





# DIG4LIFE

# Serious Game Implementation Teacher's Handbook

Guidelines for the use of Serious Game Dig4Life – Digital for Literacy and Future Education – for the Development of Digital Competence



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# 1. PREMISE

The project aims to promote "digital culture" among young people.

For this reason, it is necessary to implement didactic and communication strategies and educational and training interventions that go beyond frontal lessons and all those didactic activities based on the transmission of content.

Nowadays, youngsters work, get information and play on the Internet with little consideration of the risks and dangers resulting from the use of new technologies. Therefore, young students must develop social, behavioural and active citizenship skills alongside technical end professional expertise.

They need to develop the skills related to the areas identified in DigComp 2.1: information and data literacy, communication and collaboration, digital content creation, security, and problem-solving.

This handbook is addressed to upper secondary school teachers. It aims to support them in the phases of preadministration of the Self Assessment - Serious game - a tool developed by the DIG4LIFE project.

The guidelines in this document have been defined considering a transversal use of all subjects taught. What is described is aimed at providing teachers with valuable tips to prepare the lessons during which Serious games will be used.

This tool supports the optimal use of Serious games to improve learners' digital skills. It is not aimed at defining teaching methods, which remain the competence and prerogative of teachers in their assigned roles.

The textbook is divided into two sections, each respectively dedicated to accompanying activities:

The first section is dedicated to the briefing for students and precedes the administration of the digital game; the second section concerns the debriefing phase, following the performance of the activity.

The first part illustrates the purposes of the game, with particular attention to the pedagogical aspect, the positioning of the proposal and the identification of the added values in using the proposed methodology. Moreover, it is suggested how to plan the work, underlining the areas of interest that can be explored in full compliance with a multidisciplinary approach.

The second part, which will be the central phase of learning, illustrates the different phases to be developed with appropriately structured activities aimed at analyzing, comparing and abstracting the lived experience, as well as defining the learning points to define the process in which knowledge is created through the transformation of experience (Kolb, 1984).





# 2. INTRODUCTION

#### 2.1. What is Digital Competence?

Digital competence consists in knowing how to use information society technologies (IST) with familiarity and a critical spirit for work, leisure, and communication. It is supported by basic ICT skills: using computers to find, evaluate, store, produce, present and exchange information and to communicate and participate in collaborative networks via the Internet (EUR-Lex Access to European Union law). It's a crucial competence. It is one of the eight key lifelong learning competencies essential to the 2030 Agenda.

#### 2.2. For What Competences?

The Digital competencies considered in this document and included in Serious Game have been extrapolated from the reference framework for the digital competence of European citizens, "*DigComp 2.1*". DigComp 2.1<sup>1</sup> is the evolution of the reference framework for citizens' digital skills. Starting from the conceptual reference model published with DigComp 2.0, this document illustrates eight levels of mastery and examples of use applied to the education and work sector. The infographic below illustrates this document in summary.

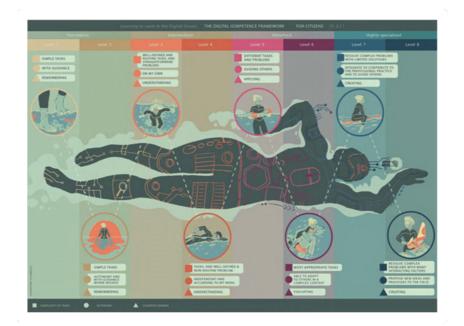
The narration in images and text "Learning to swim in the digital ocean" immediately introduces the innovations introduced in update 2.1, highlighting the salient points: the organization by levels of mastery and the recurring elements (complexity of the task, levels of autonomy, cognitive domains).

<sup>&</sup>lt;sup>1</sup> <u>https://www.agid.gov.it/sites/default/files/repository\_files/digcomp2-1\_ita.pdf</u>





#### Figure 1: DigComp 2.1



#### Source: JRC Publications Repository

The tool was developed by JRC as a scientific project and is aimed at supporting European citizens in improving the digital skills listed below:

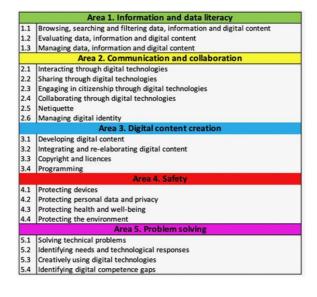


Figure 2: DigComp 2.1 – DIGITAL SKILLS LIST







#### 2.3. Why Serious Game?

It is proposed as a teaching methodology to stimulate the learner to learn to play.

