 specifically.
- Make a 30-second **video** or design a **poster** about the circular economy and its links to the **#GlobalGoals** and **share** it with World’s Largest Lesson on Facebook or Twitter @theworldslesson @circulareconomy

How To Take Action – Deeper Engagement:

- For deeper learning and impact, students can also take part in **projects** to make change for the Goals in their local communities from the IT perspective.

Visit the “**Take Action**” page on our website: www.globalgoals.org/worldslargestlesson and find organisations, resources and lesson packs to help you get started.



Appendix 4

Worksheet Planning

Part A. Action Planning Form

Project Title: _____

Time frame for the Service Activity: _____

Part B. Lesson Plans

Based on your answers to the guided questions, create lesson plans for each step in the Service Activity phase of the project.

Step One: Researching the problem. Dates: _____ Goals: Materials and Resources: Activities: Assessment Plan:	Step One: Selecting a solution. Dates: _____ Goals: Materials and Resources: Activities: Assessment Plan:
Step Three: Writing an Action Plan. Dates: _____ Goals: Materials and Resources: Activities: Assessment Plan:	Step Four: Orientation and Training #1. Dates: _____ Goals: Materials and Resources: Activities: Assessment Plan:
Step Five: Orientation and Training #2 and introducing reflection assignment during service. Dates: _____ Goals: Materials and Resources: Activities: Assessment Plan:	Step Six: Step Six: Students begin their service project. Dates: _____ Goals: Materials and Resources: Activities: Assessment Plan:

(Reference: RMC Research Corporation.(2009). K-12 Service-Learning Project Planning Toolkit. Scotts Valley, CA: National Service-Learning Clearinghouse. Retrieved from: https://www.ffa.org/sitecollectiondocuments/lts_servicelearningtoolkit.pdf)

Appendix 5

Administrative Tasks

Making arrangements for students to carry out service-learning projects involves many administrative issues, such as scheduling (possibly getting permission for students to miss classes), gaining parent permission and involvement, and managing risk. *What challenges do you anticipate related to each issue? What resources (people, financial, etc.) could help you and your students with these challenges? What are your final strategies for addressing each administrative issue?*

Administrative Issue	Challenges	Resources	Strategies
Scheduling the service experience			
Gaining administrator permission and support			
Gaining parent permission and support			
Transportation			
Materials and equipment needs			
Potential risks			

(Reference: RMC Research Corporation. K-12 Service-Learning Project Planning Toolkit. Scotts Valley, CA: National Service-Learning Clearinghouse, 2006/2009. www.servicelearning.org/filemanager/download/K-12_ServiceLearning_Project_Planning_Toolkit.pdf)

Appendix 6

Examples of Reflection Questions Based on the “What? So What? Now What?”

Model for Service Learning activities

1. What?

- *What happened?*
- *What did you observe?*
- *What was your role at the community site?*
- *What issue is being addressed or population is being served?*
- *What were your initial expectations?*
- *Why does this organization exist?*

2. So What?

- Did you learn a new skill or clarify an interest?
- Did you hear, smell, or feel anything that surprised you?
- How is your experience different from what you expected?
- What impacts the way you view the situation/experience? (What lens are you viewing from?)
- What did you like/dislike about the experience?
- What did you learn about the people/community?
- What are some of the pressing needs/issues in the community?
- How does this project address those needs?
- What about your community involvement has been an eye opening experience?
- How did the experience relate to your coursework?
- What specific skills have you used at your community site?
- Has your view of the population with whom you have been working changed? How?
- How has the environment and social conditions affected the people at your site?
- Has the experience affected the way you view the world? Homelessness? The nature of families? How?
- Did anything about your community involvement surprise you? If so, what?
- What did you do that seemed to be effective or ineffective in the community?
- How does your understanding of the community change as a result of your participation in this project?
- Talk about any disappointments or successes of your project. What did you learn from it?
- What sorts of things make you feel uncomfortable when you are working in the community? Why?

3. Now What?

- What seem to be the root causes of the issue addressed?
- What other work is currently happening to address the issue?
- What learning occurred for you in this experience?
- How can you apply this learning?
- What would you like to learn more about, related to this project or issue?
- What follow-up is needed to address any challenges or difficulties?
- What information can you share with your peers or the community?
- If you could do the project again, what would you do differently?
- Have your career options been expanded by your service experience?
- How can you continue your involvement with this group or social issue?
- How can you educate others or raise awareness about this group or social issue?
- During your community work experience, have you dealt with being an “outsider” at your site? How does being an “outsider” differ from being an “insider”?

