

Effects of Quiz-style Information Presentation on User Understanding

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Overview

- Introduce the idea of quiz-style information presentation
 - Information is presented as quizzes
 - Motivated users would keep their attention on receiving information
 - Lead to better user understanding
 - Useful for educational systems
- Experimental results
- Task is presenting biographical facts

Example



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U2 I don't know.

S3 OK. Third hint: He was a German poet and writer.

Example

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Fourth hint: Inspired by travel to Italy, he completed his study of German classicism with Friedrich Schiller.

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Fifth hint: With *The Sorrows of Young Werther* and other works, he became a notable proponent of the “Storm and Stress”.

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U5 Johann Wolfgang von Goethe?

S6 That's right! Congratulations!

Quiz-style information presentation

- Biographical facts are presented as hints in a “who is X?” quiz
- Quiz-style ordering of biographical facts
 - Makes it difficult to name the person
 - Makes the interaction as long as possible
 - Keeps user’s attention for a longer time
- Feedback utterances to facilitate guessing by a user

Quiz-style ordering

Encyclopedic ordering

1. He was a German poet and writer.
2. With *The Sorrows of Young Werther* and other works, he became a notable proponent of the "Storm and Stress".
3. He served for 10 years as a government minister of the duchy of Weimar.
4. Inspired by travel to Italy, he completed his study of German classicism with Friedrich Schiller.
5. He made contributions in the field of natural science.

Most difficult (ambiguous)

He made contributions in the field of natural science.

He served for 10 years as a government minister of the duchy of Weimar.

He was a German poet and writer.

Inspired by travel to Italy, he completed his study of German classicism with Friedrich Schiller.

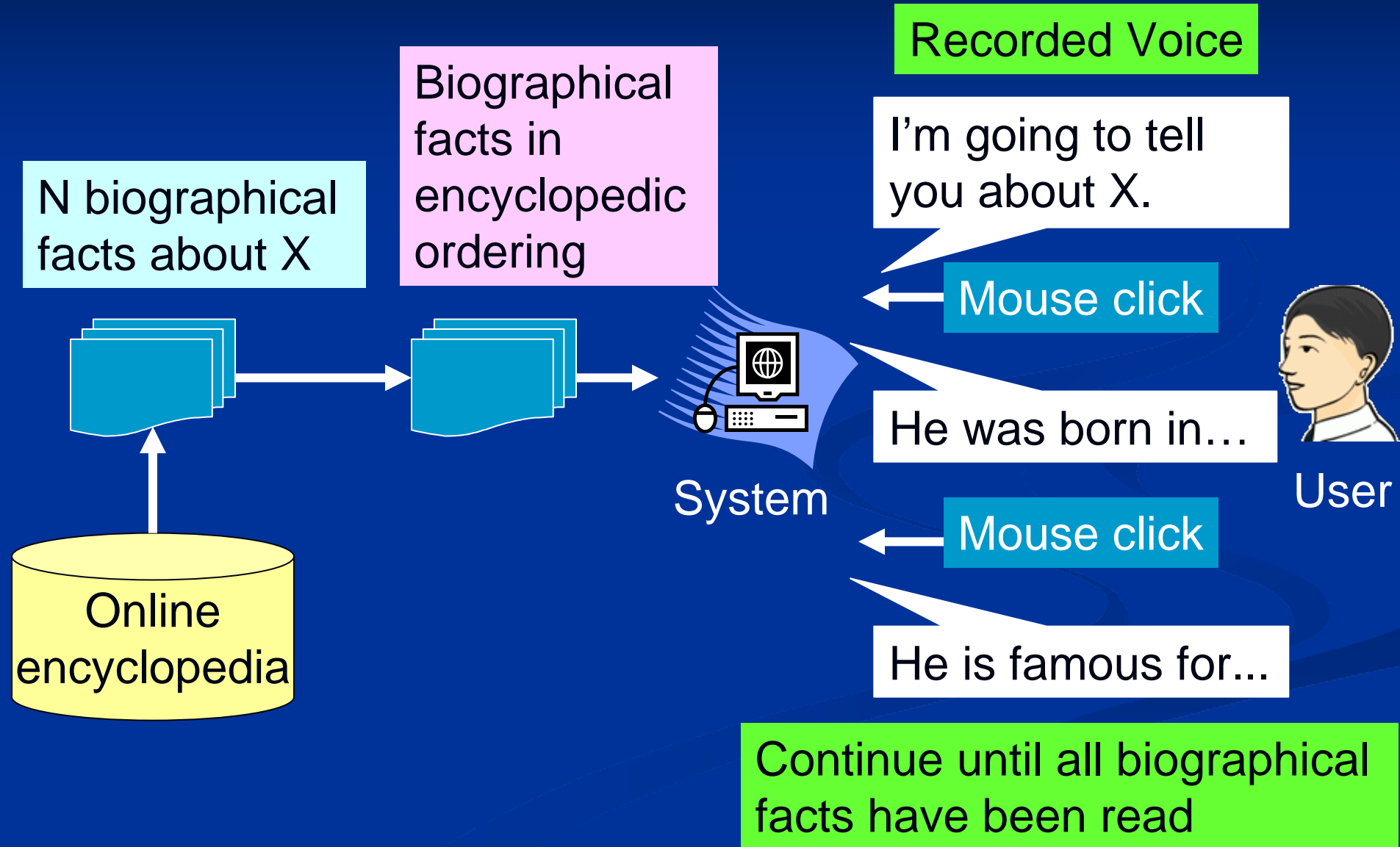
With *The Sorrows of Young Werther* and other works, he became a notable proponent of the "Storm and Stress".

