

A photograph of two students in a laboratory or workshop setting. One student, wearing a plaid shirt, is smiling and looking down at work. The other student, wearing safety glasses and a dark shirt, is focused on a task. They are surrounded by various electronic components and tools on a workbench.

Design for Learning

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Agenda

- Educational Technology
- Pedagogical Conversational Agent
- Design Activity

Educational Technology

Enhance the learning experience of learners

Alleviate the workload of educators

Improve the accessibility of learning opportunities



Learning experience

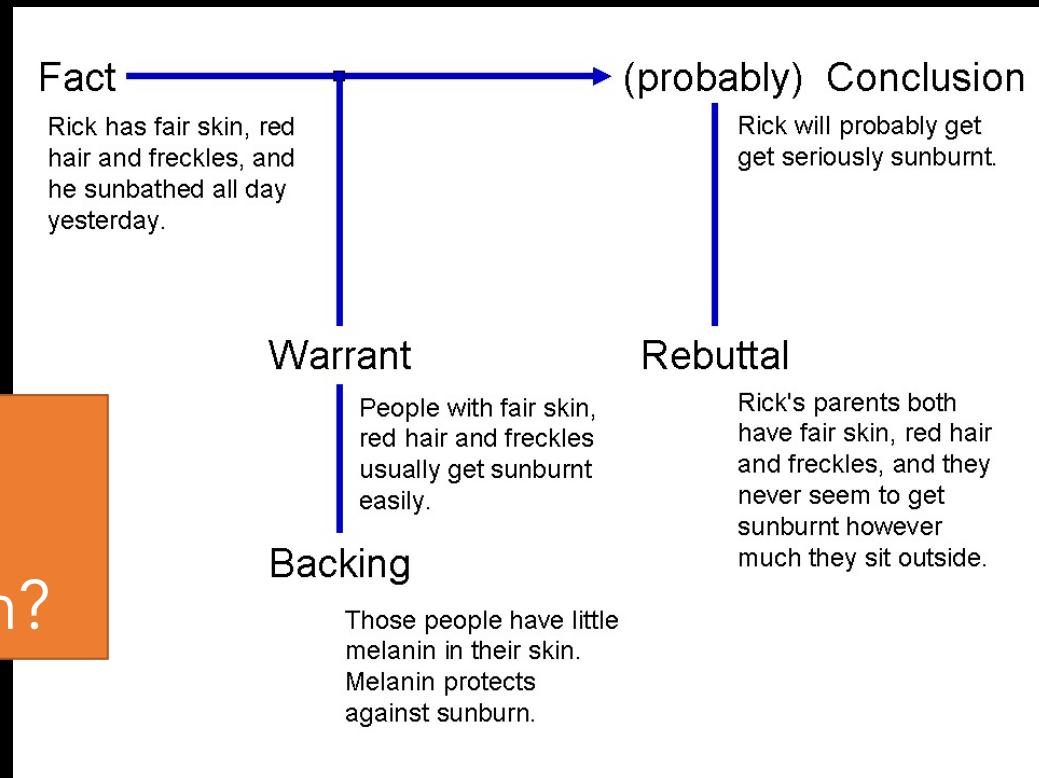
- Individual
- Collaborative

Example: ArguTutor

Thiemo Wambsganss, Tobias Kueng, Matthias Soellner, and Jan Marco Leimeister. 2021. ArgueTutor: An Adaptive Dialog-Based Learning System for Argumentation Skills. Proceedings of the 2021 CHI. DOI:<https://doi.org/10.1145/3411764.3445781>

Toulmin's Argumentation Model

How to design the argumentation learning support system?



by [Chiswick Chap](#)

Text editor to write your review

During or after writing your review you can get input and feedback on your argumentation at any time by clicking [here](#).