4. Other Questions.

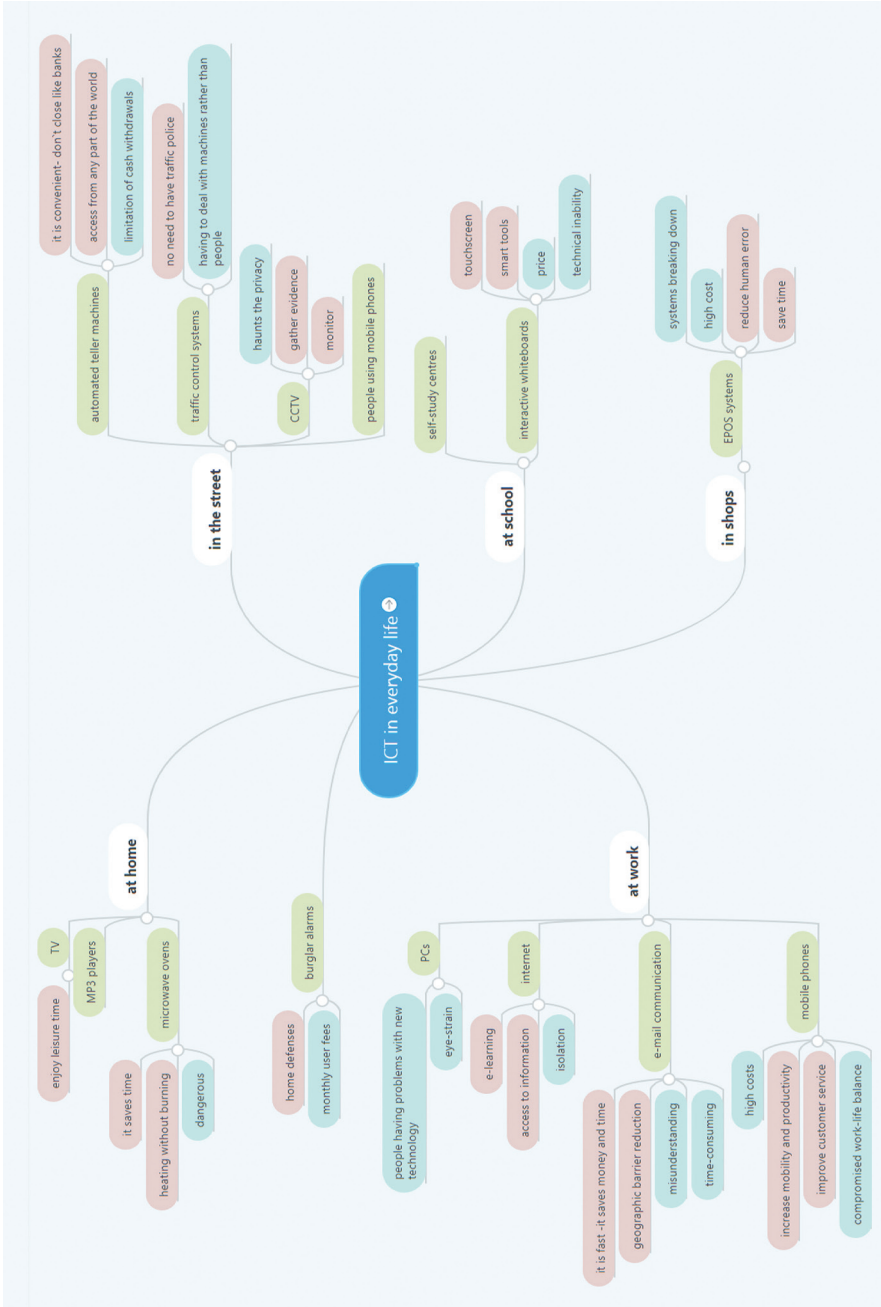
- Do you see benefits of doing community work? Why or why not?
- What institutional structures are in place at your site or in the community?
- How do they affect the people you work with?
- What did you do that seemed to be effective or ineffective in the community?
- What are the most difficult or satisfying parts of your work? Why?
- How are your values expressed through your community work?
- Complete this sentence: Because of my service-learning, I am....

(Retrieved from: <https://www.hilbert.edu/Public/file/service%20learning%20reflection%20questions%20what%20so%20what%20now%20what.pdf>)

Appendix 7

The Use of ICT in Everyday Life

A Mind Map using the website <https://www.mindmeister.com/folders>



Appendix 8

Ergonomics: Definitions and meaning

Study the definitions of ergonomics and underline the keywords.

Ergonomics is the study of how humans interact with man made objects.
<https://techterms.com>

The study of people's efficiency in their working environment.
<https://en.oxforddictionaries.com>

Ergonomics is the science of refining the design of products to optimize them for human use.
<https://whatis.techtarget.com>

... the study of how equipment and furniture can be arranged in order that people can do work or other activities more efficiently and comfortably.
<https://www.collinsdictionary.com>

Ergonomics is the scientific discipline concerned with the understanding of the interactions among humans and other elements of a system, and the profession that applies theoretical principles, data and methods to design in order to optimise human wellbeing and overall system performance
International Ergonomics Association, 2000

Ergonomics broadly aims to optimise human wellbeing and overall system performance
Karwowski, 2005

... it's about designing for people; ...the science of fitting the job to the worker.

... the process of designing or arranging workplaces, products and systems, so that they fit the people who use them.
<https://www.ergonomics.com>

...the study of the relationship between workers and their environment, esp. the equipment they use.
...the applied science of equipment design, as for the workplace, intended to maximize productivity by reducing operator fatigue and discomfort.
<https://www.dictionary.com>

...the study of how humans interact with manmade objects. The goal of ergonomics is to create an environment that is well-suited to a user's physical needs.
<https://techterms.com>

... the study of the problems of people in adjusting to their environment; esp., the science that seeks to adapt work or working conditions to suit the worker.
<http://www.yourdictionary.com>

Appendix 9

Ergonomic Advice

Part 1. 0:00-0:28

Exercise 1. Match.

A		B	
1.	Adjust	a	straight with your back against the chair.
2.	You should be sitting up	b	to raise your monitor.
3.	Keep	c	horizontal position parallel to the floor.
4.	Add	d	flat on the floor and close together.
5.	Use books or a stand	e	a foot-rest.
6.	Make sure the thighs are in	f	the shoulders low and back.
7.	Keep your feet	g	an arm's length away.
8.	Use	h	your workplace.
9.	Place the monitor	i	a lumber support.

