

“You cannot use my broom! I’m the witch, you’re the prince”:

Collaboration in a Virtual Dramatic Game

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Children as young as three engage in the art of make-believe, exploring the boundaries between reality and fantasy. The transition from the make-believe play of the preschooler to more structured theatricals is evident in childrens’ efforts to set up little plays [14]. One of the most important aspects of drama is that it provides a collaborative type of activity where children engage in a play actively, with several senses. Aristotle refers to this as “enactment”: which means to act rather than to read [7]. However, due to its physical grounding, acting is often seen as an activity done independently from the creation of stories and the writing processes. In fact, creating stories is often regarded as an individual activity and collaboration plays little role in it.

Merging acting, reading and writing into a single collaborative virtual environment, and supporting it, was one of the main goals of the research here presented.

The product of such research is a virtual environment for story creation, *Teatrix*, which aims at providing effective support for young children (7-9 years old) developing:

- their notions of narrative, through the dramatization of several situations;
- and, their ability to take a 2nd and 3rd person perspective across the experience of a wide range of situations.

In this paper, we briefly discuss how children collaborate in *Teatrix*, which is a virtual environment aiming at providing the children with the means for collaboratively creating a story on a virtual stage. The children will create the stories using a set of pre-defined scenes and *dramatis personae* [10] (characters that have specific roles in the play). Children may control the personae (characters) to a certain extent (although some of the characters may be system controlled), and each child expects the story to evolve in reaction to her/his character’s actions. However, their characters must act in a believable and coordinated way, according to their role, in order for the story creation environment to engage the children in an entertaining experience which can meet the child cognitive needs to interpret, understand and interact with the world in terms of stories [4]. And collaboration is an essential ingredient to achieve a final “story/performance” they are proud of.

This paper is organised as follows: first we will describe some of our findings concerning collaboration in dramatic games. Then, we will give a summary of *Teatrix*, describing how it provides support for collaborative story creation. Finally, we will discuss some pending issues and propose some future work.

COLLABORATION IN DRAMATIC GAMES

Our research was grounded on a set of experiences run in the school “*O Nosso Sonho*”. During the experiences we observed children of several ages performing fairy tales in different settings: theatre and

puppet scenarios. The school follows an educational approach that divides by “rooms” the types of activities done by the children. That is, the school provides the children with the possibility of choosing by themselves their preferred daily activities. Drama is one of such activities and one of the most chosen ones (drama is done in the “Dramatic Room”). Children enjoy the dressing up, the painting of their faces to become someone else, the acting, the singing, and even to be in the audience.

So, in order to better understand and influence the creation of a virtual theatre we collected 14 performances done in the “Dramatic Room” (each performance with between 4 to 8 young actors) and observed the interactions between children and with the teacher. This analysis is not trivial as interactions in a dramatic game may occur at different levels, in parallel and between different participants. Children share the same physical environment (the stage) and they have a common goal (the performance).

In the dramatic games, we were able to distinguish two types of interactions between children: (1) “*performance level interactions*” where children interact through their characters by their actions and sentences; and (2) “*co-ordination interactions*”, for example, during performance, a child may signal another one to step in. In the later case, children may provide signals to the others, give orders, make demands or simply inform the others about something. Further, children’s actions are often dictated by their common goal, and co-ordination actions may appear, like for example, in the middle of one performance one child steps out of the stage to find a “little basket” to give to the red Riding Hood. Being collaborative in nature, and as many other collaborative activities (see [5] for an overview of collaborative learning), we can find that dramatic games are influenced by several different factors. In particular:

