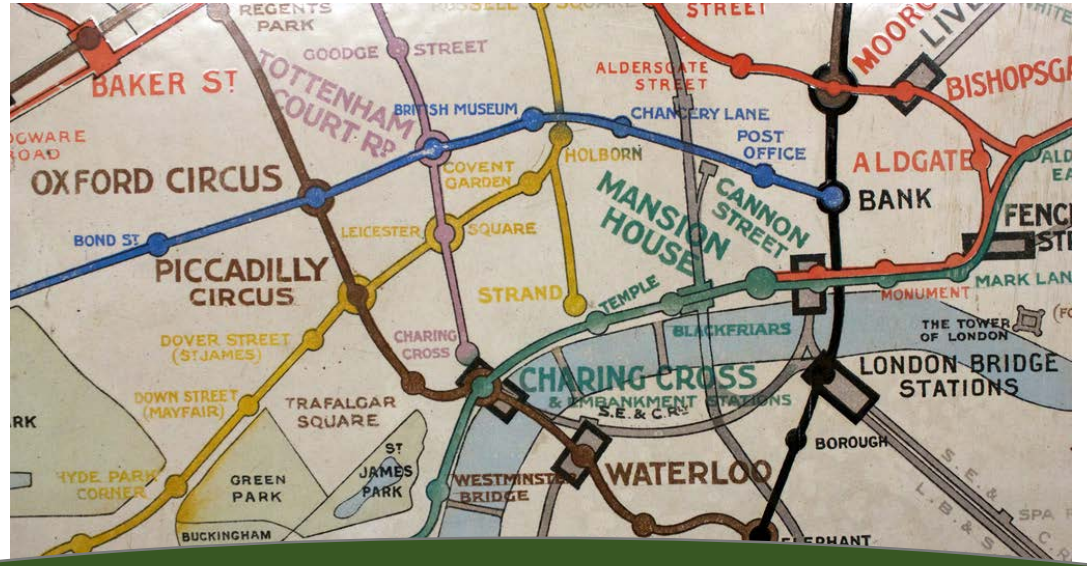
Argument Mapping to Enhance Critical Thinking



Introductions

Jeanne Ryan – MSTC
Dona Warren – UWSP

Critical Thinking and You

Introduction to Argument Mapping

Practice Argument Mapping

Applications of Argument Mapping

Critical Thinking and You

Critical thinking is "purposeful, reflective judgment which manifests itself in reasoned consideration of evidence, context, methods, standards, and conceptualizations in deciding what to believe or what to do."

(Peter Facione, 2015, "Critical Thinking What It Is and Why It Counts," http://www.insightassessment.com/Resources/Critical-Thinking-What-It-Is-and-Why-It-Counts)

What are your experiences with critical thinking in your classroom?