Easiest (definitive)

Experiment

- To verify whether quiz-style information presentation can effectively convey information
- Perform comparison of two information presentation systems
 - **Read-out system**
Reads out the biographical facts in an encyclopedic order
 - **Quiz system**
Reads out the biographical facts in the quiz-style order with feedback utterances

Read-out System



Quiz System

Recorded Voice

Created manually

Biographical facts in quiz-style ordering

N biographical facts about X

Let's start a quiz!
First hint: he was born in...

Type a guess

Close! Second hint: he is famous for...



User

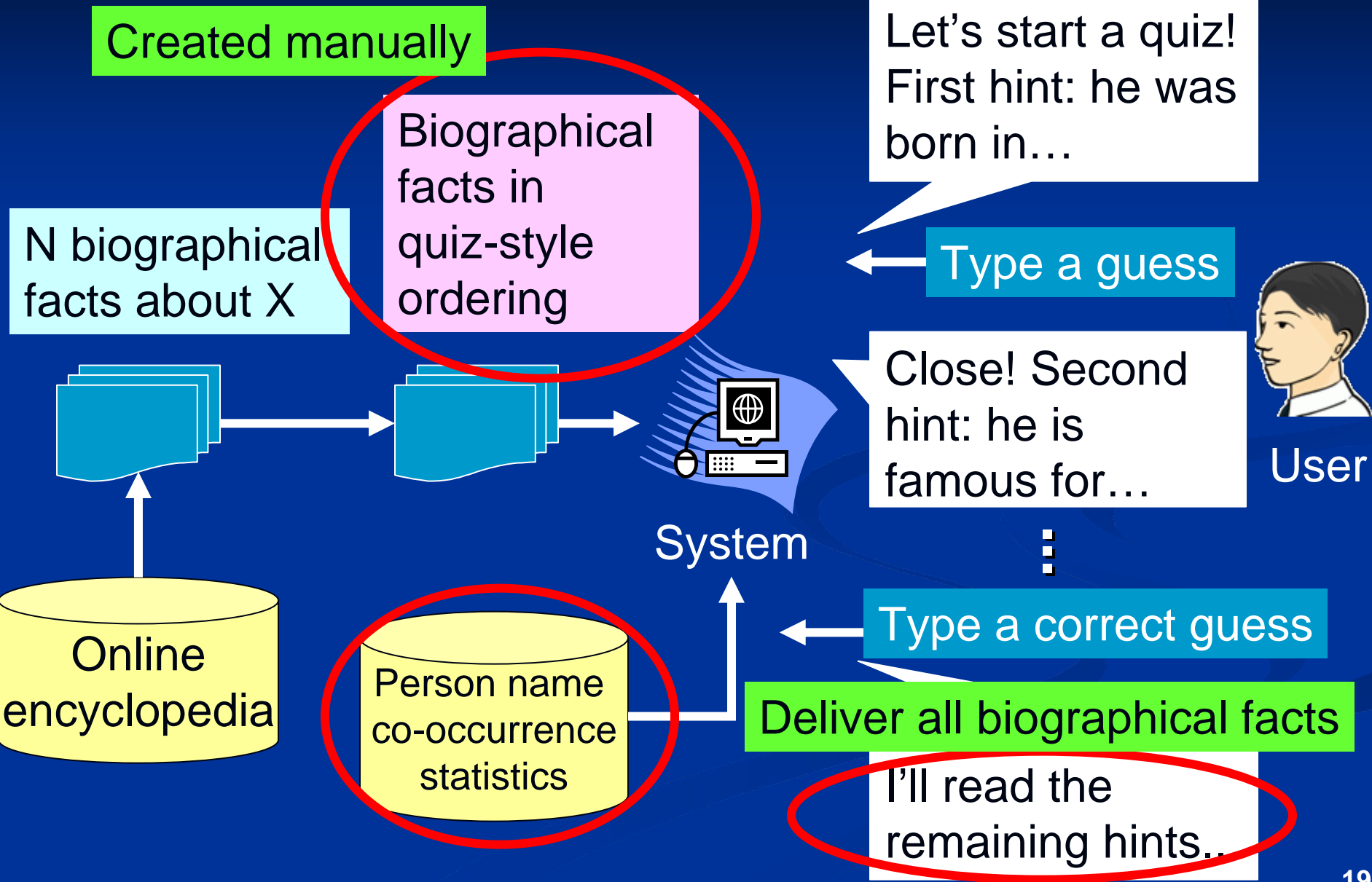
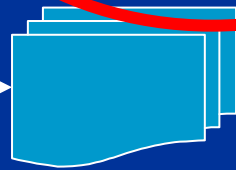
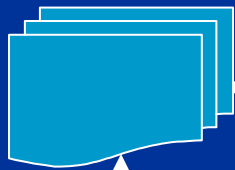
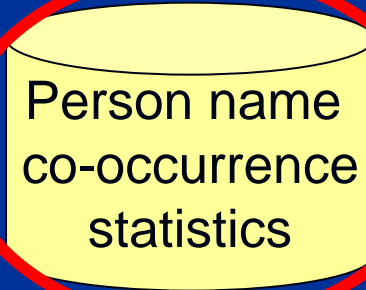
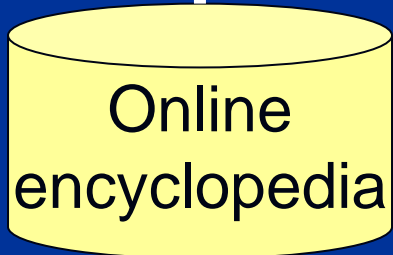
System

