The principle of minimal help

Best Practice 2023

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Paolo Maldini: “If I have to make a tackle, I’ve already made a mistake.”

Transfer News @TrustyTransfers - 9m

“I love tackles, man. I want to come out with the most tackles from each game; that’s my aim. I’m not really happy when I come out of a game without many tackles.”

- Wan-Bissaka

Figure 1: Source: Twitter
K. H. Hofmann: “If I have to use a pen during exercise class, I’ve already made a mistake.”

Figure 2: An illustration
What is this all about?

- Research shows that students learn best through active learning.
- Indeed, students should work on their own as much as possible to improve understanding and to develop problem-solving skills.
- The “principle of minimal help” as introduced by the Swiss educationalist Hans Aebli is of particular interest in this context.
- Simply put, the aim of the principle of minimal help is to provide as much help as necessary whilst as little as possible.
The five levels

1. Motivational help
2. Help through feedback
3. General strategic help
4. Content-oriented strategic help
5. Contextual help
Motivational help

- ...is intended to encourage the student and to boost her willingness to continue working.
- ...makes sense if the student’s learning prerequisites are sufficient to solve the problem on her own.
- ...works in 50% of all the cases.

Examples

- “I am convinced that you can (easily) deal with this problem.”
- “I also had problems with this topic, but once you manage to get through it, it is gonna feel great.”
Help through feedback

- ...is intended to inform the student whether her method fits the problem and possibly leads to a correct solution.
- ...is more specific, but does still not provide any content-related information regarding possible upcoming steps.

Examples

- “You are on the right track.”
- “The assumption you made is not sufficiently motivated.”
- “You made a mistake here, just look at it again carefully.”
3 General strategic help

...is intended to support the student with general information on the appropriate strategy without going into detail.

Examples

- “Do you understand all the words used in the problem? What are you supposed to show?”
- “What was the topic of the lecture?”
- “Do you know any similar problems? How was it done there?”
4 Content-oriented strategic help

• ...is intended to provide general or frequently used solutions for the respective problem.
• Compared to the previous level, these hints are supposed to be more task-based.

Examples

• “Make a drawing or a visual representation.”
• “Write down an equation.”
• “Make a smart guess and test.”
5 Contextual help

- is intended to give specific information on how to find a solution for the task at hand.
- However, the student potentially has to take more steps or implement the help to reach the final solution.

Examples

- “Try to use Stoke’s theorem here.”
- “The determinant of your matrix is supposedly non-zero. What does that mean and how can you proceed from there?”
How to use the principle of minimal help?

1. motivational help $\rightarrow$ 2. feedback $\leftrightarrow$ 3. general strategic help $\rightarrow$ 4. content-oriented strategic help $\rightarrow$ 5. contextual help

- In order to interfere as little as possible with the learning process, one should act at the lowest possible level.
- One should not strictly follow the system: if the student has a proper understanding problem, it makes little sense to just give motivational help.
Student: “I just don’t understand what I’m supposed to do with this exercise. Can you please help me.”

(a) “Proceed as follows: Rewrite the first equation in the form $x = \ldots$ Then replace $x$ in the other equations with this term.”

(b) “Just read through the corresponding passage in the lecture notes.”

(c) “Think a little longer. How did we learn to solve such equations? If you don’t get any further, please get in touch again.”

(d) “That is not surprising. The problem is difficult. First isolate $x$ and then substitute the result for $x$ in the other equations.”
Student: “I am done with Exercise 6, but my solution makes no sense. I’ve been looking for a mistake for a while now without success...”

(a) “Please explain me how you approached the problem. Maybe we find an error in your reasoning.”

(b) “Finding mistakes is a fundamental skill in this subject. So, unfortunately, I can’t help you with that.”

(c) “Please give it another try. Maybe you will find the error. Otherwise please get in touch again.”

(d) After viewing the solution: “I understand why you didn’t find any mistake. Think about what the squaring does here.”
The principle of minimal help in real life

The principle of minimal help is an essential part of many guidelines for learning/teaching/tutoring at German-speaking universities:

- FU Berlin
- TU Darmstadt
- Universität Hamburg
  
- Universität Graz
- Universität Bern
Thank you for your attention!