- The age of the children: we found that 5 to 6 year’s old children did not manage to stay in character easily, and needed a lot of scaffolding from the teacher in order to “act”. Differently, the 7 to 8 year’s old were much more at ease with their characters. This result may stress the importance that perspective taking plays in collaborative activities and the lack of ability to decenter from their own perspective found in the younger groups.
- The group heterogeneity/homogeneity- since the groups performing were quite large (from 4 children to 8) the influence of heterogeneity was not seen very significantly. However, we noticed that our groups with both genders tended to produce better plays than with only male actors (we didn’t have the opportunity to have a female only play). Also, larger groups are more difficult to control, and thus the play tends to be weaker. More research can be done where mixed groups are created (with different ages and different backgrounds).
- Teacher intervention: in our dramatic room the teachers play two essential roles: 1) the stage director, deciding where each child should go, and provide them signals to start or finish; 2) the narrator: it is often the teacher that sets up the scene (“One day, a family that lived...”). Although both these roles can be performed by children (in fact, some children do like to take a lead in coordinating the whole performance) these two activities are usually done by the teacher. We found that, if the teacher is weak in the directives given to the young actors (in two of the performances the teacher had a minimal role in it), the play may turn into something completely different from what had been agreed upon. For example, we had a group performing Hansel and Gretel where half of the children decided they wanted to be wolves and attack the two children in the forest. Another group decided they just wanted to ride motorbikes. Also, interaction between the children, both at the co-ordination and at the performance level, becomes weaker and conflicts tend not to be solved.
- Story/Task: the story to perform also influences the collaboration established as some stories do foster interaction and coordination stronger than others. Since our experiments were all conducted with fairy tales (“The Red Riding Hood, The Three Little Pigs, Hansel and Gretel, and Cinderella) we did not achieve any results on the influence of the story in the collaboration of the children during the dramatic game.
- The audience: we did performances both with and without audience and the interactions between the actors were slightly different in each case. The audience introduces both a critic element in the performance (as their friends may be in the audience) and at the same time a disturbing one. We found that the performances without audience lead to a much better control of the characters but children were not as enthusiastic about it as with audience. In our case, the audience was sometimes too disturbing, and often children from the audience would step in the stage interfering with the whole performance (note that the Drama Room is a classroom and not a theatre).

OVERVIEW OF *TEATRIX*

Taking into account the dramatic games activity of the school “O Nosso Sonho” we designed *Teatrix*, as a game for story creation (see [8] [10]) that follows a theatrical metaphor. The environment is divided in three steps strongly related with the theatrical performances.

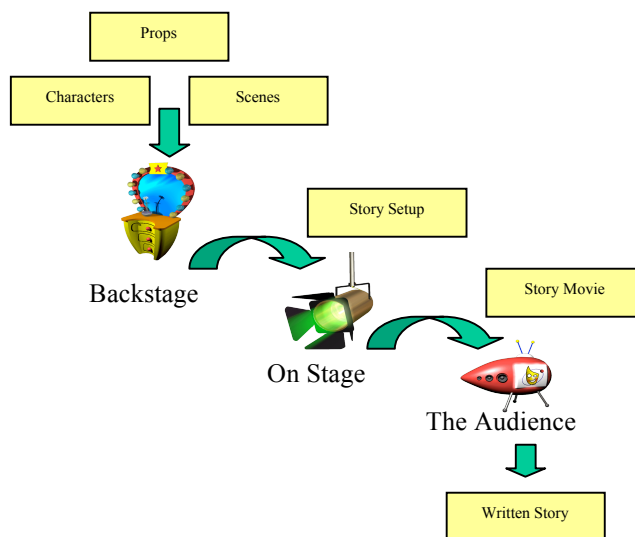


Figure 1- Phases in Teatrix

The first one offers the children the possibility to prepare the scenes, props and characters for each story (in relation with what happens in *the backstage* of a theatre during the preparation of a play).



Figure 2 - Teatrix: Backstage Option

The second step provides the children with the possibility to initiate one story and to start the acting (*on stage* performance). This option is realized in a collaborative 3D world. In this phase, virtual reality technology plays an important role since it provides the children with the means to explore the scenes during the story creation [13]. The story creation only evolves if the children work together to achieve a common goal: their story. From the story creation process a “*film*”-like object is created. This “*film*”-like object offers the children with a product, which they can analyze and even to reconstruct in future performances. Furthermore, the children get much more from an interaction or experience if in the end they will create a meaningful artifact, that they can exhibit as a proof of their individual or collaborative work [11].



Figure 3 - *Teatrix*: On Stage Option

The third option is based on the artifact produced from the story creation process. In this phase, children can be the audience of their own performances and watch their previous performances (as being the *audience or the public* in the theatre). In this option the children have also the possibility to write about the stories previously performed. With this part we want to provide the children with the opportunity of watching and discussing what they’ve produced. By supporting the discussion of the story we aim to promote a better understanding of the characters interactions, and maybe to encourage the reflection of the children about the emotional and intellectual parts of the story [4].

COLLABORATION IN *Teatrix*

A) In the Backstage

The most important activity children have to do collaboratively during the backstage, is the choice of each child’s actors and roles for the play. Children can choose the roles they play in the story, according to a taxonomy of roles proposed by Propp [12]. The roles are:

Villain- the role of the villain is to disturb the peace of the happy family, to cause misfortune, damage or harm. The villain may be a dragon, a devil, a witch, a stepmother, or even a little boy or a girl.

Hero/Heroine- introduced by his/her name indicating his/her status. Propp presents two types of heroes: the seekers, which go in search of a loved element; and the victimized heroes, whom are themselves the victim of the villainy.

