



## Story Maps at school: teaching and learning stories with maps

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### Abstract

Storytelling is the art of involving the emotions and the imagination of people by telling stories. Map-based Storytelling can be very useful to transmit knowledge in several topics, focusing on *where* the stories take place. In this paper we explore the opportunities offered by Storytelling with maps in didactics. In particular we refer to the set of different applications offered by Esri to build Story Maps based on different approaches and techniques. We also describe a project, promoted by Esri Italia in collaboration with the Italian Association of Geography Teachers, that involved several Italian schools, to spread the concept of Story Maps and their role in teaching and learning different topics.

**Keywords:** Story Maps, GIS, Storytelling, Didactics, ArcGIS Online

### 1. The didactic power of Storytelling

In the last years many authors have been stressing the power of storytelling to involve the audience in order to transmit knowledge. In particular the art of storytelling has been experienced in the classroom to catch the attention of pupils.

Storytelling is an oral art of performing a story with a live audience (Kirkby et al., 2014). Of course storytelling is not a new method of teaching. On the contrary storytelling is the most ancient form of education. More than 200,000 years ago cave paintings were already used to tell stories through the use of pictures. Later on

oral tradition was very important in Africa and Ancient Greece. It is worth noting that not every human culture in the world is literate, but every single culture tells stories (Henning, 2005).

People around the world have used stories as a powerful way to transmit cultural values, traditions, beliefs and history to future generations (Hardy, 1978).

Storytelling is still a successful way to involve the audience because the words and actions of the performer are tools used to encourage the listener's imagination.

Indeed, concepts can be more easily assimilated if they are presented in the form of a story.

Furthermore through storytelling the teller and the audience become directly and tightly connected.

So Storytelling is the oldest form of teaching. It was used very early on by human communities to give children the answers to important questions such as creation and the origin of life. In this way teachers can be considered as having been storytellers for millennia (Henningen, 2005).

To stress the capacity of storytelling to impress the audience the teacher can prepare the stories in a way that suits the pupils in relation to their age and interests.

Digital storytelling recently emerged as a new and interesting way to tell stories, thanks to the support of new media and technologies. The idea is to use a set of multimedia, such as text, graphics, images, audio and videos to narrate a wide range of tales, from historical events, to scientific topics, current events and personal life, typically with a strong emotional component.

The great opportunity for this form of digital expression is that these stories can be created by people everywhere, on any subject, and easily shared all over the world through the web.

In the field of education, teachers and their students, from early childhood classes through graduate school, are using digital storytelling in many different ways.

Digital stories available on the web can be helpfully used by teachers to deal with topics that are difficult to address through traditional methods. Indeed the power of storytelling to involve the audience is strengthened by the support of multimedia that involves the emotional side of people even more.

At the same time teachers can use digital stories as an opportunity for students to build their own stories, exploiting the confidence of the new generation in creating digital contents and sharing them online.

Digital stories allow students to take a linear series of events and turn them into a multidimensional experience, through the combination of voice, text, images, audio and video. It encourages them to communicate, collaborate, research and gain a deeper understanding of history as they explore the most effective way to retell it.

A very interesting and successful way to build digital stories is to incorporate maps in storytelling. Storytelling with maps can be used across many topics, for literature, history, geography, politics, environment, science.

## 2. Telling stories with maps

Maps tell many different types of stories. Indeed maps have been telling stories for centuries. Maps have always captured the attention of people, stimulating imagination and inspiration (Kerski, 2013).

Maps, as the travel stories of missionaries, diplomats and merchants, were the basis of geography and, in general, were used as a tool to transmit the knowledge of the world. The importance of storytelling through maps was also stressed in the past when the journeys of famous leaders were turned into fictional stories. The stories of the trips were built to impress the reader with wonderful and fantastic facts (Palagiano, 2007).

Medieval maps were for example used to transmit a set of geographical knowledge and to propose a vision of the world, putting together cosmology and theology. The description of reality was part of the more general explanation of the world (Conti, 2007).

Since the function of maps has always been to describe and to tell the *known world*, or the *knowledge of the world*, in the past decades maps have been integrated with data analysis and have been strengthened through many different tools by digital technologies. Geographic Information Systems, web maps and mobile apps, are used every day to inform people, locate services, alert in case of emergencies, support decision, to communicate and to do many other kinds of things connected to geolocation.