Part 2. 0:29-1:14

Exercise 2. Put the words in the correct order to make sentences:

1. back, your, straight, Keep

2. chair, Adjust, your.

3. should be, arms, at a 90, Your, degree angle

4. the screen, the, in, with, the eyes, Place, line

5. keyboard, Add, a

6. the mouse, to, Move, closer, the keyboard

7. curtains, or, blinds, windows, Install, on

8. Use, anti-glare, an, screen

Part 3. 1:15-2:10

Exercise 3. Complete the gaps with the following verbs: *to keep*(×2), *to add*, *to place* (×2), *to avoid*, *to bend*, *to adjust*, *to put*, *to raise*, *to make sure*, *to take*. Use imperatives.

1. _____ seats that are too high or too low.
2. _____ the monitor in line with the eyes.
3. _____ the monitor at a distance of 50-90 cm.
4. _____ or lower the work surface.
5. _____ your elbows at a 90-degree angle.
6. _____ the thighs are in the horizontal position at a 90 degree angle.
7. _____ the elbow at the same height as the keyboard and the mouse.
8. _____ your wrists and hands in neutral position.
9. _____ the wrists at the same height as the keyboard.
10. _____ a foot –support or a nonskid foot-rest.
11. _____ your feet on a footrest.
12. _____ small frequent breaks.

Appendix 10

Dominoes

activity	get	an adjustable chair	change
the height of the chair	put the monitor	at eye level or below	use
LCD screens	CRTs emit	radiation	don't sit near the
sides or back of CRT monitor	ensure you have enough	leg room under the desk	take a break
after 20 minutes	the keyboard must be at	the same height as the elbows	look away from the screen at
regular intervals	CRTs can	flicker	put your feet
firmly on the ground	recycle	ICT equipment	keep your back
straight	set up an	ergonomic workspace	take longer
breaks during the day	keep the mouse and the keyboard	close to each other	maintain good
posture	utilize a chair with	back support	do an alternative

Appendix 12

Computer-related Injuries

Computer-related injuries	<u>Posture-related injuries</u>	Back and neck pain
		Headaches
		Shoulder and arm pain
		Muscle problems
		Physical fatigue (tiredness)
		Stiffness and pain
	<u>Injuries of the hand or arms</u>	Painful muscles and tendons
		'Overuse injury' in the elbow, wrist or hand
		Pain
		Swelling
		Stiffness of the joints
		Weakness
		Numbness
	<u>Eyestrain</u>	Blurred vision
		Temporary inability to focus on faraway objects
		Double vision
		Burning, itchy and tired eyes
		Eye discomfort
		Computer Vision Syndrome
		Headaches

Appendix 13

Newspaper Article

November 29, 2017

Mobile Phone Driving Bans in Europe

Thanks to our phones, we are nearly always connected to other people. Wherever we are, we receive messages, calls and can check our social media accounts, as well as listen to music and take pictures. Every driver has been tempted at one point or another to check their phone whilst driving because it beeped, or maybe to look up the monument they just drove past. And yet we all know that the use of mobile phones whilst driving is forbidden and can be very dangerous.

European Countries and their Mobile Phone Driving Bans

Although it is obvious that mobile phones shouldn't be used whilst driving, the actual laws and consequences of breaking them aren't all that well known. So what is the situation like in Europe? In Eastern Europe, the fine for contravening the mobile phone driving ban is under 50 euro – a lot in those countries. The fines get even higher in Western Europe. Drivers in the Netherlands are fined heavily if they use their mobile phones rather than use a legal, less-distracting, hands-free device - they receive the highest fines of all of the European countries, with drivers having to pay 420 euro if caught using their phones whilst driving. In

Germany, the laws concerning the use of mobile phones whilst driving have recently become more specific. Drivers are not allowed to pick up, hold or use their phone whilst the motor of the car is on. If caught using the phone, even if it's just to control the navigation system or to click away an incoming call, drivers are required to pay fines of at least 100 euro if there is no accident and more if someone was endangered or an accident took place due to the use of the electronic device. Additionally, the driver gets a point on their license. The UK is even stricter with drivers who use handheld mobile devices whilst driving. Drivers that go against the mobile phone driving ban will get six points on their license and will have to pay up to £200. If caught using their phone again, drivers will risk having to go to court and paying up to £1000, as well as receiving a driving ban for at least six months. Both Spain and France have a ban on Bluetooth headsets such as headphones and earphones as well as on mobile phones. This means that drivers will also be fined if they are caught taking a call through an in-ear Bluetooth device. Drivers can also expect to receive three points on their license in both countries, but there is a slight difference in the size of the fines. In France, drivers have to pay a 135 euro fine if caught using a mobile device, whereas in Spain the fine is 200 euro.

The Danger of Phones

Phones greatly impact a person's reaction time and concentration, both of which have to be quick and sufficient whilst driving to ensure the safety of everyone involved. When using a phone, a person's concentration is consumed by the phone and thus it takes longer for the person to take in changes in their environment. This can be dangerous whilst driving because drivers need to be able to detect changes in the traffic and in the motion of the vehicles around them to be able to identify possible hazards and react appropriately. Every year thousands of accidents that could have been prevented occur due to the use of phones whilst driving, some resulting in severe injuries or even death.

What are the Solutions?

