

Teaching guide for Characters in Play:

Dolors Aleu



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**UNIVERSITAT POLITÈCNICA
DE CATALUNYA**
BARCELONATECH

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I. INTRODUCTION

Characters in Play is a collection of computer games that aims to disseminate lesser-known characters from the history of science, technology, arts and so on in Catalonia. The game's central focus of the character and their historical context is used to work on various aspects of the school curriculum which can be expanded in the classroom.

The fifth game in the series is focussed on Dolors Aleu i Riera. Initially, the game is designed for children in Year 6, but it is also appropriate for students in their first year of secondary school. The aim of this game is to introduce the character and her relationship to the advances in medicine, as well as her contribution to the spreading of hygienic habits, during the latter half of the 19th century.

Dolors Aleu i Riera (Barcelona, 1861-1913) was the first woman to graduate in Medicine in Catalonia and the second to earn the title of Doctor. She finished her secondary education in July 1874 and in September of the same year she entered the Faculty of Medicine.

After becoming a doctor - which took a long time thanks to the obstacles she faced for being a woman - Aleu specialised in gynaecology and children's medicine. She worked for 25 years at her own surgery and also worked at the Casa de la Caritat (Charity House) for free, where she was a children's doctor.

In a similar vein, she also set out to spread good hygiene habits amongst the female half of the population at the Academy for Women's Enlightenment, which she founded together with Clotilde Cerdà i Bosch. There, she worked as a domestic hygiene teacher, and was the first woman to become part of the French Hygiene Society, where she was accepted as a foreign associate member.

2. BASIC SKILLS USED

In this section, we present the basic skills, aims, content and evaluation criteria related with the skill sets linked with the game. These have been taken directly from the Department of Education's curriculum.

BASIC LINGUISTIC SKILLS

Aspect: Reading comprehension

1. Fluent reading to understand everyday texts from both the media and school sources in various formats and media supports.
2. Applying comprehension strategies to obtain information, interpreting and evaluating content according to the type and complexity of the text and the aims of the reading.
3. Using the structure and format of each text genre and the semantic aspect of works and most common syntactical structures.
4. Applying search and information management strategies to gain own knowledge.

- The game develops linguistic skills by reading the various information that needs to be read to advance and learn aspects of history and geography, as well as audiovisual skills by interpreting the visual contexts of the various screens.

BASIC MATHEMATICS SKILLS

Aspect: Problem solving

1. Translating a problem into a mathematical representation and using concepts, tools and mathematical strategies to solve it.

2. Providing and proving a problem's solution according to the questions asked.
3. Asking questions and creating maths-based problems.
3. Creating new personal knowledge via information processing strategies with the aid of digital apps.

Aspect: Reasoning and testing

4. Making appropriate mathematical guesses in everyday situations and proving them.
5. Arguing the mathematical statements and processes carried out in relevant contexts.

- Skill and strategy learning are reinforced with digital technology. The players, in addition to playing the game, can also visit other websites where they can learn more information related to the videogame's history and historical context.

Aspect: Connections

6. Establishing relationships between various concepts as well as between the various meanings of the same concept.
7. Identifying the mathematics involved in everyday and school situations, and seeking situations that can be related to specific mathematical ideas.
8. Expressing mathematical ideas and processes in an understandable way using verbal language (oral and written).
9. Using various representations of the concepts and relationships to mathematically express a situation.
10. Using technological tools with discretion, adapted to the situation and interpreting the representations they provide.

- The game provides mathematical problems related to everyday situations. The creativity of the game also foresees the players using calculations to try and beat their adversary.

BASIC DIGITAL SKILLS

Aspect: Tools and applications

1. Selecting, using and programming digital devices and their functions according to the tasks to be carried out.

Aspect: Information processing and learning/working environment organization

2. Searching for, contrasting and selecting digital information by considering various digital sources and environments.

3. CONTENT AND EVALUATION CRITERIA FOR GAME-RELATED CONTENT

GAME-RELATED CONTENT

The game is linked to skills of language, environmental, social and cultural knowledge, as well as mathematics.

CATALAN LANGUAGE

Key content

- Text types: narrative, descriptive, expository, instructive, conversational, predictive, etc.
- Comprehension strategies: making predictions, linking the text with previous knowledge, questioning oneself, imagining what might happen, making a summary, and so on.
- Lexis: Common and specific vocabulary
- Digital texts:
 - Dynamic texts.
 - Non-sequential critical reading.
 - Multi-format: written, still image, moving image, audio...