A **structured argumentation** is essential when writing a good review.
If you want to help the recipient of your text, you have to convince him that **your points are logical**. The right structure of an argument can help:

According to the *Theory of Argumentation* of Toulmin 1984, an argument should consist of at least two parts:



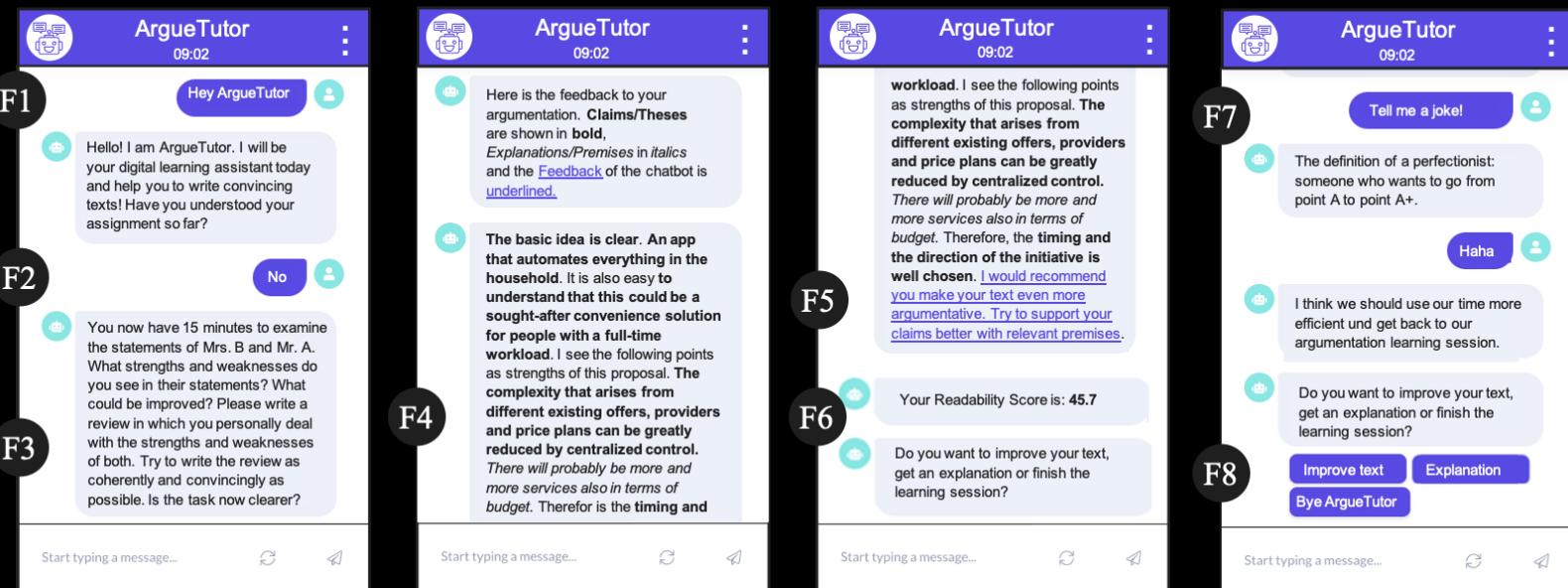
- 1) **Statement (claim).** Example: *It is advantageous for students if they could take a part-time job.*
- 2) **Reason (premise).** Example: *Because in this way they earn their own money and learn how to deal responsibly with it.*

The **reasoning** is always **convincing** if it presents **the facts in detail** and leaves no questions open for the reader. A reason (**premise**) can, for example, be a statistic, a quotation from a known person or a personal experience.

By these examples, your **argumentation becomes more convincing**, because you can clarify your statements with these. A factual, accurate language is more convincing than everyday language.

Tip: Try to support your claim with several premises in order to further back the validity of your statements.

An integrative learning solution



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Design Principle

- From theory and user requirements

Provide guidance and support for argumentative writing embedded within conversational elements and an adaptive argumentative text feedback function to allow students to learn interactively.

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Design Principle

- From theory and user requirements

Employ a web-based conversational agent with a responsive, simple and functional UX to allow students to intuitively use the tool for learning tasks without any distraction.

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Design Principle

- From theory and user requirements

Provide proactive, individual argumentative tutoring and guidance with explanations based on an argumentation theory to allow students to receive theory-based support whenever they need.

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Design Principle

- From theory and user requirements

Provide an adaptive feedback function for argumentative texts with an analysis of individual argumentative components and an individual feedback message to allow students to assess their individual argumentation level anytime.

