

# Supporting Children's Collaborative Authoring: Practicing Written Literacy While Composing Oral Texts

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## ABSTRACT

This paper presents the theory, design and evaluation of a new type of computer-supported collaborative interface intended to help young children practice certain oral language skills critical for later written literacy acquisition. Based on a theory of “emergent literacy”, this paper describes a toy – TellTale – designed to let young children create, share and edit oral language in a way similar to how they will eventually create written language. Two user studies were conducted. The first suggests that paired children of different SES use different social and linguistic strategies to establish cohesion and that purely syntactic measures of narrative coherence are not sensitive enough to describe children's collaborative language play. A second pilot study investigated how groups of children used TellTale. Although results are not conclusive, TellTale also seems to be an engaging interface for group authorship.

## Keywords

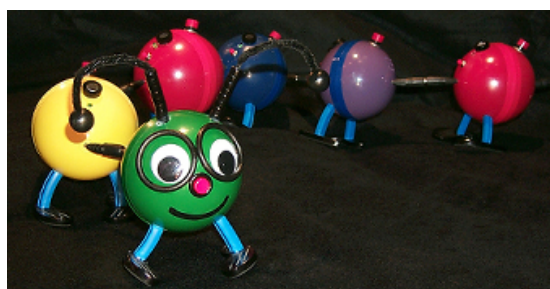
Emergent literacy, collaboration, authoring, language, play, toys, socio-economic strata.

## INTRODUCTION

Old distinctions between collaborative learning, group play and language instruction are changing as both digital media and our relationship with technology evolve. By carefully designing technology-enhanced language toys that give children control over both the structure and content of their language, young children may be able to engage in literacy activities previously thought to be too advanced for their age. This research addresses a particular aspect of this new opportunity.

Specifically, it claims that a tangible technology-enhanced toy – TellTale – that supports collaborative construction of oral language can help children practice certain skills crucial for later written literacy. TellTale's interface is designed to support “externalized meaning-making” (Wells, 1981) and “emergent literacy” (Whitehurst and Lonigan, 1998) through collaborative oral story construction.

## TELLTALE: A TOY TO SUPPORT COLLABORATIVE LANGUAGE PLAY



TellTale (shown at left) is a caterpillar-like toy with five modular, colored body pieces and a head. Children can press a button on each of the five body pieces to record 20 seconds of audio into that body piece. The child can then play back that audio by pressing the body piece's record button. The body pieces detach from each another and can be arranged and rearranged in any order. At any point the child can attach the toy's head to the body in order to hear the entire story (*i.e.* the audio recorded into each of the five pieces) played in sequence. The child can also record over the audio in any body piece at any time. All body pieces are identical in functionality and are

designed to help children reflect upon the structure and content of their stories.

## EVALUATING TELLTALE: TWO STUDIES

While an earlier study (Ananny & Cassell, 2001) found that TellTale's segmented interface successfully encourages individual children to create cohesive narratives, the two studies described here were designed to investigate how children use TellTale during collaborative language play. Due to space restrictions, only very brief descriptions of both studies are given here. For a complete presentation of both studies, please see the on-line version of this paper.

### User study #1: TellTale and Paired Authorship

The goal of this study was to investigate the specific kinds of collaborative techniques paired children use to establish coherence within a jointly-authored TellTale story and, secondarily, how children of different socio-economic strata (SES) may use different strategies to establish narrative cohesion. A total of 22 native-English speaking children (5 low-SES dyads, 6 high-SES dyads) ranging in age from 6,1 to 7,6 participated in the study.

Overall, children from different socio-economic strata tended to engage in different behaviors during collaborative storytelling. An initial analysis of only the quantitative data may interpret low-SES children's high percentage of co-occurring utterances and low percentage of syntactic connectives as an indication that they are less able to engage in good turn-taking behavior and that they are less aware of their co-participant. But the qualitative data suggest that this may not be the case for two reasons: low-SES children appear to be using more subtle (*e.g.* non-syntactic, paralinguistic and non-verbal) strategies to indicate turn-taking during story construction. Also, despite the high percentage of co-occurring utterances in low-SES children's recordings, these children consistently incorporated elements of their partner's utterances concurrently. In contrast, children from high-SES tended to establish coherence using syntactic connectives between consecutive recordings.

The location of conjunctive phrases also suggests an interesting new finding. In both high- and low-SES conditions, children were more likely to use connectives to link the beginning of their recordings to the previous recording and less likely to use connectives to link the end of the recording to the subsequent recording. This reliable pattern suggests that, when children are establishing narrative coherence, they may be more focused on linking with previous content than planning for coherence with future content.

### **User Study #2: TellTale and Group Authorship (A Pilot)**

Although this study was only a pilot investigation, several interesting observations were made about children's collaborative language play with TellTale. A total of 7 children in two groups participated in this study: four 7-year old girls in one group; three brothers aged 3, 5 and 7 in the second group.

In both groups, children worked together to build stories. Children frequently debated exactly what should be recorded in each body piece. At one point in the 7-year old girls' group, the story became complex and there was much debate over exactly what should be said in the fourth body piece. One child wrote with a crayon on a piece of paper exactly what she thought should be said – “so we'll know for sure” – indicating that these children were comfortable mixing written authorship with oral storytelling during the play session. In the other session, a 7-year old creatively used TellTale to solve his brothers' problem. After the 5-year old and the 3-year old had recorded into four of the five body pieces, they expressed concern that there was only one body piece left. The 7-year old brother then held down the record button on the fifth body piece while playing back the first four. In effect, he “copied” the first four body pieces into the fifth, freeing four body pieces for new audio.

## **CONCLUSION**

While TellTale supports only certain kinds of language play, its design and evaluation suggest that there is a new opportunity to use media technology to support children's emergent literacy development and collaborative play. One user study found that children of different socio-economic strata use different strategies to establish cohesion during joint construction of oral stories; and that children's use of conjunctive phrases may indicate a preference to link with previous content over planning for future content. A second pilot study suggests that TellTale may also support authorship among more than two children.

## **ACKNOWLEDGMENTS**

Special thanks to Professor Hiroshi Ishii and Professor Justine Cassell for their collaborative guidance. Thanks also to Dr. Bakhtiar Mikhak and Jean Barnwell for help thinking through and building this project. This work was generously supported by LEGO and the MIT Media Laboratory's Things That Think and Digital Life consortia.

## **REFERENCES**

- Ananny, M. & J. Cassell (2001). “TellTale: A toy to encourage written literacy skills through oral storytelling.” Presentation at Winter Conference on Text, Discourse & Cognition, Jackson, USA. January 28-30, 2001.
- Wells, G. (1981). “Language, literacy and education.” In Wells, G. (Ed.), *Language Through Interaction*. Cambridge: Cambridge University Press.
- Whitehurst, G. & C. Lonigan (1998). “Child development and emergent literacy.” *Child Development* 69(3), pp.848-872.