i-Theatre: a Novel Educational Instrument for Multimedia Storytelling

Federico Albiero
EduTech Srl (Italy)
f.albiero@edutech.it

1. Why an Instrument for Storytelling

"*God created man to listen to his stories.*" (African popular sentence)

Believe one in God or not, this simple trace of primitive popular wisdom [1] – simple, deep and universal as only myth can do [2] – perfectly depicts a basic reality of man on earth, as a living being capable of expressing and communicating with stories. Besides painting storytelling as a reality deep rooted in human nature, the image – also reported in a different version in [3] by the researcher, Jungian psychoanalyst and storyteller C.P.Estés – helps to clarify some other features of the act of narration.

First, the sacred quality of storytelling, close to divinity: the capability of touching with respect the immense mystery of life which is far beyond the individual understanding, though he can experiment and live. Then, the starting condition of "loneliness of God", expressing the everlasting need of human communication for a listener to be involved ("*who claim for the story is not the speaker's mouth, but the listener's ear*" [4]). Moreover, the condition of creativity, always arising as an answer from a condition of trouble and dissatisfaction to fulfil real life needs. Finally, the "pleasure of God", who is so happy with his creation because he's not alone anymore and he can enjoy listening; whereas man, at the same time, finds naturally sense to his existence thanks to the relation established by storytelling. The emotional and affective aspects of the symbolic expression [5] are crucially important, as they represent the "glue" that connects people, the vital source of a shared feeling among people which gives motivation to the action and originates relation (the etymology of the word symbol is, literally, "put together").

I started from this little dissertation to make more tangible through an example the fundamental features of storytelling (for more details on the role of narration in education, see [6]).

In our modern society, we assist to a huge transformation. On one hand, there is a dramatic human and cultural impoverishment, as media are exploited by power and often the individuals have not the instruments to protect themselves from impersonal models and stereotypes of globalization. On the other hand, the concrete possibility of the individual to make his choices and cultivate his life according to his personal feelings and sensibility is by far larger than in the past, and there is a growing attention to the person in education.

Pedagogical research has started to show that the problem to work with is to *change the way of thinking*, through research and experimentation of new paths. Since the establishment of first societies in Europe, our way of thinking works on the cognitive model of separation (*e.g.*, the most taught operations in school are classify and abstract). Normally, there is not awareness that this is a just a possible approach, and it has to be completed from his counterpart, which has been lost from our society: the *capability of interconnecting things*, to see differences as complementary aspects of a unique entity, the inner and intimate relation between knowledge and life. The extremely difficult but great opportunity for the future of education nowadays is therefore to *experiment new ways of teaching*, where listening of the individual and welcoming diversity is really at the base. It is needed to work on the ability of seeing interior images (pre-expressive phase), to educate the capability of listening, to re-establish a strong relation with sensorial perceptions and physical materials, to adapt to the cognitive style of learners [7]. This difficult tasks imply the need for new cultural instruments: *i.e.*, models that works on the coordination of body and mind such as the theatre model and *drama education* paradigm [8], ways to work on the connection between knowledge and living experience as *storytelling*, forms that awake creative thinking as *arts*.

In this perspective, the handy availability of new ICT technologies and media resources is an incredible opportunity for modelling appropriate tools for the educators, allowing the free proposal of new activities and exploration of creative possibilities, relevant in the actual moment and in the next future.

2. i-Theatre

The idea of i-Theatre, then, arises from this cultural and educational need for authentic self-expression and is dedicated to young children who naturally express themselves though drawings [9], adding simple digital tools for early animation making. i-Theatre [10] is a novel integrated interactive instrument for story-creation and multimedia storytelling dedicated to children of 4-10 years, but especially in preschool age.

Technically, the system concept starts from several works done at MIT and the innovative vision of tangible user interface – not surprisingly formulated from a oriental culture point of view – of prof. Hishii [11], claiming for the need to go beyond standard GUIs in conceiving the human interaction with the machine ("*world will be interface*"). i-Theatre expand and re-elaborate the idea of Jabberstamp [12], adding to the speech recording the movement of characters and animation-making tools.