⋮

Type a correct guess

Deliver all biographical facts

I'll read the remaining hints...



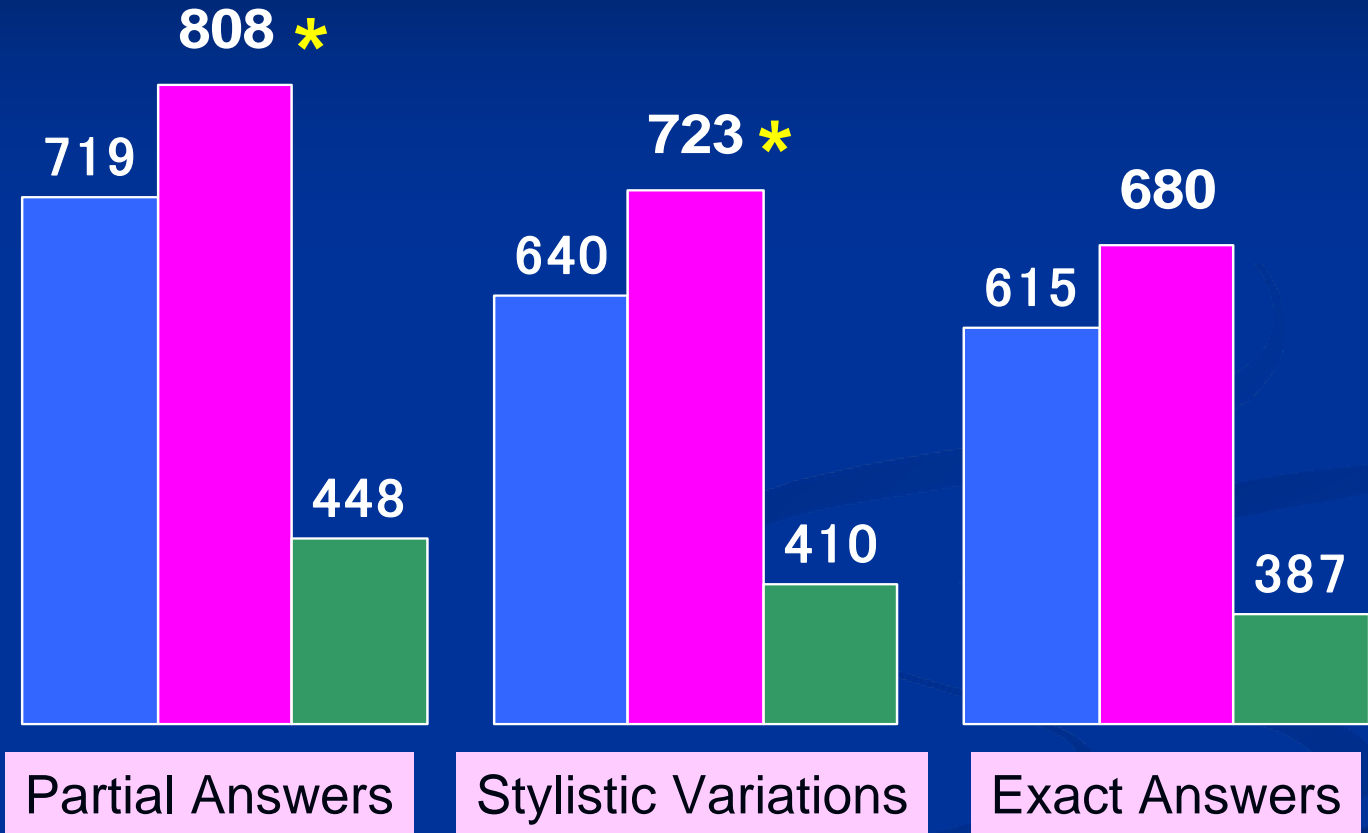
Experimental Setup

- **40 participants** (20 males and 20 females)
- **Procedure**
 - Each participant used both systems alternately
 - Received biographical facts of 20 people in a controlled order
- **Evaluation criteria**
 - User understanding (by a memory test)
 - Subjective evaluation (by a questionnaire)
 - Task completion time

Results (memory test)

