

Shakespearean Karaoke

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Background Information

- Traditionally, students learn about plays by reading them from a book. However, reading dialogue on paper does not always communicate the various emotions and actions that help people understand the significance of person-to-person interactions.
- Researchers have found that **virtual humans can be effectively used in social interactions and in training situations**, for example:
 - as a real estate agent (Cassell, 2000)
 - as a guide through the solar system (Thorrison, 1997)
 - for learning south Indian social protocols (Babu, Suma, Barnes, & Hodges, 2007)
- Researchers have also investigated the use of **virtual reality in interactive theater**.
 - Slater et al. (2000) built a system that let actors rehearse a play in virtual reality, and found that this led up to successful play performance.
 - Geigel & Schweppe (2004) produced an entire theatrical experience in virtual reality with users controlling actors, scenery, orchestra, and audience.
- We have designed and implemented an application that allows a user to experience a play by acting out a part of Shakespeare's Much Ado About Nothing with a virtual human.
- **Using this system, can a person learn about a play at least as well as he or she can by reading the play?**
- Our hypothesis is that **interacting with the virtual character will lead to a better understanding of the play, or, at the least, will be more enjoyable for participants than the traditional text approach.**

Method

- Participants were randomly assigned into one of two conditions:



Virtual Reality

- Participants study by acting out the scene with a virtual human: the virtual human plays Beatrice while the participant plays Benedick
- The participant's line is displayed on the bottom of the screen
- He or she reads the line out loud and presses a button
- Beatrice responds with her next line



Reading

- Participants are provided with a paper copy of the play
- The participant is free to study the written copy however he or she chooses

- Participants were given the same amount of time in each condition to study the material
- After studying, participants answered 24-question questionnaire about the play, based on lower two levels of Crook's condensation of Bloom's taxonomy:
 - Sixteen questions measured learning on the knowledge level
 - Eight questions measured learning on the application level
- Participants also went through a short interview session, giving their opinions about their method of study

Results

- The only significant difference of scores between conditions was in the **prologue category**.
- Means were **slightly higher in Reading condition** than in VR condition in each category.
- Participants in the reading condition indicated in the interview that reading the material multiple times helped them answer questions correctly.
- Participants in the VR condition commented that they would have answered more questions correctly if they would have been able to act out the scene with Beatrice more than once.

Discussion

- The lack of significant difference in scores in two out of three categories suggests that participants in virtual reality were able to **learn about the scene about as well** as participants in the reading condition.
- One contributing factor to higher means in the Reading condition may be the **repetition of the material that was allowed in the Reading condition, but not in the VR condition**. This is supported by participants' interview comments.

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