Magician (or magic element) has special functions in the story and it can be represented in many forms. For example: (1) an animal (a horse; a bird, etc); or (2) objects out of which the magical helpers appear (a ring; a lantern; etc); (3) objects with magical properties (a ring; a sword; etc) or (4) qualities or capacities given directly to the hero/heroine.

Beloved one and Family, Usually described in the initial situation, and is often subject to harm by the villain.

Donor- (or the provider). It is from this personae that the hero obtains some agent (sometimes magical) which allows the hero to eliminate the misfortune.



Figure 4- Icons representing the roles

Each role has a set of functions associated to it and the combination of the role with the actor makes the “character” that the child will have to control. The interesting aspect of this choice is that children in *Teatrix* do not mind being witches and villains as much as in the “real dramatic game”.

The mechanism for choosing the roles is simple: one child is the responsible for the creating of the settings and the selection of the actors involved in the story. It is usually that child that then initiates the 3D onstage. To do that, she invites the others to select their own characters to control (and thus their role in the story). Once a character is chosen by one of the children, the others cannot chose it anymore. Children see this part as a game and there is normally no negotiation involved. They just want to be involved in it.

B) In the Virtual Stage

In the virtual stage, as in the real stage, collaboration is necessary in order to attain the objective, that is “the performed story”. Children control their characters using mainly the actions the characters can perform. The actions are selected from a set of possible actions associated with the character being controlled. For example, “flying on a broom” can only be achieved by the witch. The choice of the actions is done in a control window (see **Figure 3**). Amongst the possible actions to choose from, there are some that involve the use of an object (which they have to collect and keep). Using certain objects may involve other characters and the result may be something happening to the others. For example, a little boy may use a stick to hit and harm the witch. So, using the control window, the child can control the actions his/her character will perform, even if against the goals established by its role (a child controlling a villain may not want it to harm anyone). Further, at the “performance level”, the interaction between the children is achieved from both the actions that involve other characters, but also through the “*Talk*” action that allows children to put their characters communicating through speech with the others. It is these actions performed by the characters that constitute the fundamental ingredients of the “movie” that they are producing. Thus, they collaborate with the others to make their “joint story” an entertaining story (to be watched in the audience phase).

But interactions may also occur with system-controlled characters, which are characters that exist in the story and that are not controlled by any child. Such characters have their beliefs and goals as a result of the role they play in the story (see [10] for more detail). For example, a villain is parameterized as having the goal of harming the hero.

SOME RESULTS

Teatrix is already installed in a Portuguese school “O Nosso Sonho” and we have been testing it since the middle of March. Children work together in a distributed environment (see [8] and [10] for more details on the distribution mechanism and NIMIS environment) each one controlling his/her own character. Each child is using his own computer/working place (in the NIMIS classroom that means that they have a tablet embedded in the table which is used as interface). Further, as they are all in the same room, they can talk to each other in particular for coordinating their actions in the 3D worlds.

From the first experiences we realized that the roles of the characters is well understood, as well as the whole creation metaphor. In general, children like to play with it (they see it as another game they can play together).

However, the first evaluations also showed that

a) children got a bit disappointed with the control they had over the characters since it did not provide them with the means to develop their character's performances or to fully express their creativity. The problem of controlling characters at different levels has already been addressed by [2] and recently by [15]. Similarly, and to overcome our particular problem, we designed another type of control (the "Hot Seating") that can be seen as a kind of mental control of the character. The "Hot Seating" method is based on research by Dorothy Heathcote [3] on acting in classroom drama. The idea is that a child is seated on a "Hot Seating", and s/he is asked to freeze his/her character's actions. S/he should step out of the character's behaviour and justify why the character is acting in that way. S/he can also inspect the emotional state of the character, its goals and change the behaviour accordingly.

This deeper control of the characters also gives rise to more elaborated interactions between the children, in particular the co-ordination type of interaction. It may also foster children to be more critics of the others performances suggesting them to go into the hot seating. We hope to be able to evaluate the "hot seating" tool during the next couple of Months and determine its impact in the stories created collaboratively.

b) children did most of the coordinating type of interactions by talking (shouting!) to each other over the tables. For example- "I'm following your witch.", or "you cannot use my broom". This fact justifies that in the future we will be working on the creation of a clear and explicit support for "co-ordination level interactions".

DISCUSSION AND FUTURE WORK

The work here presented is still quite preliminary and a lot more needs to be done on the evaluation of the collaborative activities done with *Teatrix*. Further, we are now seeking to understand at what extent we can support the "coodination type of interactions" and if we do really need to support them through the system.

Although children have been playing with *Teatrix* for more than three Months now, we are at present, conducting its formal evaluation. We are also trying to obtain a qualitative assessment method to establish the link between the stories produced in *Teatrix* and the real performances done in the Dramatic Room of the school.

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