The development process has drawn his strength from the methodology of user centered design and participatory design.
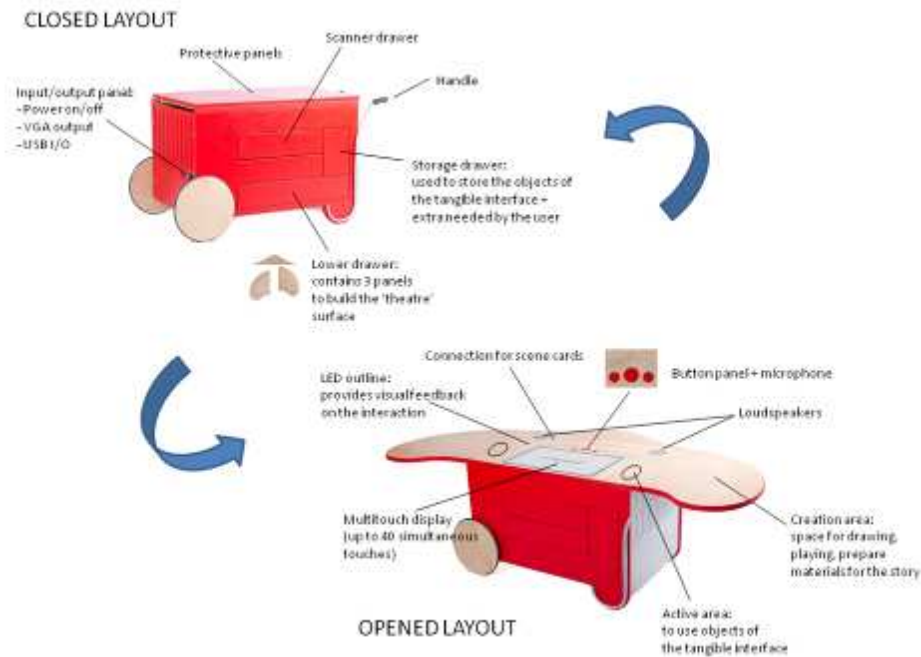
Fig.1: i-Theatre closed and opened layout.

2.1 Design

As the instrument is inspired – it has its roots and lifeblood – in the world of theatre, we wanted this metaphor to be expressed in the physical design of the object. Therefore we chose: first, concept of *wagon-bag* of the wandering storyteller, full of his magic tools and artifacts, when the system is closed. Second, the little bit round *amphitheater-shape* when the system is open and ready to work. It is red, as a tribute to classic theatre and color of vitality and self- expression. When the system it's open, the essential component is birch wood to give to the children a warm and natural feeling important to encourage the creative process.

As we wanted to develop a system for early animation making (*i.e.*, what it basically means multimedia storytelling) that could be the simplest and most intuitive possible, we designed all the interaction with the digital to be done through physical objects, or by using simple gestures on a multitouch surface, and three buttons. The tangible interface is composed by several objects.

Personal case of the children. This is the equivalent of the concept "archive" we have in computer graphic interfaces, but made it physically. The case can be used by a single children to store all the digital objects he's using in the storytelling activity (characters, backgrounds, movies). We designed two versions: the standard case in a geometric shape, and a 3D-print version (like, *e.g.*, a treasure box or Aladdin lamp) so every children can even choose his personalized interface to work with.
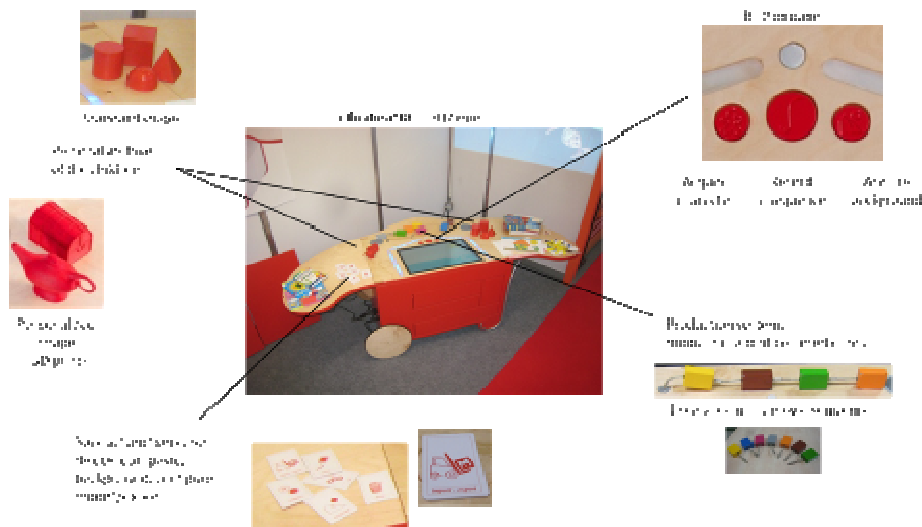
Fig.2: i-Theatre tangible user interface

Scene cards. Each coloured card is meant to store a single movie clip that children can record by using the instrument. Children can start from a simple level where they record all the story using just one card, or they can record several clips and easily compose them in a sequence. In this way, they get a storyboard, made it physically.

Function cards. The use of cards is the equivalent of selecting a function from a menu in a GUI: the same action is done by placing the object in the active areas (as for the personal case). We decided for the metaphor of playing cards to keep an aspect of playfulness that is behind all the concept of educational activity with i-Theatre. For the moment there are six cards (*i.e.*, digital cut, paste, set background, delete, import-export, configure); the set will be expanded in future by adding more tools for refining the animation and for educational activities.