The question we have to answer before we can figure out how to reduce the number of people using their mobile phones whilst driving is why we have such a strong desire to use our phones in the first place. The answer to that is simple enough. Our phones offer us a variety of opportunities that make life easier and that entertain us. Instead of always having to meet people face-to-

face or sending letters in the mail, we can send a quick text with WhatsApp or share a picture on Instagram. If we don't know something, we simply have to Google it. In case of boredom, why not just play a game? Phones give us a huge amount of opportunities in the form of a very small device. But with so much going on our phone screens, there's no wonder that they distract us. When driving, we need all of our concentration to be on the road to avoid car crashes and accidents. Driving in itself demands a lot of attention, but if that attention is used to interact with a phone, then we don't have the necessary concentration left to focus on the road. There are some solutions to this problem. One example of such a solution would be a device that you don't have to touch or even look at, but that still does everything you need it to do. At German Autolabs, we are working on creating a device like this. Our device, Chris, is not forbidden by the mobile phones driving ban and still provides you with most of the opportunities a phone offers you. Without taking your eyes off the road, you can tell your boss that you will be a bit late, or change the song in your car. Chris responds to your voice and does the things that would distract you on a phone for you. This makes driving more relaxed for you and safer for everyone.

(Resource: Weissert, K, (2017). Mobile phones driving bans in Europe. Retrieved from: <https://www.germanautolabs.com/blog/mobile-phone-driving-bans-in-europe>)

Appendix 14

Virus Alert

1. Complete the article with the following words: *software, programmers, networks, damage, harm, email attachments, updating, corrupting, disastrous, files.*

Like a biological virus, a computer virus is something you don't want to get. A virus is a simple program designed to cause (1) _____ to someone else's computer. A virus spreads by duplicating and attaching itself to other files. The extent of the damage depends on the virus. There are tens of thousands of viruses. Some virus (2) _____ is insignificant, but inconvenient, another one is (3) _____, putting the computer system out of action by erasing (4) _____ or (5) _____ data, consuming computer's memory, and causing computer not to function correctly. Viruses are written by malicious (6) _____ who wish to cause problems for other computer users. The primary source of infection these days are (7) _____ followed by illegal (8) _____ and infected files from the Internet. Some viruses can duplicate themselves, attach themselves to programs, and travel across (9) _____. In fact opening an infected email attachment is the most common way to get a virus. It is better to prevent an attack than to try and cure it. The antivirus programs and (10) _____ your virus definitions file at least once a month it's a lot like having a glass of orange juice every morning — it keeps your computer's immune system strong and healthy.

(Reference: The BBC. (2014).Viruses. Retrieved from:<http://www.bbc.co.uk/schools/gcsebite/ict/implications/virusesrev1.shtml>)

2. Answer the following questions according to the text.

a) Where do computer viruses come from?

b) How does a virus impact a computer?

3. Based on the text, write if the sentences are *True* or *False*. Justify your choice.

a) Computer users can control computer viruses. _____
Because _____

b) The beneficial effect on computer of a glass of orange juice every morning is enormous. _____

Because _____

4. Give the definitions of the following words:

a) An email _____

b) Internet _____

c) A program _____

d) A computer _____

Appendix 15

Communication Technology

Worksheet 1. Types of Communication Technology and Communication Devices

Since the end of the 19th century, the way people communicate has been completely transformed. People can now deliver massive amounts of data with the push of a button. New communication technologies have connected not only people but also businesses, changing the way people interact on a daily basis.

Telephone

Alexander Graham Bell revolutionized the way people communicate with his patent on the telephone in 1876. Over the past century, advances in technology have replaced the heavy hardware and metal wiring of the original design with lightweight **microcircuitry**. These advancements have also allowed for the transition from **landlines** to **wireless**, freeing people to communicate from **remote** locations. All over the world, millions of people can talk to each other, expanding businesses and improving relationships that might not otherwise have survived across long distances. Telephones also allow for instant communication, and new technology integrates video and Internet.

The first telephones, as well as their modern **counterparts**, consist of a ringer, transmitter, dialer, switch hook, power source, and anti-sidetone circuit, all of which have been advanced by new technology.

Radio

In 1906, Reginald Fessenden, creator of the first sophisticated radio transmitter, expanding on the ideas of Guglielmo Marconi, sent music and speech across the airwaves. This invention of the radio allowed sound and information to be **broadcast** to an extremely wide audience. Radio reached its golden age during the 1920s, and companies advertised their products to consumers around the world. During the 1930s radio expanded further into news, politics, vaudeville routines and sporting events, broadcasting into millions of homes every day.

Television

Television was introduced to the public in 1946, even though it had been experimented with since the late 1920s. Television exploded in homes around

the world, going from 940,000 households in the beginning to 20 million by 1953. Corporations suddenly had the opportunity to show their products, not just describe them. Over the following decades, television became the predominant source of communication to a wide audience, and it changed the political and cultural **landscape** forever. A major criticism was that television reduced complex events into simple entertainment, but television was here to stay, changing the way people received their news.

Internet

The creation of the Internet allowed computer networks from around the globe to network with each other, giving individuals access to an incredible wealth of information. In 2010, about half of the world's population has access to the Internet, growing from only 6 percent of the population in 2000. Email, social networks, newsgroups, and video transmission have connected the world like never before. High-speed connections allow for an immense amount of information to be transferred in seconds.