Evaluation criteria

- Understanding all kinds of oral messages that come up in classroom activities, in learning situations and everyday life in the various formats.
- Understanding and extracting relevant information from age-appropriate audiovisuals and written texts presented in different formats.

ENVIRONMENTAL, SOCIAL AND CULTURAL KNOWLEDGE

Key content

- Using digital technologies to seek out and select information, and simulating scientific processes.
- Evaluating a healthy, varied diet.
- Hygiene habits and healthy lifestyles.
- Rejecting stereotypes and prejudices, as well as injustice and discrimination due to gender, affective orientation, background of beliefs in order to develop feelings of empathy and respect for others.

Evaluation criteria

- Recognising and explaining the ubiquitousness of micro-organisms in the environment.
- Relating the structure of a living being with its functions. Identifying the main organs of the human body and the functions they carry out, relating a correct working of the body with certain healthy habits. Finding out the repercussions of habits that are bad for health.

MATHEMATICS

Key content

- Developing mental arithmetic strategies with whole numbers, fractions and decimals.
- Choosing the correct type of calculation according to the situation: mental arithmetic, written arithmetic, calculator and other digital devices.

Evaluation criteria

- Checking quantification in real-life situations as an aspect that favours comparison, ordering and classification.
- Making estimations based on results-based experience (sure, probable, possible, impossible) from games of chance. Testing the results.

4. TEACHING INSTRUCTIONS FOR USING THE GAME

4.1. INTRODUCTION

The fifth instalment of the Characters in Play series is about the Catalan doctor Dolors Aleu i Riera.

The videogame's aim is to tell stories from the character's life, placing them in their historical context and describing some of the most important illnesses that can affect people at the same time.

The game is divided into chapters, according to the stages in Dolors Aleu's life; each chapter touches on a specific moment in her life. The game is led by the Catalan doctor, who comes across different characters - some based on people that she met during her life - who will test her and help her progress. She will also have to come up against different illnesses via a card game.

4.2. WORKING RULES

At the beginning each level must be completed to move onto the following one. Once completed, it can be replayed from whichever level is desired. To do so, you have to click on where you want to send the character.

The videogame has two different parts. One one hand, the Dolors Aleu character has to overcome challenges and tests to move through the game and to finish the level. Each level has different characters to interact with. Some of these people are based on real historical characters, while others are Barcelona citizens.

The characters test Dolors Aleu, who has to answer the questions they put to her. If she gets the answer right, the characters will give her reputation points that will help her to move on in her mission. If the character doesn't have enough points at specific moments, she can't move on and will have to repeat some of the tests to receive some more.

There are other characters who, instead of giving out reputation points, give the Dolors character cards related to illnesses, medicines and human defences in order to fight them. These cards can be added to the fight and used to compete against her adversaries in the guessing game.

On the other hand, Dolors Aleu will come across other characters, both people and illnesses, who will want to come up against her in the guessing game. If she wins the game, she accumulates more reputation points.

The guessing game works as follows:

1. How to create the fight:



When the player has the initial cards, a new fight can be started by clicking on the “+” symbol, which can be edited with the “Edit fight” button. If you want to delete a fight that has been created, it has to be dragged off the screen. The darker cards are the ones that have been found and that can be used in the games. The lighter cards are the ones that can be found in the game - they can also be seen by clicking on the card icon at the top part of the screen. To use the cards, they need to be dragged from the upper part of the screen to the lower part. A maximum of thirty cards per pack can be had.

2. How to play the guessing game:



On the top part of the screen you can find the adversary. On the bottom part there are several icons:



- The heart: this represents the character's health.



- The brain: this represents their knowledge, and is needed to play the cards. The higher the card's knowledge number is, the more points needed to play it.

The character has some cards that they must play. Once they have made their move, the player must give the turn to their fellow player, who will play their cards. The cards have three amounts:



- The heart: the card's life points. Every time the other player attacks, the rival card's attack points will be subtracted.



- The brain: these are the knowledge points needed to play each card.



- The blob: this represents the strength of each card. The higher the number, the

more life points will be subtracted from the card or the player's character.

Every time it is the character's turn they regain knowledge points for using the cards. As the game moves on, the player will earn more and more knowledge points, which allows them to play better cards.

