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District Information Modeling and Management for Energy Reduction

DIMMER

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Collaborative Project

PLAYING | CARDS

The game of DIMMER

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The DIMMER cards have been presented at IATED 2015: **Augmented Reality and gamification approach within the DIMMER project**

http://library.iated.org/?search_text=publication%3AINTED2015&adv_title=&rpp=25&adv_authors=osello&adv_keywords=&orderby=page&refined_text=

The main point of the game is the importance of clean energy generation, so the **winner is the one who saves more energy** and not the one who picks up the higher number of cards. In this way **children learn easily to think to a long-term future and realize immediately the value of taking good practices** instead of bad ones referring to their behaviour towards the environment. To allow this kind of working the game is composed by sixty cards organized into forty roles, ten bonus and ten 'energy element' cards. In Fig. 1.1 it is possible to see an example of every type of card, which are described below.

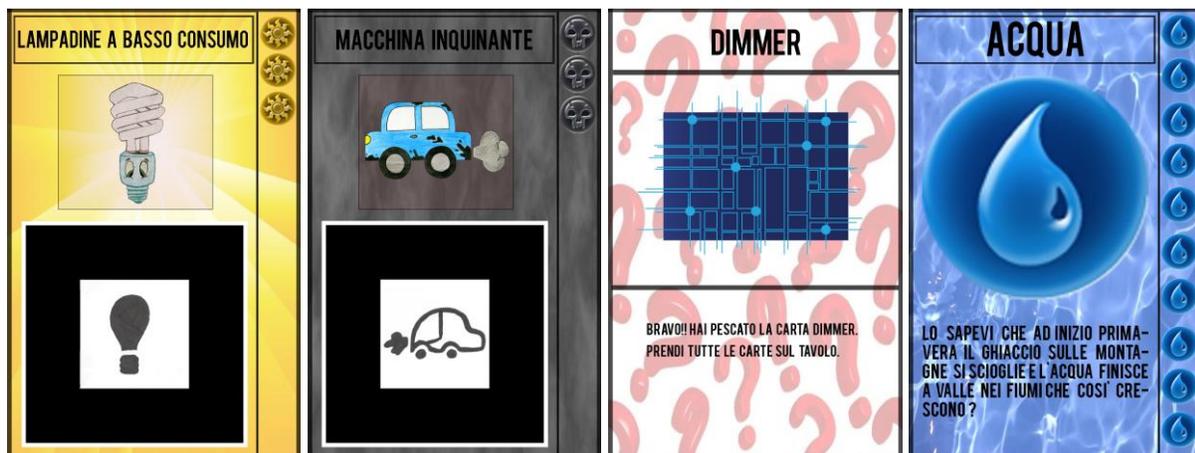


Figure Errore. Nel documento non esiste testo dello stile specificato..1 - (from left to right) Positive and negative role cards, bonus DIMMER card and energy element card.

The game is divided into ten turns in which an 'energy element' card establishes the dominant seed of each turn, with a maximum of two cards with the same seed. Since a limited number of fifty cards is provided, it is advisable to play the game with a maximum of five children. It is necessary to deal two bonus cards per child and the same number of role cards to everyone. The game starts from the younger child and it works counter clockwise. For every turn the children drop the card they prefer, paying attention to the dominant seed for energy saving, because its points will be stronger than points from the other seeds. It is possible to use bonus cards whenever the player wants – just one bonus card per turn – in order to take advantage in the game by changing the seed of the turn or playing another extra functionality, like picking up all cards or doubling points in the current turn.

Within role cards there are twenty-five positive figures that show different energy saving strategies, divided into five seeds representing the natural elements that are capable to generate energy: sun, fire, earth, water and wind. There also are fifteen negative cards related to elements that generate pollution to the environment. All role cards have points on them, in a scale from one to five, that will be determinant to the game's resolution: after every turn and at the end of the game, the points obtained by saving energy will be added whether points got by polluting practices will be taken off. The child with the higher score wins. In case of a hypothetical tie at a single turn or even in the final count, a three-question quiz about energy saving will be done to solve the situation.

It is important to notice how awareness in terms of sustainability is always present in the whole game contest: in addition to the perspective of winning by saving clean energy and refuting pollution, some advices or reminders are explained at the bottom of 'energy element' cards, in order to integrate learning at every phase of the game. As introduced before, the key element that allows to maximize the desire effect of children's consciousness is the use of AR by adding markers to the cards. Every single role card has a drawing on the top that represents a particular way of energy consumption (either positive or negative) and a marker on the bottom that schematizes it. The marker is linked to an appropriate 3D model that simplifies the energy element's icon of the card. While playing the game, a video camera gets the markers of the dropped cards, making 3D models appear on the screen according to the connection previously explained.

In the Fig. 4 below it is possible to see an example of this drawing/maker/3D model threefold representation. In this way the children will see the renewable energy sources they choose for playing represented by attractive and colourful 3D figures on the screen, while they will link up polluting solutions with ungraceful and dark images, understanding immediately the difference between good and bad approaches in terms of energy generation.



Figure Errore. Nel documento non esiste testo dello stile specificato..2 - Example of the threefold representation of the elements

AR enables children to learn in an interactive and entertaining way, so they get easily interested and motivated about relevant topics as energy consumption. This way they may become aware at an early stage of their lives, influencing their own habits and behaviours towards the environment and reaching even to affect the way of thinking of the adults around them.