Nowadays maps can, therefore, tell stories in new ways. Maps are useful tools to describe phenomena, situations and relationships, to trace routes and positions of objects, to show changes that have occurred over time, to point out differences in places, to model possible scenarios related to different actions. For these reasons maps are very important to support decisions and make plans.

A Story Map has all the functions of a normal map but, in addition, it can be specifically created to stress the message and the story which the author wants to express. Story maps include a set of functions and instruments, such as texts, popups, graphs, charts, photos, videos, audio, that facilitate the comprehension of the story. Story maps are, indeed, particularly effective to inform, educate, entertain and involve the audience.

But these new abilities of maps do not necessarily allow us to be good storytellers if we are not able to take advantage of this new way of building maps. There are some general principles to follow in order to increase the ability of a Story Map to be an effective communication medium.

Esri Inc., one of the most important companies worldwide in the field of geospatial technology, is working hard to explore different ways and solutions to create Story Maps and to tell stories through maps. The Esri Story Maps team develops templates, applications and guidelines on how to make Story Maps through ArcGIS Online, one of the main elements of the Esri Platform for GIS technology. ArcGIS Online offers many opportunities for non-specialists to develop maps to promote their own best practices. ArcGIS Online makes it possible to create web maps through a combination of available basemaps, thematic maps, data, popups, with texts, audio, videos. The resulting maps can be shared with everyone and be viewed on multiple devices.

There are different types of Story Maps. The simplest Story Map provides a set of reference points located on a map. These points can be associated with descriptive texts. Using other Esri templates it is possible to explain a geography-related topic, summarize a status or situation, compare two or more themes or places, showing changes over time, forecasting the future, providing a narrative. Such story maps can tell the extent of damage from an eruption, the pattern of vegetation in a national park, compare cities around the world, show changes occurring in land use, explore the scenario of climate change (Esri, 2012b).

It is very easy to build these story maps, following a wizard on the website [www.arcgis.com](http://www.arcgis.com).

This is the result of a rapid change in the GIS technology promoted by Esri to involve large audiences.

Story maps can be used in the classroom for both teaching and learning. The website <http://storymaps.arcgis.com/en/> provides a set of existing Story Maps that can be useful to propose topics in a different way. Story maps are divided into the following fields: Architecture and Design, Business, Conservation and Sustainability, Culture, Destinations, Events and Disasters, History, Infrastructure and Planning, Nature and Environment, Oceans, Parks and Recreation, People and Health, Public Art, Science and Technology, Sports and Entertainment, Travelogues.

Another way to use Story Maps in the classroom is to ask the students to build their own map. The process to realize a Story Map is to develop a storyboard, gather data, create a web map, save and share it.

It is very important to help students to figure out what story they want to communicate and to what audience. Then it is necessary to consider all the elements, such as data, texts, videos, audio, to be included in the story that must be as clear as possible (Esri, 2012b).

Through the realization of their own Story Map the students have the possibility to gather a deeper understanding of processes and causes of phenomena, to understand the interrelationships and the effects of events, to inform and inspire their classmates. Another way to let students explore the world of Story Maps is to divide the class into several groups and to assign different tasks to do.

It can also be interesting to use Story Maps, for example the template called "Map tour", to relate a school trip, locating on a map all the places visited and associating pictures and descriptions with these points.

Another useful way to evaluate the power of Story Maps in didactics is to use them to assign homework. Teachers can build, also together with the students, a map by locating a set of points. These points can be associated to texts describing a topic, such as history, geography or literature. For each point it is possible to provide a text to read and a set of questions to answer.

### 3. The use of Story Maps at school: the project of Esri Italia and AIIG

Although Storytelling with maps is a very useful tool in education, a problem in promoting this method is the lack of teachers who are trained with web-based mapping and geotechnologies. However the migration of geospatial technology to the web has reduced the number of barriers for teachers to implement such tools at school. They no longer need to install software and a computer laboratory but just an ordinary web browser (Kerski, 2013). In addition, the new web-based applications are very simple to learn.

Esri Italia is doing everything to promote ArcGIS Online and the tool of Storytelling with maps, also helping teachers in discovering the power of Story Maps in didactics.