"You learn by playing", someone said. The game stimulates guys' imagination, encourages the desire to learn and facilitates learning.

Proposing an educational game on digital skills will allow guys to improve while having fun. It will let them be aware of the web risks and will stimulate the desire to protect themselves and avoid errors that could be fatal.

"You learn only by having fun" - Anatole France. These are the points that can lead to the use of serious games in teaching practice.

#### 2.3.1. Pedagogical Approach

#### 2.3.2.

- Learn by playing (play for learning).
- In this case, we notice the difference between gamification and a serious game, and, more precisely, a Serious game includes the presence of gameplay and a real game path rather than simply applying game elements.
- -

#### 2.3.3. The Centrality of the Proposal

#### 2.3.4.

- The importance from an educational perspective in the case of teaching Civic Education "... respect for the rules ..." and digital citizenship. The Digital Citizenship Charter establishes the right of citizens and businesses "also through the use of information and communication technologies ... to access all data, documents and services of interest in digital mode ... to simplify access to personal services "and" reducing the need for physical access to public offices ".
- It is consistent with ministerial and European guidelines in terms of digital skills.
- -

#### 2.3.5. Added Value

#### 2.3.6.

- the game is adherent to the problems affecting real life and real situations;
- the gamer becomes aware of the risks deriving from incorrect actions without actually paying the consequences;
- the language that approaches the world of young people;





- learning based on the achievement of objectives with relative rewards;
- active involvement of the students;
- the opportunity to repeat the game, based on self-assessment, allows learners to improve, thus stimulating learning.

#### 2.4. Game Structure

The game is divided into five levels, each relating to a specific macro-area of DigComp2.1. Each level includes tests focusing on skills developed in a specific area. After taking a test, you move on to the next one. You get a score for each test concerning the answer given. At the end of the game and based on the path taken, a report will be displayed based on which teachers will be able to extrapolate information on the digital skills of each student and will allow students to self-evaluate.

Therefore, digital skills will be developed with a "lifelong learning" view.

The game can be repeated many times, at a distance of time, to check the progress achieved.

# 3. PART ONE: BRIEFING

#### 3.1. Briefing the Game

What does briefing mean?	
Informing and summarizing are the two meanings of the English term "briefing".	
What is the briefing for?	
<ul> <li>Through briefing, even in a short meeting, we can analyze a topic and provide project implementation guidelines.</li> <li>In this phase, we use one of the most famous methodologies to define the project specifications: the 5W + 1H. In fact, in the following sections, we will answer the following questions of interest: <ul> <li>Who is the project aimed at? (Who)</li> <li>Why is it done? (Why)</li> <li>What should be done? (What)</li> <li>Where will the work be done? (Where)</li> </ul> </li> </ul>	

• When should it be done? (When)





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• How should it be done? (How)

#### Who is the project aimed at? (Who)

The project involves teachers and students of the first biennium, the second biennium and the fifth year of secondary school.

The activities proposed can be contextualized in the specific class context.

#### Why is it done? (Why)

Students use new technologies daily and for several hours a day: they surf the net, listen to music, buy products, interact on social media, look for general and specific information in an attempt to find immediate answers, etc.: but are we sure that is it a conscious use?

What we record daily and which is reported by the national and international media show that this awareness is not always present.

Regarding the model of competencies defined by DIGICOMP, the aims of the project can be summarized as follows:

- encourage compliance with social/IT rules, trying to make them aware of the risks that they may incur in the event of non-compliance with the rules;
- facilitate the approach to digital culture through educational methodologies based on games;
- make know the netiquette;
- raise awareness of the digital culture;
- recognize and note the risks (for oneself and others) present in the unconscious and not very responsible use of new technologies;
- promote reflection on the social value of digital skills;
- enhance the digital culture through the sharing of rules and adoption of responsible behaviour;
- develop the ability to find solutions to real problems by identifying with the characters of the roleplaying game to try to solve plausible daily life situations in which new technologies are essential.

#### What should be done? (What)

Study the game's rules very well, this manual and avoid improvisation. Improvisation in these cases can play tricks. Share rules and game modes with students.

