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
S1 Who is this?

First hint: He made contributions in the field of natural science.
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S1 Who is this?
   First hint: He made contributions in the field of natural science.

U1 Albert Einstein?

S2 No, not even close!
   Second hint: He served for 10 years as a government minister of the duchy of Weimar.
Example

S1 Who is this?
   First hint: He made contributions in the field of natural science.
U1 Albert Einstein?
S2 No, not even close!
   Second hint: He served for 10 years as a government minister of the duchy of Weimar.
U2 I don’t know.
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<td>U2</td>
<td>I don’t know.</td>
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<td>S3</td>
<td>OK. Third hint: He was a German poet and writer.</td>
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Example

U3 Friedrich von Schiller?
Friedrich von Schiller?

Very Close!

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

Very Close!

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

Hermann Hesse?
Example

U3 Friedrich von Schiller?
S4 Very Close!
   Fourth hint: Inspired by travel to Italy, he completed his study of German classicism with Friedrich Schiller.
U4 Hermann Hesse?
S5 Not quite!
   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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  Fourth hint: Inspired by travel to Italy, he completed his study of German classicism with Friedrich Schiller.

U4 Hermann Hesse?
S5 Not quite!
  Fifth hint: With *The Sorrows of Young Werther* and other works, he became a notable proponent of the “Storm and Stress”.

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

N biographical facts about X

Biographical facts in encyclopedic ordering

Online encyclopedia

System

Recorded Voice
I’m going to tell you about X.

Mouse click
He was born in...

Mouse click
He is famous for...

Continue until all biographical facts have been read
Let’s start a quiz! First hint: he was born in…

Close! Second hint: he is famous for…

Type a guess

Type a correct guess

Deliver all biographical facts

I’ll read the remaining hints...

N biographical facts about X

Biographical facts in quiz-style ordering

Biographical facts

Online encyclopedia

Person name co-occurrence statistics

Created manually

Recorded Voice

User

System
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
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