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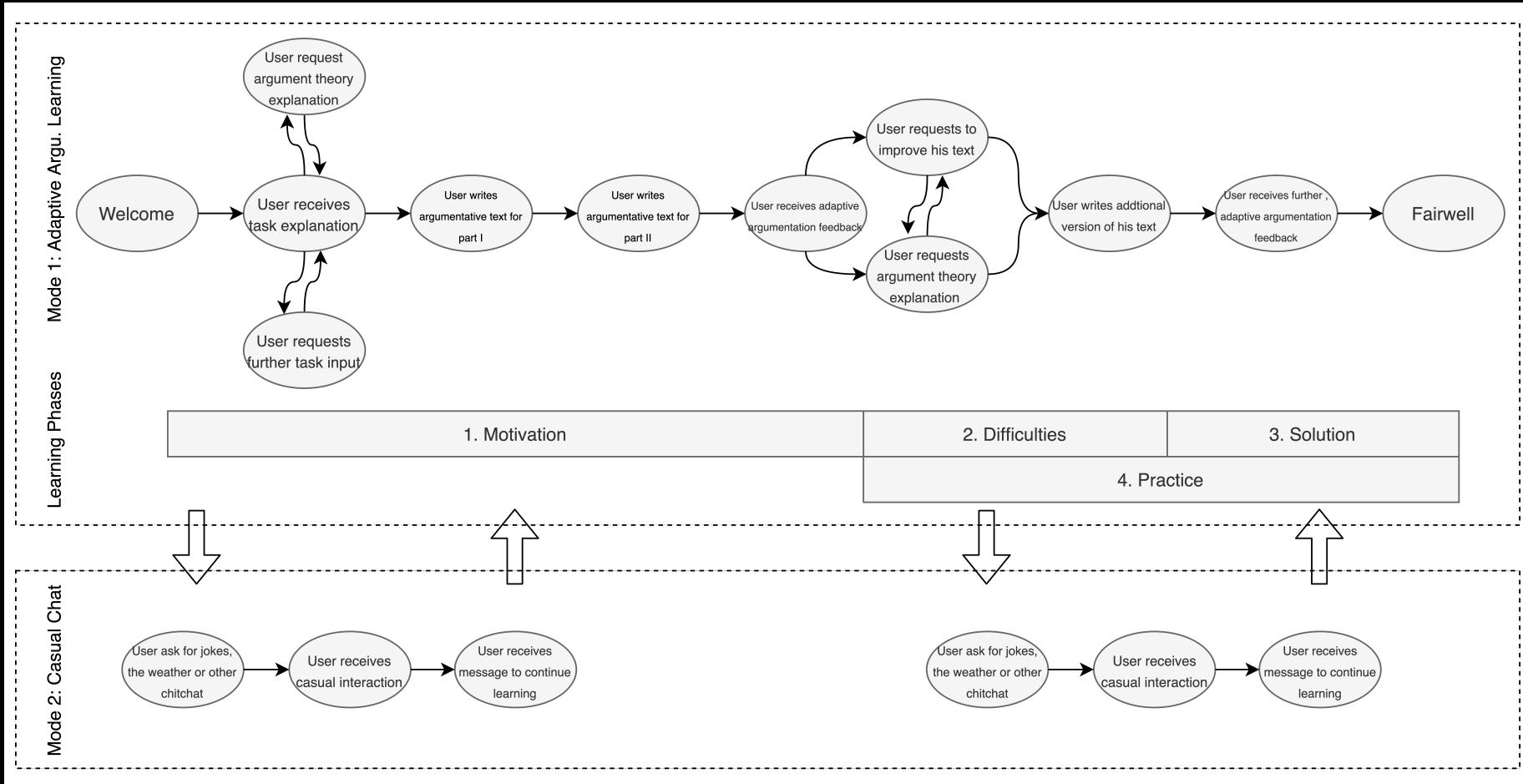
Design Principle