#### Where will the work be done? (Where)





The project proposed, from planning activities to data analysis, can involve the whole school year.

#### How should it be done? (How)

To make the use of serious games and this handbook effective, it is recommended to follow the following steps in the development of activities:

- Teachers should test the game to see if it is tailored to their needs
- First game: students try the game for the first time.
- Activities planning: the teacher analyses the reports and prepares activities to improve, inspired by the activities planned in the debriefing phase (chapter 2).
- Second game and analysis of improvements: students play again at the end of the activities.
- A more detailed example of the advice for use is available in the tab on the next page.

#### Purpose

Beyond the explicit aims and objectives of the game, the activities allow the simultaneous development of many transversal skills, which allow teachers of different disciplines to include it in their curricular path and, of course, in the Citizenship Education curricula.

Particularly relevant is the use, for example, of the activities within the planning of Civic Education and the English language.

The Guidelines for teaching civic education (M. D. no. 35 of 22.06.2020) identify three thematic nuclei that can also be developed thanks to the use of the game:

- Constitution, law (national and international), legality and solidarity: e.g. issues of cyberbullying and the dissemination of data and images
- Sustainable development, environmental education, knowledge and protection of heritage and territory: e.g. energy consumption associated with the use of technological devices (carbon footprint), disposal of technological waste
- Digital Citizenship: e.g., digital literacy, fake news
- As for the foreign language, the game can be used in different languages to develop communication skills.

#### Activities

In order to make the use of serious games and this handbook effective, it is advisable to follow these steps in developing these activities:

• planning: the objectives of the game are explained





- Teachers should test the game to see if it is tailored to their needs
- first game: students try the game for the first time
- activities planning: the teacher analyses the reports and, inspired by the activities planned in the debriefing phase (chapter 2), prepares a series of activities aimed at improving
- second game and analysis of improvements: students play again at the end of the activities
- improvement analysis

#### 3.2. Process Steps

First Activity	
Test the Game	The teacher tests the game and checks its use in the classroom.
Mode/Methodology	The teacher accesses the game using the available credentials. Given the possibility of including the game in a civic education path, it is recommended that the teacher coordinator of civic education carry out this first activity.
Time	2h
Tools	Tablet/pc/smartphone

Second Activity	
Students Test the Game	The teacher proposes the game in the classroom and, in the end, using the reports establishes a discussion for the first feedback.
Mode/Methodology	Exploratory teaching, brainstorming
Time	2h
Tools	Lim/tablet/pc/smartphone





Third Activity	
Predisposition of activities	Preparation of activities. The teacher prepares new activities based on the feedback received.
Time	1h
Tools	Use of planning tools

Fourth Activity	
Debriefing	Debriefing start. In this phase, the teacher proposes the planned activities in the classroom.
Mode/Methodology	The use of active teaching methods is recommended.
Time	December-May
Tools	Specific resources concerning the prepared timesheets.

Fifth Activity	
Reproposal of the Game	Reproposal of the game to students in order to collect new reports.
Mode/Methodology	Debate
Time	2h
Tools	Lim/tablet/pc/smartphone





Sixth Activity	
Data analysis	In this phase, the results obtained are commented on. No improvements are noted. It is recommended that this activity isn't carried out only by the teacher but rather in a moment of discussion and reflection with the entire class group.
Mode/Methodology	Debate
Time	2h
Tools	LIM end/or lose leaves blackboard

# 4. PART TWO: DEBRIEFING

#### 4.1. Debriefing the Game

#### What does debriefing mean?

Debrief is a term that derives from the English language and originally referred to the military practice of making a report at the end of a mission. It is the meaning proposed by the Oxford Dictionary. As teachers, we appropriate the definition proposed by the Cambridge Dictionary in the workplace: "a meeting that takes place to obtain information about a particular job that has been completed, for example, what has been done successfully and what has not".

#### What is it for?

Debriefing is the metacognition process to be activated at the end of the experimentation phase of the game, so through the discussion:

- try to understand the point of view of others
- if there were particular problems in the relationship with the participants, try to face them together through mutual comparison.





- Alternative and efficient solutions are sought.
- Try to understand how to improve the team spirit.