There are two types of cards that can be played.

- **Illnesses (attacks):** these attack the character's defence cards or the character itself with the aim of taking points away from the other player. As many points as indicated on the attack cards will be subtracted.
- **Medicines and human defences:** these are the defence cards that can be used to defend oneself from illnesses and also to attack the rival's illnesses. Doing so can remove them from the game. The number of points on the card will be subtracted from the life points of each card under attack.

When a card is played for the first time it goes grey and it cannot be attacked. In the following turn the grey cards get their colour back and can be used. Four attack and three defence cards can be played at the same time. The character that takes away all their rival's health points is the winner.

Other considerations:

To speak to the other characters Dolors meets you need to double-click on them.

To drag the boxes that will allow Dolors to make her way to her destination, they have to be double-clicked and immediately the area of the screen they are to be dragged to.

4.3. TEACHING USE OF THE GAME

As with previous games, there are various different ways to play:

- The students can be asked to play the game at home and then, back in the classroom, to discuss what they have learnt with their classmates. This

can be used to create new knowledge about the questions that come up in the videogame.

- It could also be proposed that the game be played at school. This activity can be suggested in pairs and so they can work through the activities and overcome the challenges set in the game. At the same time they will learn new content or strengthen questions they had previously worked on in the classroom.

Via the game's levels the students can touch on topics like health, mathematics and Catalan history.

5. DESCRIPTION OF THE LEVELS

Next we shall explain what happens on each level and we propose questions that can be used with the students. These suggestions can be used as an introduction for the students before they are asked to complete the activity files you can find in the next section.

Level 1. University 1874

Dolors Aleu i Riera leaves her parents' house to go to university. She finds that the streets are blocked thanks to a workers' demonstration that is demanding better life conditions for workers.

In this level she meets a character that will give her the first cards to play the guessing game and will explain how to play it.

She also meets people that don't believe she is a medical student and put her to the test to prove so. This will be a very common situation throughout the game.

- This level can be used to reflect on people's rights and the discrimination that some collectives have had to overcome to have the same rights as other people.

Level 2. The Old City 1875

A year has passed since she started university and she has been able to prove her worth as a future doctor. She bumps into Helena Maseras, another medical

student, in the street. She explains what the defence cards in the guessing game are and ask to come along to help people that need medical attention. Via other character she comes to know the city's history and architecture a little better. Further on, when they have to help people struck with cholera, they remind them of the importance of good hygiene and healthy food.

- You will visit some of the most characteristic artistic movements present in the city of Barcelona. You can find photos of some buildings and highlight the most notable features. On the other hand, also note the fact that many illnesses of the period were a consequence of having an insufficient and unbalanced diet, as well as a lack of hygiene that could have prevented them.

Level 3. Hospital de la Santa Creu 1876

Our heroine is already in the hospital. In this level she has to go through the various rooms where she will receive explanations on the various steps of scientific method. In each of these rooms she will have to take a test to prove that she has understood what she has been told and to be able to continue.

- Revise the various steps of scientific method, explaining the importance of each one. You can suggest to the students that they seek out a simple experiment that can be done in class and do it all together, following the steps described previously.

Level 4. Plaça de Catalunya. 1882

Dolors Aleu finished her studies in 1879, but she wasn't allowed to take her final exam until 1882. They

6. ACTIVITY FILES

The activities we propose, like the life of Dolors Aleu that is in the videogame, are explained in a way that is simple and understandable and is related to the texts and the characters' dialogues. These activities, divided into five files, are aimed at the students using the game. The teachers or parents can make copies if they want to work on them at home or in class, or in whichever educational context is preferred. The photographs included are copyright-free and are quoted in all cases.

We suggest using the flipped classroom methodology to work on the files. The students create their own learning context via the resources and links suggested. Once they have completed this task, they can start on the activities in the files, and can always turn to the resources on offer to find information or data

ask her to go to the Workers' Athenaeum to give a conference on public hygiene issues. On her way there, walking along Passeig de Gràcia, she finds streets blocked by construction work, as some of the buildings are being refurbished. Once again, she has to convince people that she is a doctor so that they take her to the Athenaeum.

- Speak to the students about workers' movements and the most important demonstrations of the period. Explain why they were common and what their aims were. You could compare the situation then with now and other important workers' protests around the world.