On the occasion of the GIS Day 2014, the international day to celebrate the importance of Geography worldwide, Esri Italia and the Association of Italian Geography Teachers, promoted the project “Story Maps at school: teaching and learning stories with maps”, that involved more than 60 teachers, of several subjects, in order to teach them how to use and build Story Maps in the classroom. Several schools of Rome, Turin and Florence and approximately 1,800 students were

involved. This initiative was very successful and the participants were very impressed by the opportunities that these instruments can offer. The teachers involved had the possibility to learn different ways to use Story Maps to teach special topics (using the web site <http://storymaps.arcgis.com/en/>) and helped their students in building their own Story Maps through the Esri web application called *Map tour*.

The different classes of students involved realised a remarkable number of Story Maps, concerning projects involving their schools, school trips, special topics, a set of points of interest near the school district. The students had the opportunity to express themselves, choosing the story to tell and how to tell it. Naturally this task was also a medium to learn Geography and the use of GIS technologies. The Esri Italia 2015 Conference (April 15-16, Rome) hosted a special session devoted to GIS and didactics and the Organising Committee gave an award to the best application built by the schools participating in the project.

All the Story Maps realised are included in a web gallery: [http://www.esriitalia.it/mapgallery/thegeobservatory/Cosa/GISDay\\_2014/](http://www.esriitalia.it/mapgallery/thegeobservatory/Cosa/GISDay_2014/).

These Story Maps testify the imagination and enthusiasm shown by the students and their teachers.



Figure 1. “The Age of Humans” an atlas on human influences, as well as the cities that are helping to re-shape the way our species interacts with the planet. Source: <http://storymaps.arcgis.com/en/>.

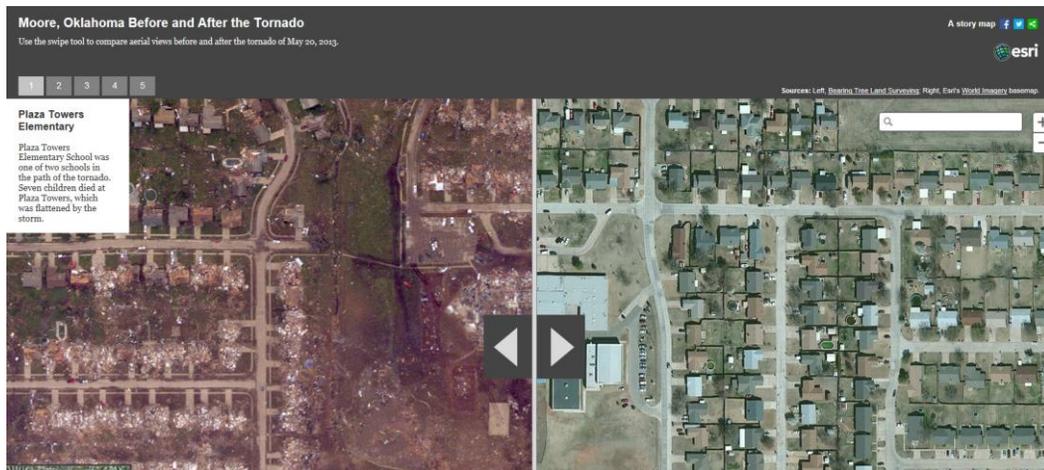


Figure 2. “Oklahoma Before and After the Tornado” a Story Map to compare aerial views before and after the tornado of May 20, 2013. Source: <http://storymaps.arcgis.com/en/>.

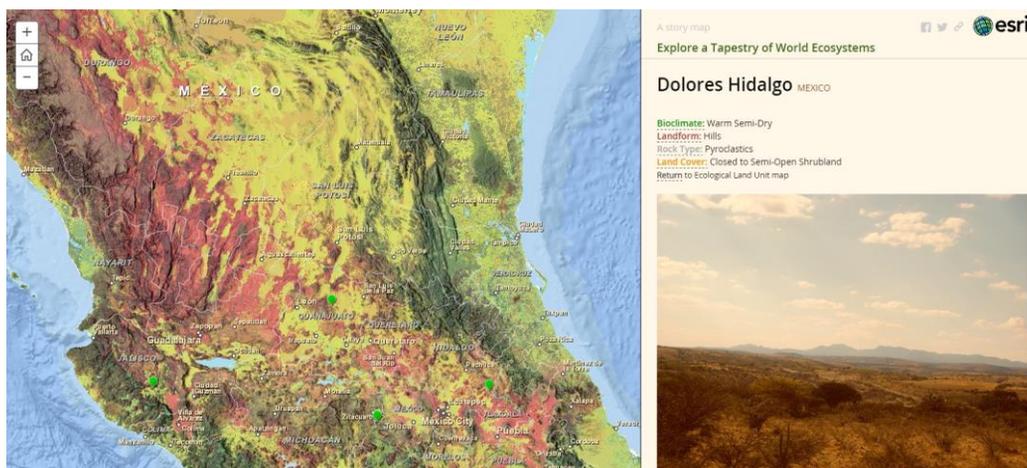


Figure 3. “Explore a Tapestry of World Ecosystems” a Story Map on global ecosystems. Source: <http://storymaps.arcgis.com/en/>.