This step is particularly significant because it allows us to:

- create "a common understanding."
- activate a further flow of construction of meanings

Debriefing can be conducted after any activity is carried out with the students. It is useful:

- after an explanation
- at any time during a learning process
- after a group activity
- to encourage empathic growth and the exchange of skills about the class group.

Debriefing can be carried out through:

- dialogue
- specific questions
- reflection exercises

A mediator guides the conversation between the participants through targeted questions and new food for thought that can stimulate discussion. Still, the discussion can also occur spontaneously; in this case, the mediator must ensure everyone respects their turn and is heard.

#### Purpose

This path aims to develop learning experiences in an interdisciplinary and transdisciplinary key, with a view to a metacognitive continuation within the Civic Education discipline with the aim of competence and/or enhance the areas of competence of DigComp 2.1.

According to the experiential learning model, it is believed that even virtual experiences, as well as real ones, are characterized by the acquisition of information and sensations that remain strongly impressive and allow the player to refine perception, attention and memory, favouring behavioural changes through learning by doing: learning therefore no longer takes the form of a mere passive transfer of knowledge between teacher and learner, but in an active and conscious acquisition of new knowledge, through continuous and constant experimentation, supervised and guided by an expert.

These elements, therefore, make learning an interesting and "fun" experience that increases the students' motivation and willingness to complete the training course.<sup>2</sup>.

#### Activities

<sup>&</sup>lt;sup>2</sup> Benincasa\_Barbara\_29 i serious game.pdf





This process requires simple planning and can be activated periodically to promote learning. We propose below a set of actions to implement the process in the classroom.

Debriefing is conducted by the teacher, who acts as a facilitator and mediator within the classroom context and/or laboratory classroom.

In the first instance, the rules of the debate must be made evident for careful listening and the suspension of judgment, allowing each student to express himself and favour the general understanding of the group. It is advisable to stimulate discussion by preparing a list of questions to trigger an active confrontation between learners.

A battery of questions can begin with some ideas on the progress of the lesson:

- What is your first impression of the game activity?
- Was it difficult to tackle the proposed game path?
- Were there any uncertainties in the continuation of the game? What kind? How long did it take you to get to the end of the game?
- Were your personal resources sufficient?
- What do you need to grow based on the gaming experience? How?
- The questions can be easily adapted according to learners' age.

4.2. Process steps	
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First Activity	
Activation of the debate in the exploratory phase with a list of questions	At the beginning of the debriefing activities, the group - class is encouraged to dialogue through targeted questions and reflection exercises such as, for example, the identification of key concepts related to the competence to be addressed in the game path (nouns, verbs, adjectives, etc.) and the compilation on a slide of a whiteboard and/or flipchart of a word cloud and/or semantic field on the terms considered by the students to be most interesting and/or to be explored.
Methodology / Mode	Open class
🐯 Time	1 hour





Second Activity	
Focus	Identification of winning ideas. Construction and compilation of a SWOT analysis to identify the opportunities, threats, weaknesses and strengths related to the competence, knowledge and skills related to the learning path.
Methodology / Mode	Open class
😂 Time	1 hour

Third Activity	
Planning of in-depth activities	Together with the students, the teacher chooses to explore a specific aspect or more aspects through the use of the brainstorming tool for the creation of a multimedia and/or paper product (bulletin board, presentation slides, video, handbook, story, debate, collaboration through documents shared in the cloud, etc.).
Methodology / Mode	Open class and/or teamwork. This phase can be conducted through the involvement of the whole class, paying attention to activate an orderly comparison. Alternatively, divide the students into small groups and allocate 10 minutes to capture and write the ideas on post-its. In the end, each group will be invited to present what has been written to arrive at a shared document. Construction of working groups for the preparation of the artefact at home.
😂 Time	In class, 1/1 and a half hours; 4 hours at home to create the artefact.



