Design Worked Example with Tracing Method for Learning Geometry

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ABSTRACT

Hand gesture, finger tracing, or pointing are often used when we delivering or understanding information. A number of research suggests the effectiveness of tracing strategy. This paper attempts to focused on providing more examples of the method in designs of worked examples for learning mathematics. First of all, the worked examples are designed by minimising extraneous cognitive load that can be done by following the principles of instructional design based on cognitive load theory. The worked example should avoid split-attention, expertise reversal and redundancy effect. When choosing tracing as the added method in learning by examples, the tracing instruction should be given explicitly, not only cued or observing. This means that the learner should use his/her index finger to touch and trace the learning material. Secondly, instruction on tracing should provide in bracket below each step of worked example. Thirdly, each individual may have a unique traceability. Therefore, additional arrows, lines or curves must not be added to the worked example. Furthermore, the tracing method can be used not only in geometry but also in algebra. Fourthly, tracing method might work better for high element interactivity. Fifthly, the size of the tracing action needs to consider the level of expertise. Since there might be numerous designs of worked examples in mathematics, future research could help teachers on deciding when and how to use tracing method.

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