(Reference: Szpak, An. (2018). Types of Communication Technology. Retrieved from: <https://www.techwalla.com/articles/types-of-communication-technology>)

Vocabulary:

Circuitry, n – the science of designing electric or electronic circuits;

Landline, n – a circuit of wire or cable;

Wireless, adj – having no wire;

Remote, adj – far apart; far distant in space; situated at some distance away;

Counterpart, n - a copy; duplicate;

Broadcast, v – to transmit (programs) from a radio or television station;

Landscape, n – view, scenery.

Communication Devices

Over 100 years have **slipped** by since Samuel F.B. Morse sent the first telegraph and Alexander Graham Bell made the first phone call. Radios have been around for a little over a hundred years, and it's been more than 80 years since the first TV broadcast. Fast forward to the 21st century, and the Internet is taking over the world. It makes information accessible quickly and easily in large cities, as well as remote locations. Today, devices such as computers, cell phones, and tablets are the primary communication devices.

Telegraphs and Telephones

It's been more than 300 years and many **prototypes** since the printing press sent the first telegraph. By the middle of the 19th century, telegraphy, with the help

of oceanic telegraph, had spread around the world. Oceanic cables were put on the bottom of the oceans, connecting continents with each other. The convenience and immediacy of the telephone soon **outpaced** the telegraph, though. In the 21st century, telegraphs are rarely used. Western Union, the main company sending telegrams in the U.S., stopped sending telegrams in 2006. **Conversely**, the telephone remains ever popular. In 2011, 71 percent of American households still had **landlines**, according to the Wall Street Journal.

Televisions and Radios

Early telephones weren't as reliable as they are today. If a cable got damaged, the line would be dead and there would be no communication at all. Thus, it was necessary to create something to improve and stabilize the stream of transmission. Guglielmo Marconi developed the first wireless radio-transmitting device as a communication piece for ships. Since then the radio has become a major source of communication. Television, which made its debut for moving pictures in 1926, very quickly became a primary communication source following the end of World War II in 1945. In 1948, less than one percent of American homes owned a TV set, but that increased to just over half by 1954 and ballooned to 83 percent by 1958.

Computers and the Internet

Computers and the Internet are **inextricably** connected. During the 1980s, the National Science Foundation funded the development of a network of computers for research. This project was called NSFNET. The NSF later handed NSFNET to a commercial consortium. Thus, NSFNET became the backbone of what is the Internet today. The Internet enables the rapid sharing of ideas and information across the globe. In 1965, Gordon Moore, the co-founder of Intel, predicted that computer processing power would double every two years. He expected his observation, which became known as Moore's Law, to hold for about 10 years. Almost 50 years later, Moore's Law holds true. Creation of numerous software applications and accessories brings new levels of communication to private households, businesses, and government agencies.

The Internet in Your Pocket

Innovators have drastically reduced the power consumption of computer chips and managed to squeeze them into smaller and smaller devices. The size of these devices and technological inventions makes it easy for people to take their communication source with them wherever they go. Wireless Internet access allows people to get entertainment, news, and information and communicate with each other at any time from almost anywhere on the planet. The smartphone is a **ubiquitous** communication device for young people; a Pew study in January 2014 found that 83 percent of Americans aged 18 to 29 owned one. Older Americans

have been slower to adopt smartphone technology, though; according to the same study, only 19 percent of Americans aged 65 or older own a smartphone.

(Reference: Davoren, (2018). Types of Communication Devices. Retrieved from: <https://www.techwalla.com/articles/types-of-communication-devices>)

Vocabulary:

Slip, v – to elapse or pass quickly or imperceptibly (often followed by away or by);

Prototype, n – the original or model on which something is based or formed;

Outpace, v – to surpass or exceed, as in speed, development, or performance;

Conversely, adv – opposite or contrary in direction, action, sequence, etc.;

turned around;

Inextricably, adv – inseparably;

Ubiquitous, adj – existing or being everywhere, especially at the same time; omnipresent.

Worksheet 2. Types of Communication Software. Modern Types of Communication

Communication software allows you to connect with other computers or mobile devices via text, video or audio formats in either a synchronous or asynchronous manner. While some means of communication, such as email, are asynchronous, Web conferencing and video chat are synchronous - allowing all parties to communicate in real-time. Video messaging offers a choice of either method. Some communication software is only available for mobile devices; others can be used on computers as well.

Video Chat

Video chat is one kind of communication software. Voice over Internet Protocol or VoIP allows you to communicate with others over the Internet without using phones. With most services, you can communicate directly from one computer to another, usually at no charge, or connect to a cell phone or landline for a small **fee**. Skype is available for Windows, Mac, Linux, and mobile devices. With a webcam on your computer, you can video chat with up to 10 people at once or even send a video message. Facetime works similarly, although it does not allow for group chats at this time. It runs on all Apple products. OoVoo is also multi-platform, **albeit** with fewer features for Mac. Use ooVoo to video chat with up to 12 contacts, send video messages, swap screens and send files.

Video Messaging

Video messaging differs from VoIP in that it is not a medium for discussions, but one in which you send a contact a short video **in lieu of** a text; the **recipient** can

watch it instantly or whenever he wants. Glide and Samba are examples of this type of software; both are available for mobile devices only. Use Glide to send fast videos to groups or individuals with no uploading or downloading required; edit them on-the-go. You can chat in groups as well as send and receive videos and text. It is available in the Apple App Store or Google Play. Samba goes one step further; it automatically records the recipient's reaction to the video on the phone's front-facing camera. As of this publication, Samba is only available for iOS. Both Glide and Samba are free.