Level 5. Universal Exhibition. 1888

Dolors Aleu i Riera was a doctor and had her own office in Barcelona for 25 years. This level takes place in the year the Universal Exhibition took place. Dolors Aleu is alerted of a public health problem when lots of people have food poisoning after eating cream cakes. It is suspected that someone is trying to boycott the exhibition. The exhibition shows off new inventions, like Nikola Tesla's electric power or an electric submarine.

Later she finds out that Dr. Moreau is the reason for many of the city's problems. She has to face off with him in the guessing game: if he wins the game is over.

- Comment on the importance the Universal Exhibition had on Barcelona. You can seek out others that have taken place around the world and explain what their aim is. Ask the students to think of an invention that could be useful for them. Afterwards, ask them which steps they would take to get the invention made.

necessary for each case. As such, it is important that the students have access to the links, either on the school's computers or at home.

Student dossier

Here you can find links to various web pages, some you will have already seen if you have played the videogame. You have to access them before starting to solve the activity files that you teacher will give you. You will also have to visit them again to answer some of the questions you will be asked.

You can read the activity questions first and then look for the information you need to answer them. Take note of the data that you think is most important. That way you won't have to go back to the webpage to find it again.

Dolors Aleu i Riera



<http://www.dbd.cat/>

https://en.wikipedia.org/wiki/Dolors_Aleu_i_Riera

https://en.wikipedia.org/wiki/Martina_Castells_Ballesc%C3%AD

https://en.wikipedia.org/wiki/Maria_Elena_Maseras_i_Ribera

Modernisme



<https://www.youtube.com/watch?v=yM3yMVbgq0Q>

<http://museuhistoria.bcn.cat/>

<http://www.xtec.cat/trobada/modernis/modernis.htm>

<http://www.fundaciotapies.org/site/spip.php?rubrique65>

<http://www.poblesdecatalunya.cat/tema.php?t=9>

<http://palauguell.cat/l-exposici-universal-de-barcelona>

<http://palauguell.cat/l-exposici-universal-de-barcelona>

http://en.wikipedia.org/wiki/Hospital_de_la_Santa_Creu_de_Barcelona

Scientific method and health



<https://www.youtube.com/watch?v=2I0MfhsIqUU>
<http://laciencialteumon.cat/el-metode-cientific/>

http://www.gencat.cat/economia/ur/ambits/recerca/programes_actuacions/divulgacio/ciencia_escoles/recerca_escoles/guies/metode_cientific.html

html

<http://www.gencat.cat/salut/acsa/html/ca/>

dir1349/doc10804.html

[https://en.wikipedia.org/wiki/Food_pyramid_\(nutrition\)](https://en.wikipedia.org/wiki/Food_pyramid_(nutrition))

Basic rights

<http://www.parlament.cat/web/serveis-educatius/drets-humans>



<http://www.amnistiacatalunya.org/edu/material/primaria/index.html>

http://www.enredate.org/cat/dies_mundials/dia_de_los_derechos_humanos

Videogames



<http://www.personatgesenjoc.cat/>

https://en.wikipedia.org/wiki/Video_game

<https://www.youtube.com/watch?v=hWgYc0Rtk0U>

ACTIVITY FILE. BIOGRAPHIES

1. As well as Dolors Aleu i Riera, Martina Castella i Ballespí and Maria Helena Maseras i Ribera studied medicine and worked as doctors.

Find information on the Internet on the three doctors and write a short biography of each of them. The biography has to include a picture and a timeline with

the dates of the most important moments in their lives.

Here we shall attach a model that you can use to complete the biography of one of the woman. (Add a file like the following one and, if possible, improve the design of the timeline).

2. Now that you have made a timeline with the template, try and do another one with the webpage: <http://timerime.com>.

3. Connect each character with the corresponding fact.

Dolors Aleu	Her father and grandfather were also doctors.
Martina Castells	She was the first woman to enter the Faculty of Medicine.
Maria Helena Maseras	Once she finished her studies she was a paediatrician and gynaecologist.

ACTIVITY FILE MODERNISME

1. Dolors Aleu was around at the same time as a very important artistic movement in Catalonia: *Modernisme*. Choose one of the pictures of the *Modernista* buildings that follow and describe it using the following words: architecture, nature, Antoni Gaudí, Catalan vault, Domènech i Montaner, 19th century.



