LICHELANDIA

("Licheni in rete - Lichens networked" project)
Liceo Scientifico G. Galilei ind. Scienze applicate - Ostiglia (MN)
Teacher: Claudio Malavasi

The educational scenario is focused on the study of lichens used as bioindicators and also inspiring literary, artistic and figurative activities.

Aims:
1) To study lichens from a scientific perspective, by assessing their biodiversity in relation to environmental quality
2) To develop a virtual city where lichens are protagonists and students, through their skill and creativity, are involved in its creation by developing texts, drawings, videos and small shows
3) To spread the activity and the results through a public event.

Scientific domain

Lichens are studied during theoretical and practical lessons (both in laboratory and in field, Fig. 2).

During the theoretical lessons, new technologies are used more and more frequently, such as the interactive multimedia presentations proposed by the working group on education of the Italian Lichen Society, coordinated by Alessio Ferrarese, which also includes self-assessment tests (http://didattica.lichenologia.eu/), or those available on the website of the "Licheni in rete (LIR) - Lichens networked" project (Fig. 1), coordinated by the writer, who established in the province of Mantua a network of schools; for more than ten years this network has been studying lichens and assessing their biodiversity in Mantua and in several towns of the province (http://digilander.libero.it/licheniinrete/prima/home.htm).

Fig. 1 - Homepage of the "Licheni in rete" - Lichens networked" project

During the laboratory lessons, it is necessary to be equipped with lenses 10x or, even better, stereo microscopes, to recognize the morphology of lichens and to appreciate their shapes, colours and peculiarities. Lichens can be identified using textual guides, which are available on the website of the LIR project, or interactive, illustrated guides such as those produced by the Dryades project (University of Trieste).

Fig. 2 - Practical lessons in laboratory and in field

The LBI (Lichen Biodiversity Index) method is then explained to the students, to show them that lichen biodiversity can be an indicator of environmental quality. This method must be learned properly, to be applied for data collection and analysis. In this phase some technological tools (e.g. GPS) are important for precise location of the biomonitoring sites and construction of digital maps showing the LBI values (Fig. 3); it is also possible to check the geographical distribution of some lichen species (*Xanthoria parietina, Flavoparmelia caperata, Evernia prunastri*); an applicative example is the recent contest of the Italian Lichen Society (http://www.concorso.lichenologia.eu/). The LBI method allows to assess environment quality; the data may be disclosed to citizens through a website and constitute, if the sampling is repeated over years, an important time series (LIR project). An established practice in our school is to send the results to the mayors of the towns monitored to inform them of our activities in order to safeguard the environment that surrounds us in the spirit of Agenda 21.

Fig. 3 - Map showing the LBI values

Enjoyment/Fun domain

After having carried out the scientific study, the students are invited to produce, by using their skills, works in which lichens are the main topic. They can compete in many activities:
a) to write: a story, a poem, a sketch, a song ...
b) to draw and/or to paint: a lichen (existing or invented), a comic book, a mural, some T-shirts (Fig. 4), a costume, a mask ...
c) to make a game: a crossword, rebus or jigsaw puzzle, playing cards, board games (such as a goose game) ...
d) to music and sing a song
e) to stage a small comedy
f) to hold an interview ... even an impossible one!

Fig. 3 - The 10th anniversary T-shirt

In recent years we have made several products that have formed a virtual city called LICHELANDIA (Annex 1) full of poems, songs, drawings, games, plays, videos available on the website of the LIR project.
I will report only the description of the last work titled "Intervista impossibile - An impossible interview". There are many ways to learn about the lichens, but a certainly curious and not without difficulties way is to interview them. Lichens are in fact very timid and shy organisms which do not like to talk about themselves; they rather prefer to use coded messages often related to their presence or absence. However, the students of the 2T class of the High School of Applied Sciences of Ostiglia have tried to interview them. Some lichens have assumed human form, and in a city park they have answered a reporter's questions to shoot a special TV news. The questions were simple and direct, and their aim was to reveal how lichens are made, their habits and what their presence means. The screenplay was essential as well as the set, which consisted of trees and benches, that is some common places where lichens can be found, although they often go unnoticed or are mistaken for plant diseases. This work was performed by a team in the field and an anchorman in a TV studio (video title "TG LICHENI - LICHEN TV NEWS"; running time 3.33'; file size 389 Mb; file format: QuickTime video). This experience was very useful, because the students, by playing the role of a lichen, were able not only to interpret and understand a new way to "exist", but also to disseminate the knowledge gained. These new modes of communication, which often make use of the latest technology, managed to get the students more involved in the learning process, which was pleasing, creative and effective.