Web Conferencing

Web conferencing is generally used by businesses for meetings, training events or to **relay** other information to people in a **remote** location. A monthly fee is usually required to use the software. Standard practice includes a whiteboard, VoIP, screen sharing and chat. Most services offer remote desktop control and the opportunity to record meetings and **annotate** information. Download an iMeet app for your iOS or Android device or your PC. Use it to hold or attend audio meetings for up to 125 people; up to 15 can participate in video meetings. Share your screen or files and easily pass control of the meeting between participants. Adobe Connect works on your desktop to share content and stream audio, video, and software. Participants can provide feedback to the moderator or chat with the room or an individual and make notes. They can also share screens, whiteboards or documents and gain control of the meeting if desired. Reference: Murray, (2018). The Types of Communication Software.

(Retrieved from: <https://www.techwalla.com/articles/the-types-of-communication-software>)

Email

Email, short for "electronic mail," is one of the most widely used features of the Internet, along with the web. It allows you to send and receive messages to and from anyone with an email address, anywhere in the world. When you configure an email account, you must define your email address, password, and the mail servers used to send and receive messages. Fortunately, most web mail services configure your account automatically, so you only need to enter your email address and password. Spam email is used to deliver unwanted material. You should not reply to email unless you are certain that the message comes from a legitimate source. Email was originally written "e-mail," but is now more commonly written as "email" without the dash.

(Retrieved from: <https://techterms.com/definition/email>)

Vocabulary:

Synchronous, adj – relating to, or operating using fixed time intervals controlled by a clock;

Asynchronous, adj –, of, relating to, or operating without the use of fixed time intervals;

Fee, n – a sum paid or charged as a privilege;

Albeit, conj – although; even if;

In lieu of – in place of; instead of;

Recipient, n – a person or thing that receives; receiver;

Relay, v – deliver, send;

Remote, adj – far apart; far distant in space; situated at some distance away;

Annotate, v – to supply with critical or explanatory notes; comment upon in notes.

Modern technology has enabled the creation of a myriad of new communication tools, sites, and software. Likewise, improvements and additions are constantly being made to existing devices to maintain the highest quality of communication possible. There are many types of communication available; the choice depends on where you are, how much time you have and how much (if any) you prefer to pay.

Cellular Phones

The capabilities of cell phones have continued to increase since their introduction in the late 1980s. In addition to basic text messaging and wireless phone conversations, many cell phones enable their users to send and receive email, pictures and recorded videos. Bluetooth technology has further increased the communicative value of cell phones, allowing talkers to carry on their conversations hands-free with the use of a small, one-sided headset.

Twitter

Twitter is a popular social networking site created in 2008. While the concept is not unlike similar social sites such as MySpace and Facebook, Twitter is unique in that users can write (or “**tweet**”) messages from either their computer or cell phone, in short, concise updates, as often as they please. The concept of Twitter revolves around the idea that people can stay updated on the events of others’ lives without spending a lot of time **sifting** through **extraneous** information or more elaborate weblogs. Another **perk** is the fact that Twitter is completely free and requires no special software.

(Reference: Starks, (2018). Modern Types of Communication. Retrieved from: <https://www.techwalla.com/articles/modern-types-of-communication>)



Skype is downloadable software that enables users to make calls and send messages via the Internet. The service also offers video calling, allowing users to watch each other in real time while they speak. It is one of the most popular online inventions helping with the communication of businesses, the family, and friends. Skype is useful in business. It

allows people to work from home, it has many helpful features including group video calling that saves a lot of travel time and money for the companies, businesses can communicate with co-workers, and it helps the companies communicate in group conferences from different places.

Skype technology makes it much easier for the family and the friends to reconnect, the customers and businesses to hold the meetings and the conferences, and it saves an enormous amount of money and time. Skype can bring societies together, it is a video chat with friends and the family, and they can call across the world as it is free communication. Video conference scheduling is much more flexible because the participants can join from the work, the school or the home; it is usually cheaper and faster than in-person meetings.

Video conference helps to exchange the data in the real-time so the presentations can reach multiple people in multiple locations, it can allow them for quicker deliberation, collaboration, and decision making.

(Reference: Soffar, (2018). What are the advantages and disadvantages of Skype ? Retrieved from: <https://www.online-sciences.com/technology/what-are-the-advantages-and-disadvantages-of-skype/>)

Vocabulary:

Tweet, v – *Digital Technology*- to post a message on Twitter;

Sift, v – to question closely, to examine closely;

Extraneous, adj – unneeded, irrelevant;

Perk, n – benefit, advantage.

Instant Messaging

Instant messaging (or IMing) enables users to communicate with each other on the Internet via short written (or sometimes spoken) messages delivered almost immediately after the content is created. Instant messaging is a less **cumbersome** form of email as well as a faster way of facilitating complete conversations in real time.

(Reference: Starks, (2018). Modern Types of Communication. Retrieved from: <https://www.techwalla.com/articles/modern-types-of-communication>)



Viber is a free, cross-platform instant messaging and voice over IP (VoIP) application. Viber includes text, picture, and video messaging with voice calling. Viber is one of the widely used applications. It is very easy to use. It has an intuitive interface and has many options to use, the touch screen or keyboard. It works worldwide, so, you can make calls and send SMS to other phones where they are without having any contract with telecommunication companies.

You can call anyone all over the world for free and text them. It has full call screen notification when a Viber call is received and it has push notification for new

text messages, a way of responding without opening the app.