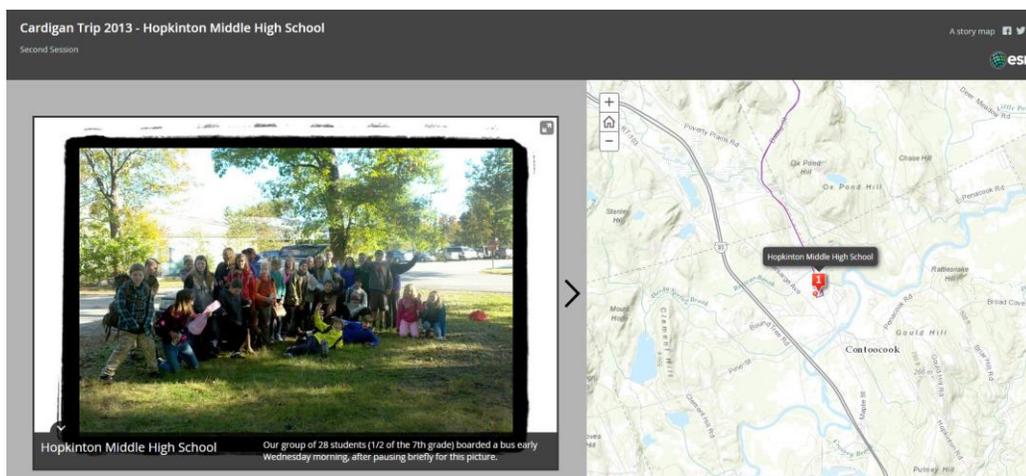


Figure 4. “Cardigan Trip 2013 – Hopkinton Middle High School” a Map tour of a school trip. Source: <http://storymaps.arcgis.com/en/>.

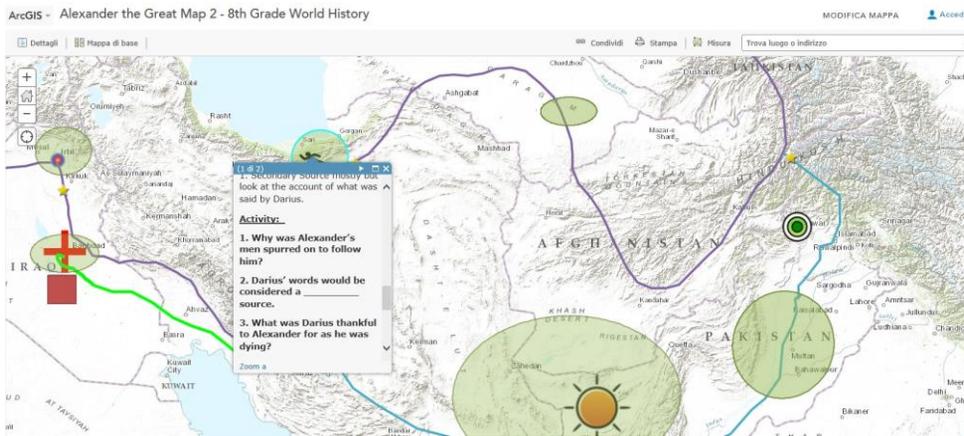


Figure 5. A web map in ArcGIS Online including texts to read and questions to answer. Source: [www.arcgis.com](http://www.arcgis.com).