2.2 Interaction

Being a transportable system, the teacher can take the instrument in the most suited place to perform the educational activity. By placing three panels taken from the lower drawer, the wagon turns into the amphitheatre-shape so that many children can stay around and play together at the same time; by switching on the power button, it is ready to work. The LED light around the multi-touch working area gives to the users a visual feedback about the phase they are currently experiencing with the system.

Then a typical narrative laboratory with the instrument goes through four stages.

Creation. The little artists draw the backgrounds and characters of their story, working alone or in group; they can also be guided to invent a storyboard if already experienced (a good reference is [13]). The educator can work by using the preferred technique and materials (*e.g.*, using drawing, painting, découpage, combining photographies, small objects, illustrations from books, etc.). At this point, children pass their creations to the digital form by using the scanner-drawer and pushing the appropriate button. The interaction with the multi-touch screen is based on a very essential gesture vocabulary (transition, rotation, zoom of characters). No other actions are possible to avoid distraction.

Stage preparation. When children want to record the animation, they choose characters and backgrounds and they connect a scene card to the system, expressing the intention to record. A backstage framework appears so that they can prepare the scene as it is at the beginning of narration, by placing active characters inside the stage and others that will show up later in the backstage.

Action. After setting the stage in the desired way, they press the record button and narrate the story, by using voice and moving the characters on the screen. When the action is finished, the system shows automatically a preview of the recorded clip, so that children can decide to keep it, if they're satisfied, or delete it and record it again. They can also store the movie clip by using their personal case, or record several clips and compose them in a sequence by using the scene cards. When a sequence of scene cards is connected, the system makes automatically the assembly of the composite movie and shows the preview.

Vision. When the animation making is finished, the movie can be watched on the touch screen or projected on a wide area on the wall, by using a VGA output, to be shared 'cinema style'. It can be stored in the personal case for future visions or it can be exported to be watched on any electronic device, by using a dedicated USB. In this way, children can share their creations inside the school or cultural institution, offer them to friends as a gift, to their parents, or maybe even to grandfathers.

3. Pedagogical research and experimentation

3.1 Preliminary results

In the narrative laboratories performed in a local school and museum results are very promising in terms of engagement of the children in the activity, capability of maintaining the attention during the performing tasks, and feedback gathered from teachers and pedagogues. The laboratories suggested that the instrument has potentials for performing educational activities that are not limited to a single story creation process but capable of stimulating the child to reflect upon the experience and lead to create more complex and articulated forms of narrative. We are currently analyzing with more detail the results by a researcher who takes into account audiovisual materials and the movie clips created by the children.

However, in parallel to the appearance on international markets, the instrument has to be tested in pedagogical projects with a longer duration and different educational settings and goals in order to analyze and show the effectiveness in terms of cognitive development and growth of the child.

3.2 Future works

Several works of research and experimentation (experimental pedagogy, media education) have to be done targeting several environments.

a. *School*: kindergarden and mainstream school, for curricular activities and special needs

b. *Libraries*: educational section dedicated to children and young kids. Goal: education and promotion of reading by combining images from illustrated books and quality animation DVD

c. *Museums and art galleries*: educational section, creative projects on art education

d. *Special therapies*: psycho-motorial therapy, speech therapy, art-based therapy, music therapy

The latter field of research is expected to have a large development with the instrument in future, as the activity of narration through images is a powerful tool already largely used in psychotherapy. Finally, the use of the digital can be combined with other physical activities, allowing psycho-motorial projects, combine the mediated performance with the instrument to theatre forms, and so on.

References

[1] Nkama B. O., *A life of storytelling*, publication of Ministry of Education and Science, Spain (CIDE-CREADE)
[2] Eliade M., *Myth and reality,* New York: Harper & Row, 1963
[3] Estés C. P., *The faithful gardener: a wise tale about that which can never die*, 1995
[4] Calvino I., *Invisible cities*, G. Einaudi, 1972
[5] Jung C. G., *Man and His Symbols*, Longanesi, 1967
[6] Dallari M., *La dimensione estetica della Paideia*, Erickson, 2005
[7] Edwards, C., Gandini, L. & Forman, G., *The hundred languages of children.* Bergamo: Ed. Junior, 2010.
[8] Various authors, *Research in Drama Education: The Journal of Applied Theatre and Performance,* Routledge (Journal)
[9] Calliari P., Degasperi M., *I bambini pensano con le storie*, IPRASE, 2007
[10] i-Theatre website: www.i-theatre.org
[11] Hishii I., *Tangible bits*, MIT, 1997
[12] Hishii I. and alt., *Jabberstamp: embedding sound and voice in traditional drawings*, MIT, 2007
[13] Rodari G., *The grammar of Fantasy – Introduction to the art of inventing stories*, 1974