When you have it installed, you can call and send SMS to all your contacts who also have installed. If you have the most current version of Viber, you can create your own groups to chat. Viber has the option to share with your friends any image you have in your computer and even take a photo. And you can put text in it and send it to one or more of your contacts at the same time.

Viber has many emoticons. It has an option to log the calls and messages received to consult whenever you want and you can return a call just to see the last time someone called you.

(Reference: Soffar, (2017). Viber advantages and disadvantages. Retrieved from: <https://www.online-sciences.com/computer/viber-advantages-and-disadvantages-and-it-is-now-for-iphone-and-android-users/>)



With WhatsApp, you'll get fast, simple, secure messaging and calling for free, Retrieved from phones all over the world. WhatsApp Messenger is a FREE messaging app available for iPhone and other smartphones. WhatsApp uses your phone's Internet connection to let you message and call friends and family. Switch from SMS to WhatsApp to send and receive messages, calls, photos, videos, and Voice Messages. You can even capture the moments that matter to you most with a built-in camera. (Retrieved from: <https://www.whatsapp.com>)

You can chat with people in your contact list, it automatically imports the contacts from your phone and it tells you that how many of your friends are using Whatsapp. WhatsApp is easy to use, and cheap, it helps you block the users that you don't want to see your profile picture or someone who you don't wish to have a conversation with. You do not need the credit balance to use WhatsApp if you have Internet packet data. And you can transfer the data easily including the music, the images, and video transfer. If you have an internet access and you do not have balance in your mobile to make a call, you can use WhatsApp to send the text or to chat. Also, WhatsApp carries a series of predefined messages that you can just tap to send them instantly.

(Reference: Soffar, (2016). The advantages and disadvantages of using WhatsApp. Retrieved from: <https://www.online-sciences.com/technology/the-advantages-and-disadvantages-of-using-whatsapp/>)



Instagram is a non line photo sharing service. It allows you to apply different types of photo filters to your pictures with a single click, and then share them with others. While is a rather basic service, Instagram's simplicity has helped it gain widespread popularity.

While nearly all smartphones have built-in cameras, they often do not produce quality photos. By using Instagram, you can liven up otherwise mediocre images and make them look more professional. The website allows you to upload images, manage your photos, apply filters, and share them with your

friends. The app allows you to take pictures with your iPhone or Android device and immediately apply the filter of your choice. You can share your photos directly on Instagram.com or on other social media websites like Facebook, Twitter, and Tumblr. Instagram was acquired by Facebook in 2012 for approximately \$1 billion.

(Retrieved from: <https://techterms.com/definition/instagram>)

Worksheet 3. The impact of Technology on Communication

Advances in technology have led to the birth of many new methods of electronic communication, such as social networking websites and videoconferences. The increase of electronic communication has helped to eliminate time and distance as obstacles to communication. This has been beneficial to many parts of society, including business, education and international relationships. Technology improves the communication process.

Business

For businesses, technology has increased the **flow** of communication **within** the workplace. Electronic communication methods used in the workplace include email, voicemail, videoconferences, online newsletters, instant messages, and the Intranet. The Intranet, a company exclusive website, can be a great way for you, as a manager, to obtain feedback from your workers, to obtain constructive criticism from your employees.

Education

Technology has improved the field of cultural education by giving children the opportunity to speak with kids from different cultures. By interacting with children of other cultures through computer-mediated communication, such as instant messages and emails, children can learn **first-hand** about other cultures. Computer-mediated communication also helps make research more convenient by giving students access to a large amount of information.

International Relationships

Electronic communication has improved international relationships by making global communication more accessible. Technology has helped to create awareness of global issues by increasing the amount of international news. For businesses, electronic communication has created new opportunities for **expanding** businesses internationally. An important part of international business involves understanding the cultures of other countries. This may involve research and culture education classes.

Support

Communication technology can also improve the lives of individuals with communication disabilities, such as weak vocal cords and hearing **impairments**. For example, hearing aids help to overcome the challenges caused by a hearing impairment. In cases where technology can't assist in overcoming communication disorders, technology can be used as a communicative substitute. For instance, an individual who has trouble speaking can use a computer to communicate messages **back and forth** with others.

Warning

While technology can be very beneficial to communication, electronic communication can also become an obstacle to effective communication. By increasing access to communication, technology has created the problem of information **overload**. Information overload occurs when information gets communicated at a faster rate than what you can process. Ways to decrease the risk of information overload include combining smaller messages into one message and selecting an appropriate method of communication. For instance, if you have an important message, using your phone, rather than email, helps to ensure your message won't get lost in the mix of other communications.

Networking and Sociability

Today, worldwide networks bring together people who share interests but may have never met. Likewise, popular youth-oriented social networking sites such as MySpace, Facebook, and Twitter allow people to carry on friendships over long distances. The rise of sociable media has radically **altered** not only the way people communicate but the way they **relate** to one another and even how they view themselves. For sociologists, behavioral psychologists and cultural critics this represents an important area of study.

Global Culture

That's the rapid sharing of **trends** and fads via electronic communication. Such movements do not need to wait for the physical movement of people to spread; instead, millions of users all around the world can be made aware of them immediately. This includes news, which has also tended more toward a global bent with less local coverage even from local news agencies. For users, electronic communication allows for the **dissemination** of content far and wide at little or no cost. This means that local artists, musicians, and writers can share their work by marketing themselves in a format that is easily accessible to anyone.