Public event

Fig. 5 - The science fair

In the province of Mantua at San Benedetto Po, in the ancient cloisters of the Abbey of Polirone, for several years the science fair "Scienza Under 18 - Sciences Under 18 (SU18)" has been held in May (Fig. 5). During this event, the schools, and in particular those involved in the LIR project, present their science projects; the students-exhibitors show the results of their biomonitoring surveys, explain the importance of lichens as bioindicators and talk to other students, parents and citizens about their scientific experiments and recreational activities lichen-based (SU18 images available on the website of the LIR project). (http://mantova.scienzaunder18.net/).

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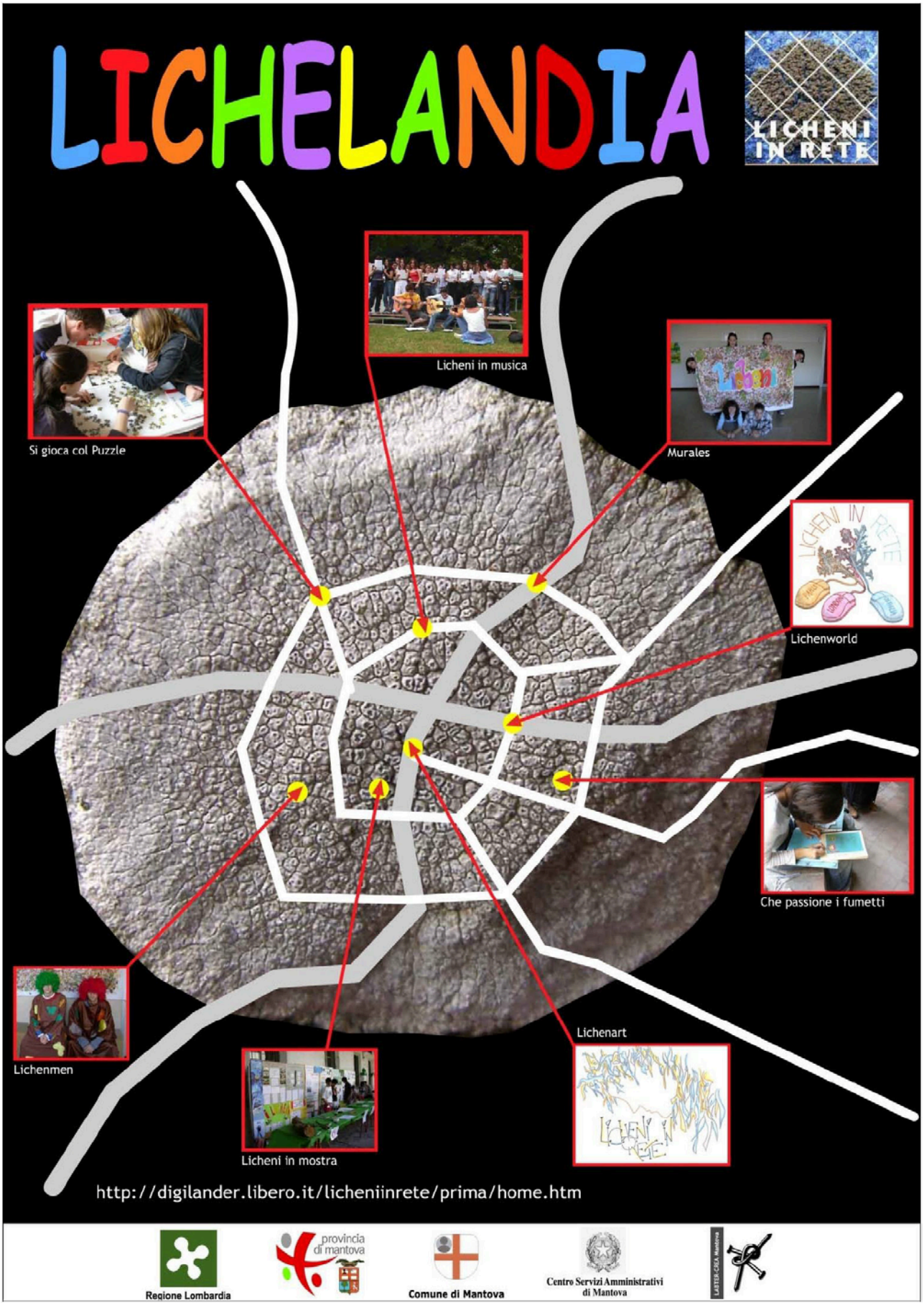
Annex 1