Sagrada Família



Hospital de la Santa Creu i Sant Pau



Casa Milà

--

2. In the previous activity you have seen three *Modernista* buildings that are in Barcelona. Do you know if we can find similar buildings in other Catalan towns and cities? Find some examples and describe them.

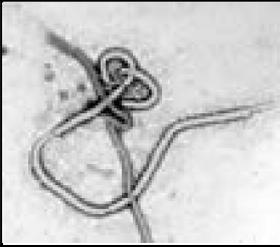
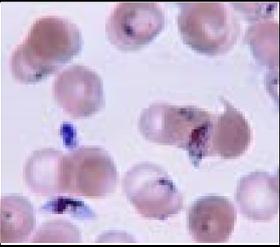
--

3. **UNESCO** considers some of these buildings, like Casa Batlló, World Heritage sites. Answer some related questions:

What is UNESCO?
What does it mean that a building or a place is World Heritage? How is it decided?
Which <i>Modernista</i> building are part of his heritage?
Which other buildings, places or traditions from Catalonia are part of this heritage?

ACTIVITY FILE SCIENTIFIC METHOD AND HEALTH

1. In the videogame there are cards with different illnesses. In the table below you have to fill in the information required on some of these illnesses. You have to look for information on the Internet to do so.

Name of the illness	Ebola	Malaria	Flu	Tetanus
Microscopic image				
How do you get it?				
What are the symptoms?				
How do you treat it?				

2. To be a good doctor, Dolors Aleu had to learn the steps to take in scientific method - and now you have to. Look for information on the Internet about a scientific study or theory (gravity, or evolution, for example), and briefly explain how you would follow scientific method to prove it.

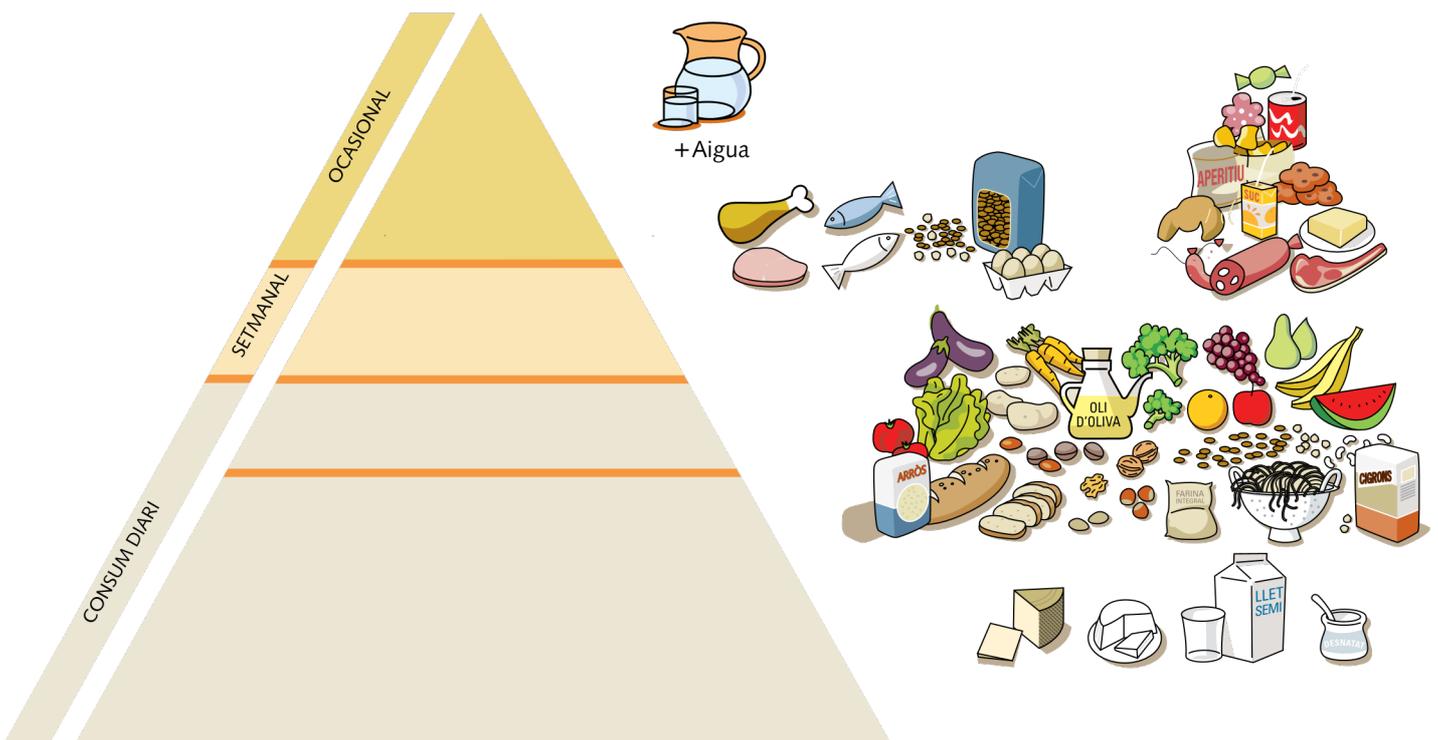
Observation:
Hypothesis formulation:
Experimentation:
Making conclusions:
Creating a theory:

3. As you have seen in the videogame, in the 19th century there were illnesses linked to a lack of hygiene and healthy food. Reply to the following questions to learn more about these habits.

- Nutritionists recommend a daily intake of 90 to 110 milligrams of vitamin C. If a person has 668.5 milligrams per week, are they getting the recommended daily quantity of vitamins?

- If a food has 20 milligrams of vitamins and a person consumes a quarter of that, what quantity of vitamins will they have consumed?

- Put the food that a person needs to have a balanced diet into the food pyramid.



ACTIVITY FILE BASIC RIGHTS

1. Dolors Aleu was discriminated against for wanting to be a doctor just for being a woman. Although today this discrimination is much reduced and many stereotypes have disappeared, there are still situations when women may be discriminated against.

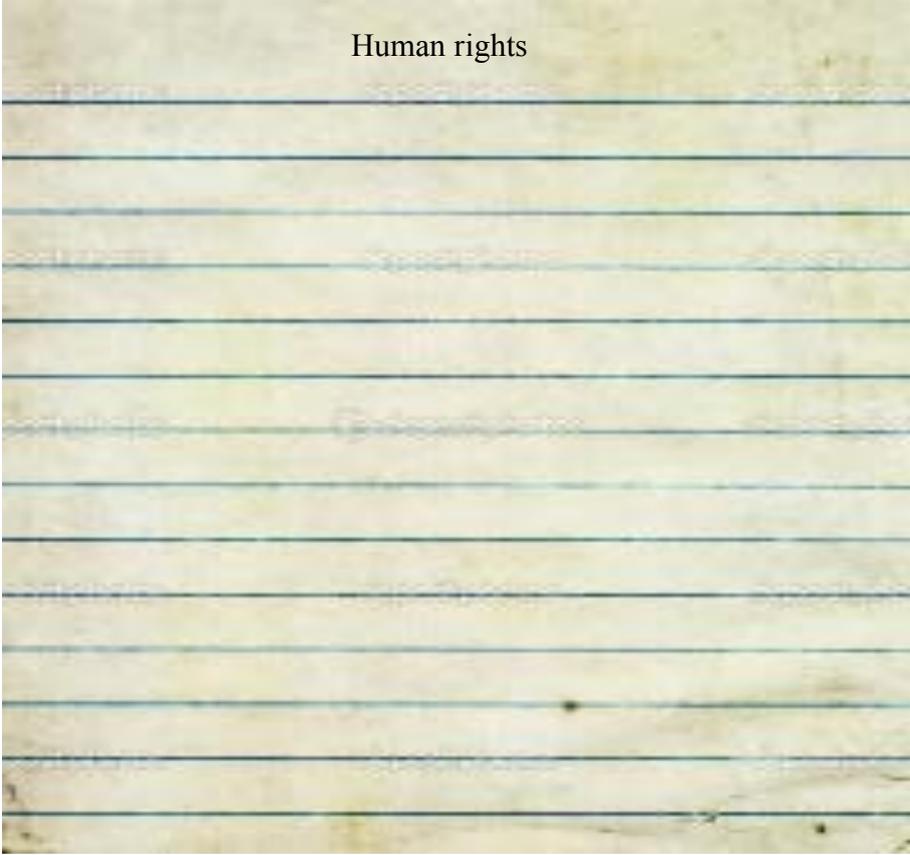
Stereotype: ideas that a group of people or society has based on established social patterns. Think about this topic and answer the following questions:

- Which stereotypes are there still today about which professions woman might have?
- Do you think that there is still discrimination towards women or other collectives? Why?
- Explain a case of discrimination that you know and explain how you would solve it.