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Fourth Activity	
Presentation of the realized project by working groups	The teacher invites each working group to present the experience achieved. In the end, he/she invites each student to fill out short online feedback to note the strengths of the activity and any possible continuation paths.
Tools	<ul> <li>LIM and/or lose leaves blackboard</li> <li>PC</li> <li>Bacheca onLine (Padlet- Wakelet, ecc.)</li> <li>Post-it</li> <li>Posters</li> <li>Markers and/or highlighters</li> </ul>
Resources	<ul> <li>Web reputation end data profiling</li> <li>Network pathologies: Hikikomori's syndrome</li> <li>Privacy right</li> <li>BYOD end the correct use of devices at school</li> <li>Selection of information and fake news (the decalogue #Bastabufale)</li> <li>Digital identity ends its management</li> <li>Content control: Limit the Internet to only known and verified sites, use a filter of parental control, and use a Program installed on a computer that filters content instantly</li> <li>Netiquette- manifesto on non-hostile communication</li> <li>SWOT analysis, es. file link (experience and document swot) https://drive.google.com/drive/folders/1pMdazX-huYBKvWmVv0la4740VOTiAWkY?usp=sharing</li> <li>The open class brainstorming can also be conducted with the use of the tool Mentimeter https://www.mentimeter.com/</li> </ul>





# 5. APPENDIX EDUCATIONAL BOARD BY AREA OF COMPETENCE/EPISODE

#### 5.1. 1st Day: Digital Safety

First Activity	
Briefing	At the initial meeting, a serious game is proposed to the students, together with its implications from the didactic point of view.
Methodology	Open Class
Time	10'-15' minutes

Second Activity	
Play	The university will insert the link to the game in the home language to make a single episode of the Serious game available to the teacher.
Methodology	Serious Game
🕅 Time	20-25' minutes

Third Activity	
Debriefing	Debriefing is conducted by teachers, who acts as a facilitator and mediator within the classroom context and/or laboratory classroom.
Methodology	In the first instance, the rules of the debate must be made evident for careful listening and the suspension of judgment, allowing each student to express themselves and favour the general understanding of the group. It is recommended to stimulate discussion by preparing a list of questions to trigger an active confrontation between learners. Through the Brainstorming methodology, some questions are asked to





	<ul> <li>the class: (some examples below)</li> <li>How was the experience of the game?</li> <li>Was it like you imagined?</li> <li>Were the goal and the instructions clear?</li> <li>Have I ever faced a similar situation in reality? How did I deal with it?</li> <li>Do you use the precautions/standards of Digital Security that Paul faces daily?</li> </ul>
🐯 Time	20-25' minutes
Tools	Chairs + Word page to allow the teacher to stop the salient elements
Resources	Students are put in a circle to develop Brainstorming better

#### 5.2. 2nd Day: Digital Collaboration

First Activity	
Briefing	The teacher describes the competence, the characteristics and the sub- areas according to the DIGICOMP framework to the class or class group.
Methodology	Open class
Time	5' minutes

Second Activity	
Play	The university will insert the link to the game in the home language to make a single episode of the Serious game available to the teacher.
Methodology	Serious Game
🐯 Time	20-25' minutes



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	Third Activity	
Debriefing	Debriefing is conducted by the teacher, who acts as a facilitator and mediator within the classroom context and/or laboratory classroom. Considering that the students have already experienced the game, the teacher proposes a debate on what they have drawn from the experience just tried. The students are asked to discuss what they expected and what they got from the experience. What can be the practical implications from the didactic point of view and comparison with the classmates on the expected results and those achieved? During the discussion, try to evaluate any difficulties encountered by the learners during the execution of the didactic game. The students are asked to evaluate whether or not what they experienced during the game is in keeping with everyday reality and if they have ever experienced similar situations.	
Methodology	<ul> <li>In the first instance, the rules of the debate must be made evident for careful listening and the suspension of judgment, allowing each student to express themselves and favour the general understanding of the group. It is advisable to stimulate discussion by preparing a list of questions to trigger an active confrontation between learners.</li> <li>How was the experience of the game?</li> <li>Did it unfold as you imagined?</li> <li>Did anything happen that you did not expect, that you would have never imagined?</li> <li>Were the goal and the instructions clear?</li> <li>Did you recognize yourself in any character?</li> </ul>	
🖾 Time	20-25' minutes	
Tools	Chairs + Word page to allow the teacher to stop the salient elements	
Resources	Students are put in a circle to develop Brainstorming better	





# 5.3. 3rd Day: Digital Creativity

First Activity	
Briefing	The teacher describes the competence, the characteristics and the sub- areas according to the DIGICOMP framework to the class or class group.
Methodology	Open class
Time	5' minutes

