



Lesson Ideas and Resources for Developing Thinkers

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Logic to the Rescue

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|-----------------------------|---|------------------------------|--------------------------------------|
| the problem | instructions to the group | the solution | follow-up activities |
|-----------------------------|---|------------------------------|--------------------------------------|

If a person says, "I am lying at this moment", is he lying or telling the truth?

Pose that question to your students. Allow them to discuss an answer. After they reach a consensus, or give up in frustration, explain that it is impossible to know. If the speaker is telling the truth, he is lying because he is not lying, and if he is lying, he is telling the truth because he is lying. Since it is not possible to simultaneously lie and tell the truth, the statement is a true paradox (something that is self-contradictory and cannot be). When logically analyzing a problem, one tries to identify and eliminate such impossibilities. To paraphrase Arthur Conan Doyle's Sherlock Holmes, "After you eliminate the impossible, whatever remains, no matter how improbable, must be true." From this activity, students will learn how to eliminate the impossible.

To illustrate, here is a more complex problem for your students to work through. I adapted it from one presented by mathematician [Raymond Smullyan](#) in his book, [What Is the Name of This Book? The Riddle of Dracula and Other Logical Puzzles](#) (Prentice-Hall, 1978). Smullyan presents his version as #86. It is printed on page 73 of the hardbound edition.

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