2. Everyone in the world should have some basic rights that are compiled in the Universal Declaration of Human Rights, which became international law in 1976.

Write a list of at least ten human rights that you think people should have, and then compare them to the one from the Universal Declaration.

Human rights



ACTIVITY FILE DESIGN A VIDEOGAME

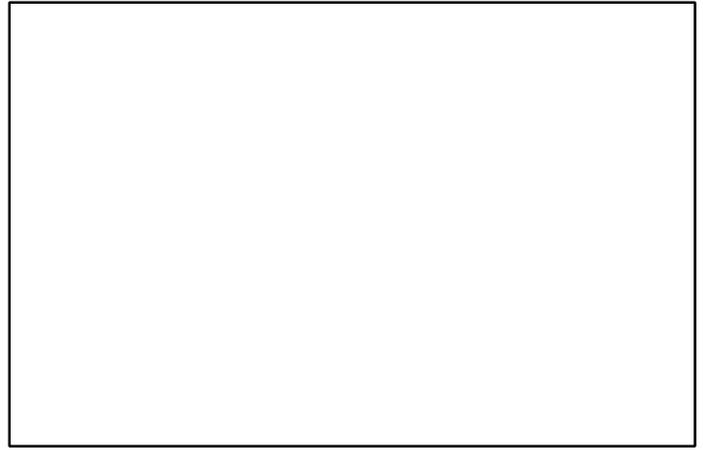
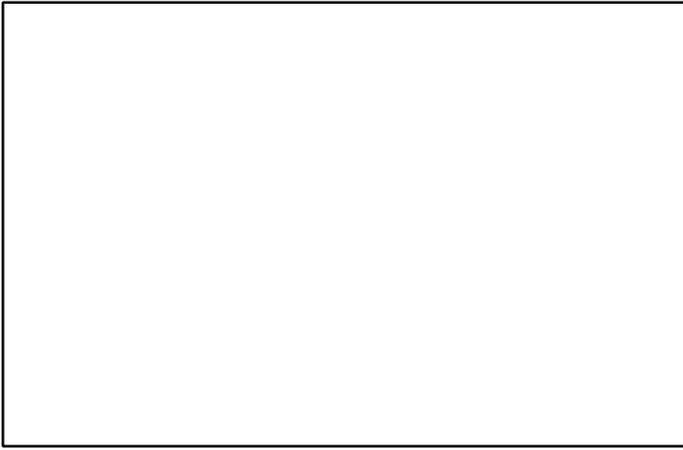
1. Now you have played the Dolors Aleu videogame, maybe you have ideas about how you'd improve it and what you'd include.

2. With the ideas that you have come up with in the previous activity, write a brief outline of a game like Dolors Aleu that you'd like to play. Bear in mind the following aspects:

- **Protagonist:** It must be a historical Catalan figure, maybe a scientist or someone known for having made an important discovery.
- **Secondary characters:** in addition to the main character, there also have to be historical characters from the same period.
- **Period:** describe the historical context the character lives in.
- **Story:** explain the problem the protagonist has to solve and what actions they have to take to do so.
- **Structure:** specify the chapters or levels that will be played.
- **Tests:** make a list of the activities, games, etc. that the character has to complete.

3. When you have finished the outline, think of some of the screenshots your game would have and make a simple technical outline in the panels below.

The technical outline is made up of illustrated panels of the main screens of a videogame, normally accompanied with drawings of the characters, the dialogue texts and the sounds or effects it has.



Other activities

On the www.xtec.cat and www.edu365.cat websites we can find activities to complement the themes touched on in the game: fractions, medieval history and geography, colours, geometric shapes, Mediterranean woods, etc.

Teachers are encouraged to get their student to seek out more information (archives, libraries, the Internet, museums, etc.) on the topics related to the game (history and geography of the Crown of Aragon, the life on Joan de Peratalladas, distillation, Mediterranean flora and fauna, changes in states of matter, Romanesque art, etc.)

We also encourage you to visit towns, festivals and fairs around Catalonia: the Ebro delta, Aquelarre de Cervera, the church of Sant Climent de Taüll, the Lavender Festival at Prat de Comte, the Jewish Quarter in Girona, the sanctuary of Montserrat, the city of Barcelona or any market in any Catalan city. Get to it!