LICHELANDIA
by Claudio Malavasi

There is a city where lichens are the focus of attention and the real masters of the game: Lichelandia. It is inhabited mostly by kids who, intrigued by lichens, want to learn to play with them, guided by wise teachers. At any time of year you can go to this city of fun and immerse yourself in its amazing attractions. The streets are a maze and occasionally open into squares that have odd shapes and strange names. One of the main squares is Parmelia Square, with its soft, gray pavement and, in the centre, many small columns with the black top; the kids have fun overriding and using them as stools when they are tired. There is the colourful, yellow Xanthoria Square, with many orange small disks; the kids have great fun using them as swivel stools. Cladonia Square has towers wide at the top and narrow at the bottom; standing on the towers, you can enjoy a wonderful landscape. Last but not least, there is Usnea Square, which is full of lianas; here the kids hang on ropes and make daring jumps. Apothecium Theatre, similar to an amphitheatre, is the real cultural and artistic center of the city; it hosts throughout the year several plays, such as "Six characters in search of Physcia tenella", or the comedy "Add Lecanora esculenta at the table"; once a year a famous song festival is held, with lyrics inspired by lichens and biomonitoring such as "Tell me how", "Look for me", "Physconia without soul", "Lichen special". There is also a literary prize with two categories, poetry and fiction; the prize is named after the Ligurian poet Camillo Sbarbaro, a true lover of lichens. Every year the best lyrics and the most imaginative stories are awarded prizes. The radio of the city, Arthonia radiata, broadcasts every day a program entitled "What's your lichen?" with Ascus, the famous magician; he has many listeners, although many people say they do not believe in his predictions.

There are several pavilions, each focusing on a type of games; you have free access to them to play or build games. Lichenigma is one of the most popular pavilions; there you can test yourself with crossword puzzles, magic squares, words hidden in a sea of letters, jigsaw puzzles and riddles. Then there is the pavilion of the board games, such as the world famous lichenopoly, or games of skill like lichenmemory and lichenpuzzles; for those who like to paint, there is the Lichenart pavilion, where there is everything you need to make drawings, paintings, masks, T-shirts with slogans and even sculptures; a wing of the pavilion is also equipped to paint murales. Once a year in this pavilion a big costume party is held, where everyone wears costumes inspired by lichens. The ubiquity of lichens has also affected the city of Lichelandia, which is twinned with Lichenland town (England), Flechtenpark (Germany), Lichenparc (France), and Lichencity (America). Lichenweb is the latest and is the most technological pavilion, where fans can create computer games, simulations, web pages and participate in an international competition named after the American naturalist Sylvia Sharnoff, which this year will be held in Tartu (Estonia); yes, you have read well, this is the curious name of the host city. Even lichenologists have their own space: it is the Thallusmuseum, which houses the largest collection of lichens classified and catalogued and often hosts international conferences organised by a mysterious association called SLI (Italian Lichen Society). Does Lichelandia really exist? Or it is an imaginary city? Well, the city exists, and its presence, development and location depend on our will and imagination.



Poster about Lichelandia by Raffaello Repossi