- From theory and user requirements

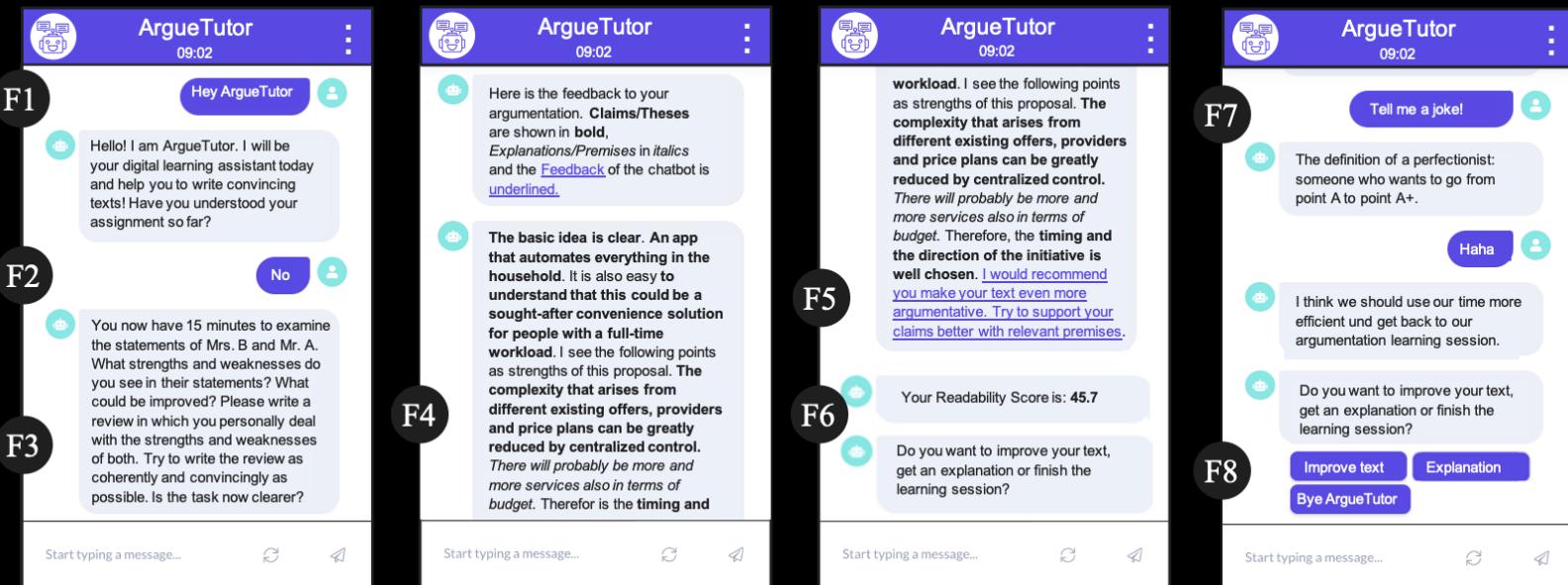
Can a Humorous Conversational Agent Enhance Learning Experience and Outcomes?

Employ a casual chat function with jokes or fun facts to allow students to take a break from the primary learning activity, but motivate them to continue their learning journey.

Thiemo Wambsganss, Tobias Kueng, Matthias Soellner, and Jan Marco Leimeister. 2021. ArgueTutor: An Adaptive Dialog-Based Learning System for Argumentation Skills. Proceedings of the 2021 CHI. DOI:<https://doi.org/10.1145/3411764.3445781>



Improvement Ideas?



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Design for Learning in different context

- Programming
- Scientific inquiry
- ...

Design Activity

Improving the User
experience for
reading scientific
literature



Design Activity

- Step 1: Determine roles
 - Reader
 - Designers
 - Taking notes
 - Moderate time
 - Manage design artifacts

Design Activity

- Step 2: observation study (20min)
 - Readers read a small part of a given paper using thinking-out-loud protocol.
 - Readers report when encountering confusing passages and their actions (including no action) on addressing the confusion.
 - Readers and designers categorize the confusions and potential designs to mitigate the confusion.

Design Activity

Step 3: Prototyping (20 min)

- Determine the target problem;
 - potentially can be supported by AI techniques, such as NLP
- Determine the design objectives
- Use sketches to illustrate the initial design to mitigate the problem

Example Design: ScholarPhi

Next on Thursday

Design for Creativity