Privacy and Security

For all of its advantages, electronic communication carries with it several dangerous aspects. Privacy and security have been concerns of the users of electronic communication since the days of the telegraph. In the Internet age, all data transmitted electronically must pass through a series of stages at which it could potentially be intercepted by a third party. The convenience of doing business online -in the form of online banking, stock trading and shopping - has forced businesses to invent security measures. Still, cases of identity-theft number in the thousands each year, and the risks of **breaches of privacy** are a major concern to many parents whose children communicate electronically. Cybercrime represents a significant threat to economic interests and Internet-based espionage has been the target of special security programs enacted by most governments and large businesses around the world. Still, electronic communication continues to flourish despite these risks, partially because of the huge investments that have been made into minimizing them.

(Reference: Hartman, (2018). The effect of electronic communication. Retrieved from: [https:// www.techwalla.com/articles/the-effect-of-electronic-communication](https://www.techwalla.com/articles/the-effect-of-electronic-communication))

Vocabulary:

Flow, n – progress, movement, current;

Within, prep – inside of; in;

First-hand, adv – from the first or original source;

Expand, v – to spread out; develop;

Impairment, n – the state of being diminished, weakened, or damaged, especially mentally or physically.

Back-and-forth, adj – backward and forward; side to side; to and fro;

Overload, v – to load to excess; overburden;

Alter, v – to change; become different or modified;

Relate, v – to establish a social or sympathetic relationship with a person or thing;

Trend, n – the general course or prevailing tendency;

Breach, n – the act or a result of breaking, break or rupture, an infraction;

Dissemination, n – the act of disseminating, or spreading widely.

Appendix 16

Activities on Types of Communication Technology

Exercise 1. Complete the text with the following words: *an email, telegraph, telephone, cellular phone, communications, TV, Internet, communicate, signals, phone.*

Telecommunications is the transmission of (1) _____ over long distances. It began with the invention of the (2) _____ in 1837, followed by the (3) _____ in 1876. Radio broadcasts began the late 1800s and the first television broadcasts started in the early 1900s. Today, popular forms of telecommunications include the (4) _____ and (5) _____ networks. Since both analog and digital (6) _____ are based on electrical signals, transmitted data is received almost instantaneously, regardless of the distance. This allows people to quickly (7) _____ with others across the street or across the globe. So whether you're watching (8) _____, sending (9) _____ to a coworker, or talking on the (10) _____ with a friend, you can thank telecommunications for making it possible.

(Retrieved from: <https://techterms.com/definition/telecommunications>)

Exercise 2. Match each term with the correct definition:

The Internet provides different online **services**. Some examples include:

- | | |
|---------------------|--|
| 1. Web | a) websites and apps that allow people to share comments, photos, and videos. |
| 2. Email | b) a collection of billions of web pages that you can view with a web browser. |
| 3. Social media | c) the most common method of sending and receiving messages online. |
| 4. Online gaming | d) operating system and application updates can be typically downloaded from the Internet. |
| 5. Software updates | e) games that allow people to play with and against each other over the Internet. |

Exercise 3. Decide if the sentences are *True* or *False*. Correct the false ones.

1. The Internet is a global wide area network that connects computer systems across the world. T/F

2. Wi-Fi is a wireless networking technology that allows computers and other devices to communicate over a wireless signal. T/F

3. Whatsapp is not free to download. T/F

4. Facebook is a very new social networking website. T/F

5. Spamming other people is very cool. T/F

Exercise 4. Complete these sentences with the following words: *upload, internet connection, download, profile picture, chat, number, update, phone inbox.*

The disadvantages of



You need an (1) _____ to send and receive the messages for free. The messages are not sent to the (2) _____. Your (3) _____ is visible to every person having your contact number and using this app. You can (4) _____ only the friends who have smartphones supporting and they should have an account on WhatsApp, so, you need to convince your friends to (5) _____ the app. Anyone can get an easy access to your details such a profile picture and status if he has your (6) _____. So, you must not (7) _____ your own picture as the images can be saved and they can be misused. Whatsapp requires regular (8) _____, and some data transfer becomes a huge problem as the User can't exceed the size of 15MB for any data download.

(Retrieved from: <http://www.online-sciences.com/technology/the-advantages-and-disadvantages-of-using-whatsapp/>)

Exercise 4. Use the clues to write about the disadvantages of Viber and Skype.



- Viber calls / not to have any option for call blocking,
- reduced quality with low Wi-Fi or 3G signals,
- impossible to call a non Viber user,
- internet connection,
- install and register to use Viber again, in case of changing your number, etc.



- Dropped connections,
- choppy (irregular) video streams,
- camera malfunctions,
- sound quality,
- a slower-than-average Internet connection,
- turn on the computer to receive calls, etc.

Appendix 17

Project/Outcomes Evaluation

No.	Criteria	Basic ideas	Excellent	Good	Could be better	Comments
1.	Overall quality	How would you rate the overall quality of the outcome/ presentation?				
2.	Effectiveness	How well did the presenters keep the presentations alive and interesting?				
3.	Relevance	Was the length of the presentation /information sufficient for the topic?				
4.	Clarity of speaking/ language	Could you hear the speaker properly and clearly, could you understand everything? Was the speech well-organized and informative?				
5.	Pace	What can you say about the speed of delivery?				
6.	Teamwork	Have you noticed a cooperative and coordinated effort on the part of the group members acting together as a team?				