Read-out Quiz Non-presented

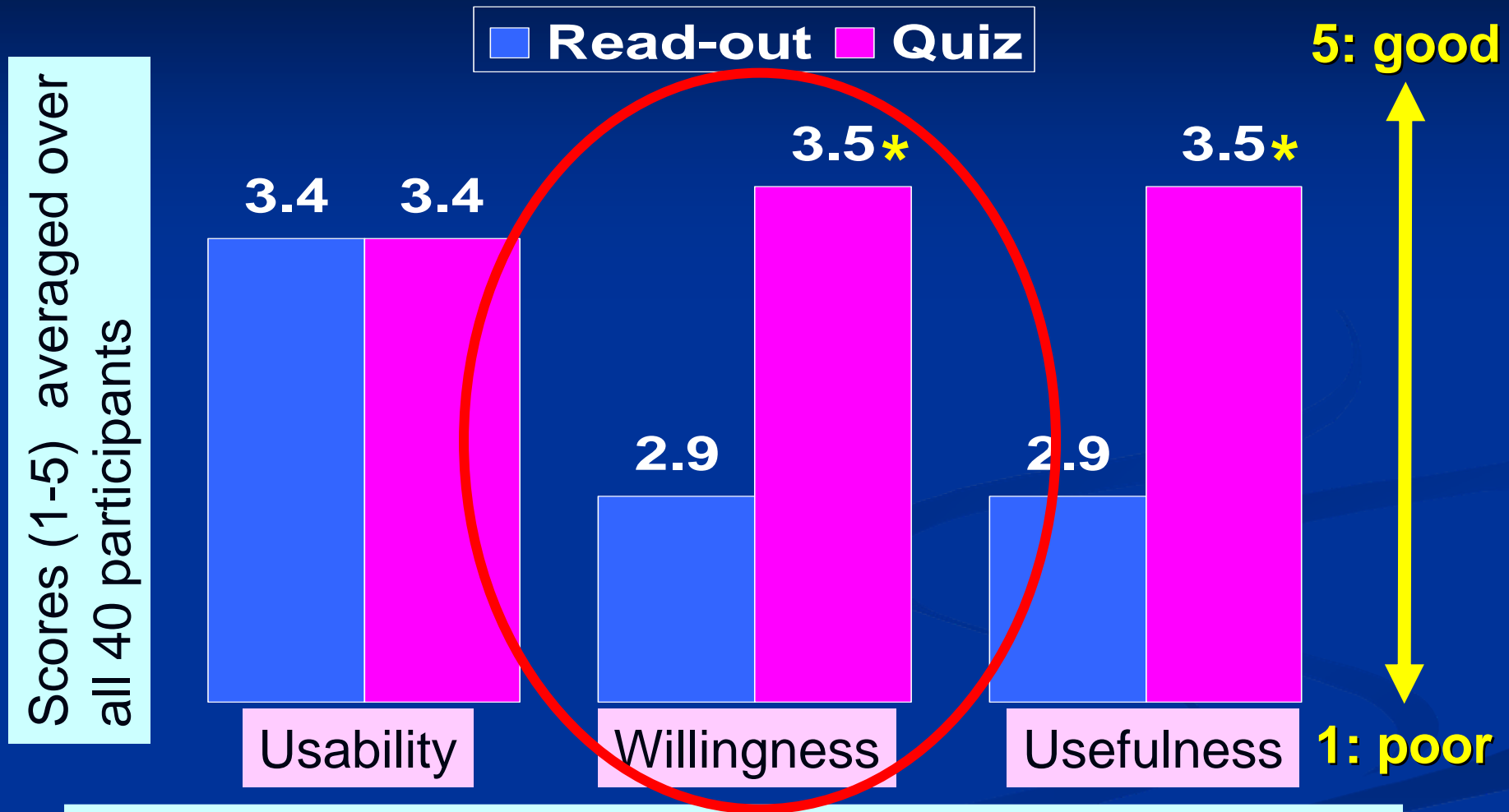
Total number of correct answers



Answer Leniency for grading

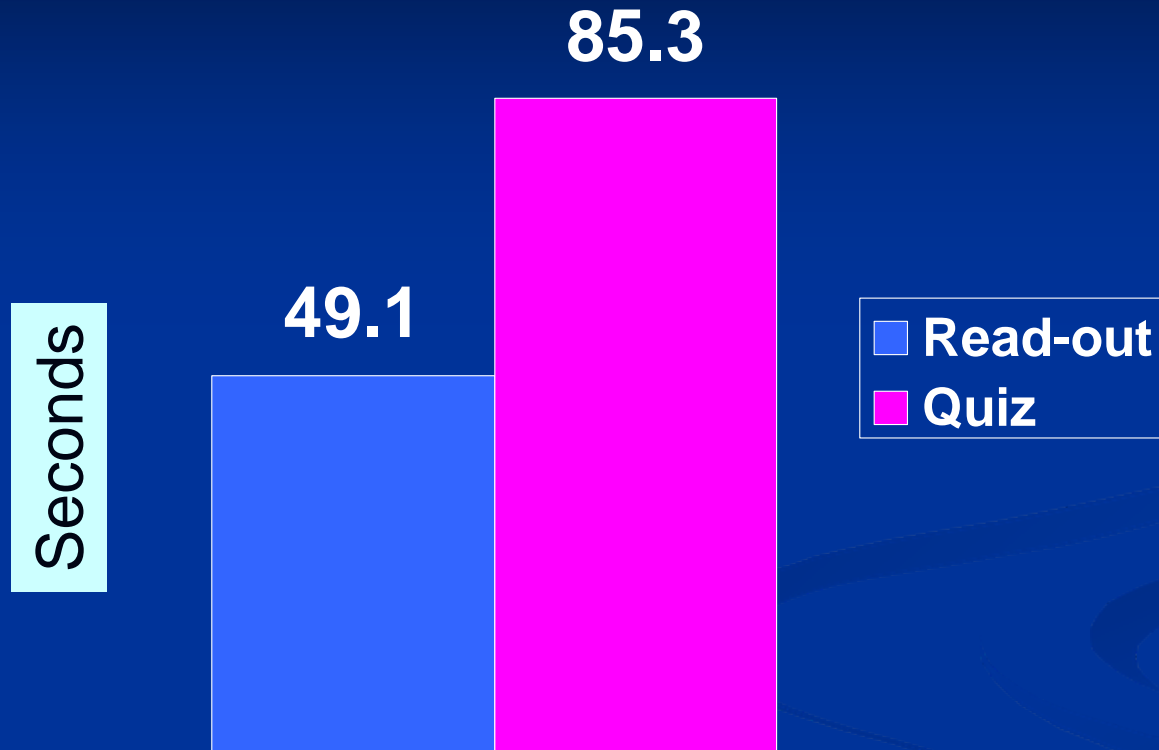
Quiz system achieves better user understanding in terms of memory recall

Results (subjective evaluation)



Participants seem to be more engaged in the interaction with the quiz system

Results (task completion time)



Time taken to present a set of biographical facts

Overall the quiz system consumes more time (for feedbacks, users' thinking and typing)

Conclusion

- Quiz-style information presentation
 - Effectively convey information outperforming the read-out method
 - High engagement is likely to have contributed to the improvement in user understanding
 - Viable alternative when time is not critical
 - Useful for educational systems
- Demo video of our current system

Demo

Quiz-style information
presentation system

Demonstration Movie