Second Activity	
Play	The university will insert the link to the game in the home language to make a single episode of the Serious game available to the teacher.
Methodology	Serious Game
🖾 Time	20-25' minutes

Third Activity	
Debriefing	Debriefing is conducted by teachers, who acts as a facilitator and mediator within the classroom context and/or laboratory classroom.
Methodology	In the first instance, the rules of the debate must be made evident for careful listening and the suspension of judgment, allowing each student to express themselves and favour the general understanding of the group. It is recommended to stimulate discussion by preparing a list of questions to trigger an active confrontation between learners. The teacher asks the students to reproduce the keywords or slogans of what they felt while playing on the Digital Creativity skill by creating a





	POSTER.
🔯 Time	30' minutes
Tools	POSTER to be reproduced in digital format
Resources	<ul> <li>Students assign themselves the following roles:</li> <li>Director</li> <li>Drawer</li> <li>Critic</li> </ul>

#### 5.4. 4th Day: Digital Literacy

First Activity	
Briefing	The teacher describes the competence, the characteristics and the sub- areas according to the DIGICOMP framework to the class or class group.
Methodology	Open class
Time	5' minutes

Second Activity	
Play	The university will insert the link to the game in the home language to make a single episode of the Serious game available to the teacher.
Methodology	Serious Game
🐯 Time	20-25' minutes

Third Activity	
Debriefing	Debriefing is conducted by teachers, who acts as a facilitator and





	mediator within the classroom context and/or laboratory classroom.
Methodology	In the first instance, the rules of the debate must be made evident for careful listening and the suspension of judgment, allowing each student to express themselves and favour the general understanding of the group. It is recommended to stimulate discussion by preparing a list of questions to trigger an active confrontation between learners. Through CANVAS, the students will collect some relevant passages they think they have done wrong in developing Digital Literacy.
🐯 Time	25'-30' minutes
Tools	CANVAS
Resources	The students choose a spokesperson. The spokesman goes to the board and reports the phrases and words on which the class encountered more significant difficulties.

# 5.5. Fifth Day: Digital Numeracy

First Activity	
Briefing	The teacher describes the competence, the characteristics and the sub- areas according to the DIGICOMP framework to the class or class group.
Methodology	Open class
Time	5' minutes

Second Activity	
Play	The university will insert the link to the game in the home language to make a single episode of the Serious game available to the teacher.
Methodology	Serious Game





🐯 Time	20-25' minutes

Third Activity	
Debriefing	Debriefing is conducted by teachers, who acts as a facilitator and mediator within the classroom context and/or laboratory classroom.
Methodology	In the first instance, the rules of the debate must be made evident for careful listening and the suspension of judgment, allowing each student to express themselves and favour the general understanding of the group. It is recommended to stimulate discussion by preparing a list of questions to trigger an active confrontation between learners. Using a pallet on the IWB, the students will collect some relevant passages they think they have done wrong in developing Digital Literacy.
🐯 Time	25'-30' minutes
Tools	PADLET + IWB
Resources	The students choose a spokesperson. The spokesman goes to the blackboard and reports the data, numbers, exercises, and difficulties that emerged in the class.

#### 5.6. 6th Day: Problem-Solving

First Activity	
Briefing	It is the final meeting. The teacher describes the competence, the characteristics and the sub- areas according to the DIGICOMP framework to the class or class group.
Methodology	Open class





Time	5' minutes
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Second Activity	
Play	The university will insert the link to the game in the home language to make a single episode of the Serious game available to the teacher.
Methodology	Serious Game
🐯 Time	20-25' minutes

	Third Activity	
Debriefing	Debriefing is conducted by teachers, who acts as a facilitator and mediator within the classroom context and/or laboratory classroom.	
Methodology	In the first instance, the rules of the debate must be made evident for careful listening and the suspension of judgment, allowing each student to express themselves and favour the general understanding of the group. It is recommended to stimulate discussion by preparing a list of questions to trigger an active confrontation between learners. Through the SWOT analysis methodology, students are proposed to try to "solve" two or three of the problems that have emerged together.	
觉 Time	25'-30' minutes	
Tools	Brainstorming + SWOT Analysis class	
Resources	Students are invited to develop a class story following all the episodes played. In this way, they can give their shape to all the skills tested, creating class stories.	





# 6. BIBLIOGRAPHY AND SITOGRAPHY

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