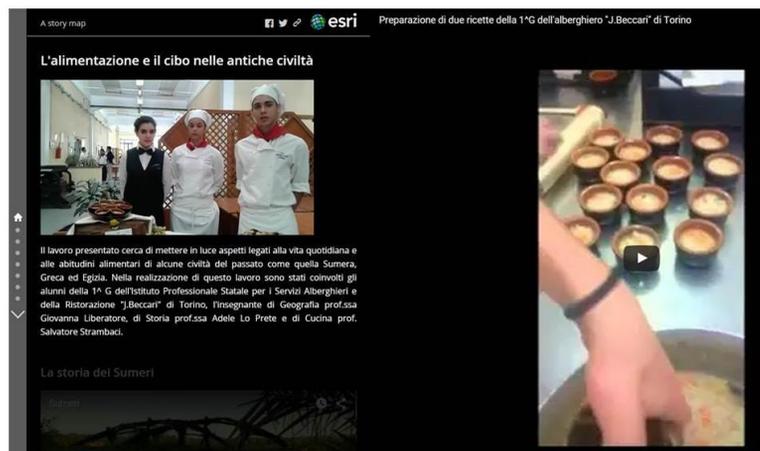


Figure 6. The Story Map realised by the catering college “J. Beccari” of Turin. It is about food and the students made an original video, included in the map, to give an account of their activities at school. The Story Map received a special prize. Source: [http://www.esriitalia.it/mapgallery/theobservatory/Cosa/GISDay\\_2014/](http://www.esriitalia.it/mapgallery/theobservatory/Cosa/GISDay_2014/).

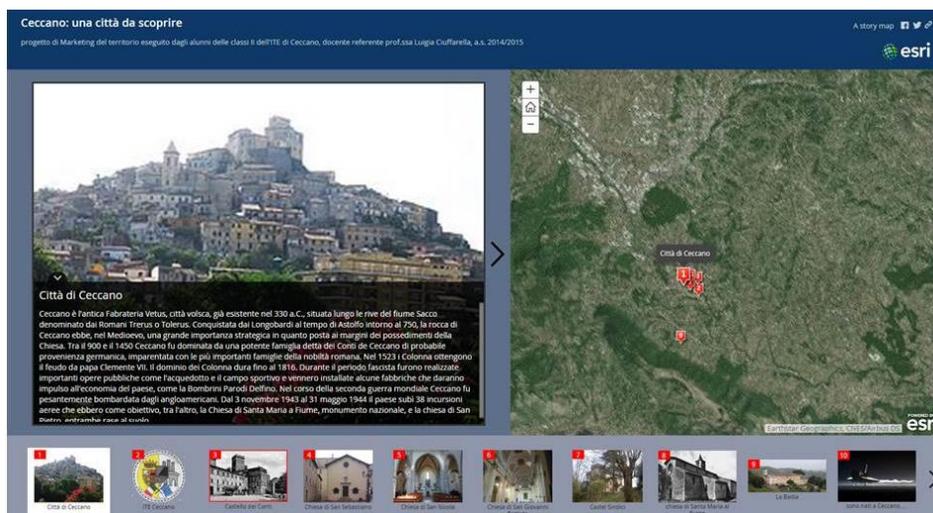


Figure 7. The Story Map realised by the school ITE of Ceccano. In the Story Map the students described the highlights of their region. The Story Map received a special prize. Source: [http://www.esriitalia.it/mapgallery/theobservatory/Cosa/GISDay\\_2014/](http://www.esriitalia.it/mapgallery/theobservatory/Cosa/GISDay_2014/).

#### 4. Conclusions

As we personally experimented during the project “Story Maps at school: teaching and learning stories with maps”, Storytelling with maps” motivates students. They consider it to be an interesting activity and a skill that is worth acquiring. It helps students in developing a positive attitude toward the learning process (Hamilton and Weiss, 2005).

Students are actively involved in the process of creating Storytelling with maps; they learn to be creative, by thinking and telling their own stories.

Students also experience that different people have different methods, sensibility and that everyone has his own way to tell a story (Hamilton and Weiss, 2005).

Storytelling with maps is an opportunity to promote imagination and imagination helps us to solve problems and to think outside the box.

The use of maps in school is very important in all the subjects in which location is a key component and in order to build a problem-based education (Kerski, 2013). Indeed, we can use map-based Storytelling to point out *where* facts, events, phenomena, etc. take place.

The use of geotechnologies in classroom can be addressed to building web-based maps and Story Maps. Indeed dealing with geotechnologies has become very important since mapping services are part of many everyday experiences. To know these instruments is both an opportunity and a challenge since the use of geotechnologies will be even more diffused in the future (Kerski, 2013).

Story Maps help students in understanding that the Earth is changing: they can begin to think about what, where and why it is changing. It will help in asking questions, about the changes occurring and about the possible actions to undertake. This is what is called problem and value-based learning, which is a method to promote the education of activism (Kerski, 2013). This is how Geography can help in building a *better world*.

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