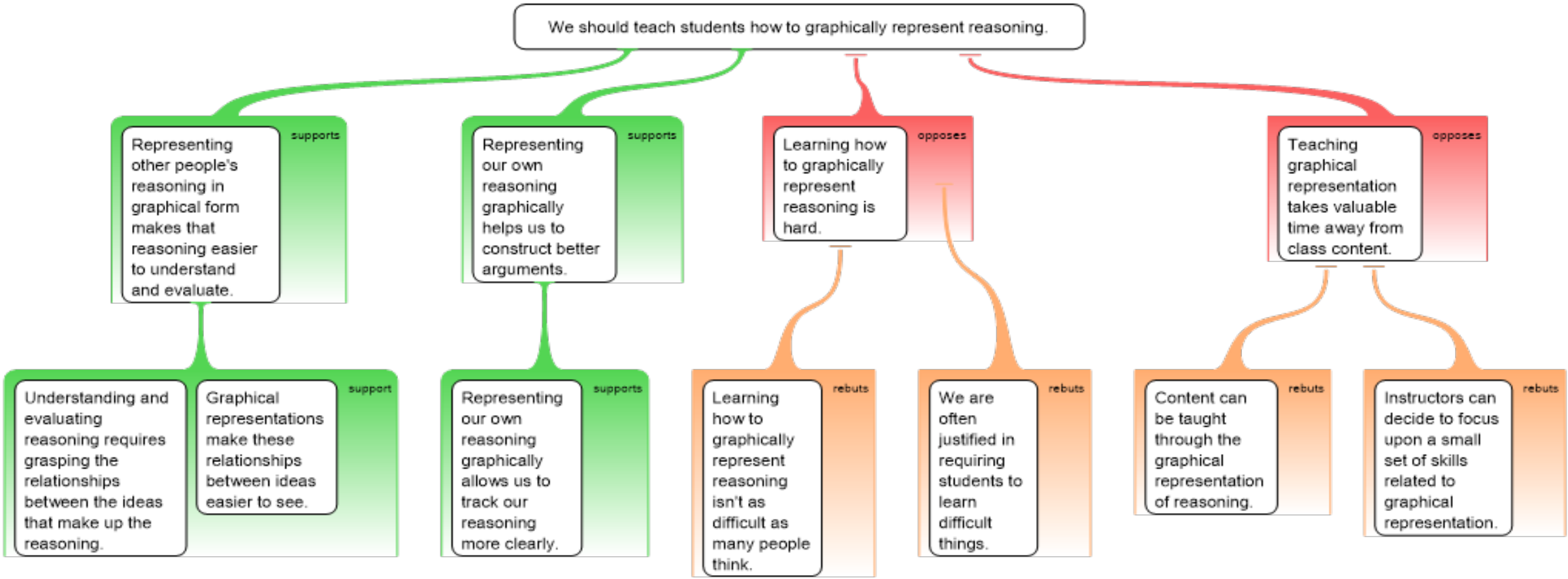
Critical Thinking and You

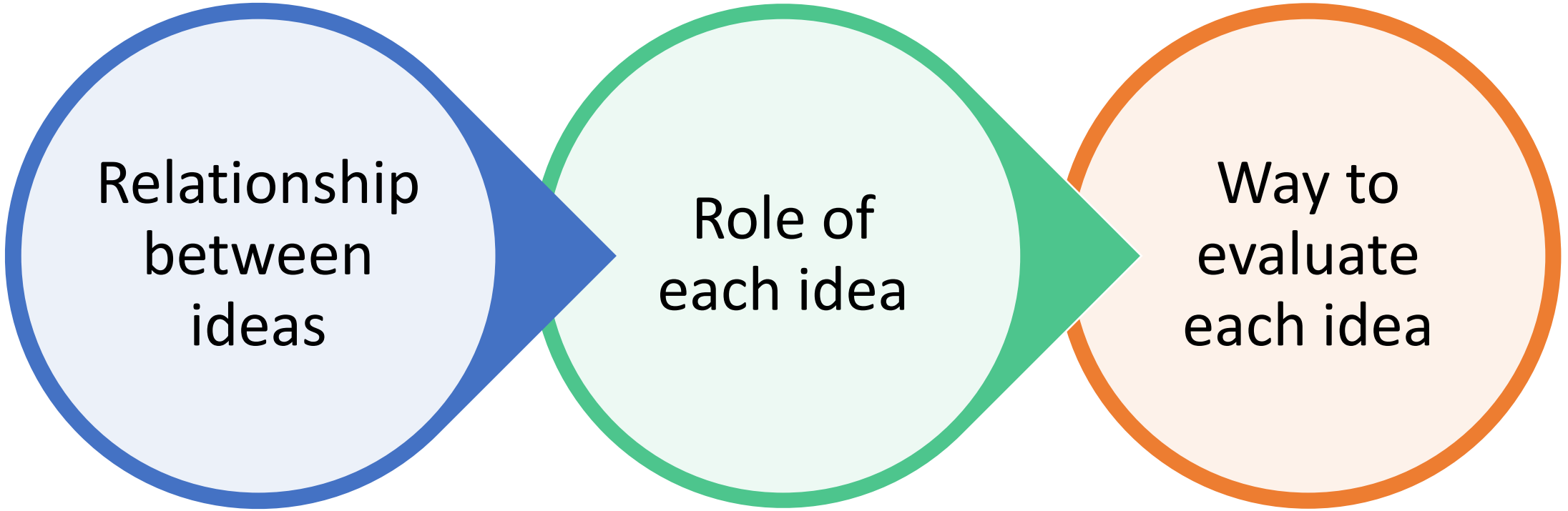
Introduction to Argument Mapping

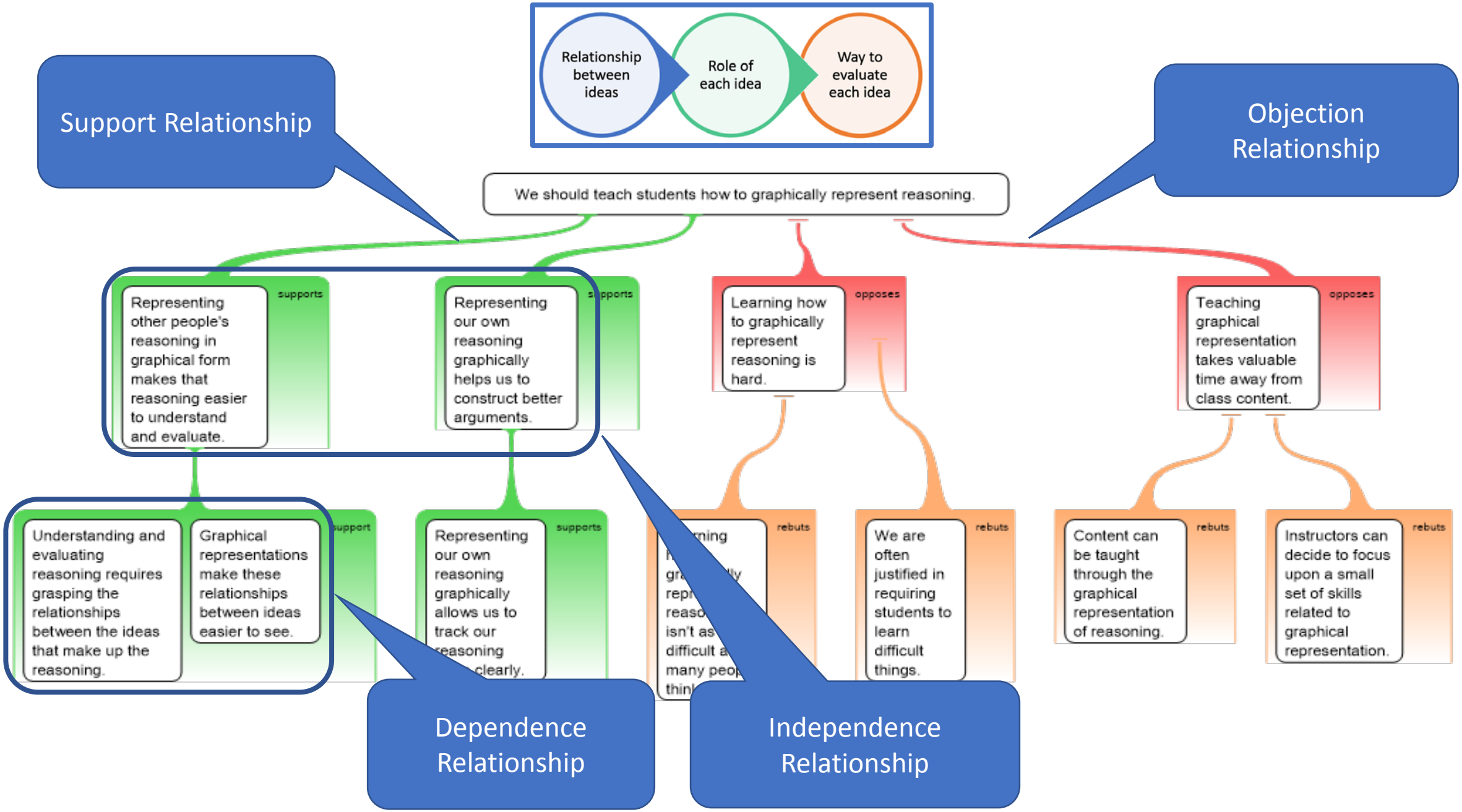
How can we help our students to reason better? What methodology should we employ? Well, first of all, understanding and evaluating reasoning requires grasping the relationships between the ideas that make up the reasoning, and graphical representations make these relationships between ideas easier to see. It follows from this that representing other people's reasoning in graphical form makes that reasoning easier to understand and evaluate. Additionally, representing our own reasoning graphically helps us to construct better arguments because it allows us to track our own reasoning more clearly. It follows from this that we should teach students how to graphically represent reasoning. Of course, there are two common objections to this approach: the claim that learning how to graphically represent reasoning is hard and the concern that teaching graphical representation takes valuable time away from class content. Neither of these objections is successful. Learning how to graphically represent reasoning isn't as difficult as many people think, and even if it were, we are often justified in teaching students things that are difficult to learn. Furthermore, it's a mistake to think that teaching graphical representation takes time away from class content because content can be taught through the graphical representation of reasoning and because instructors can decide to focus upon a small set of skills related to graphical representation.

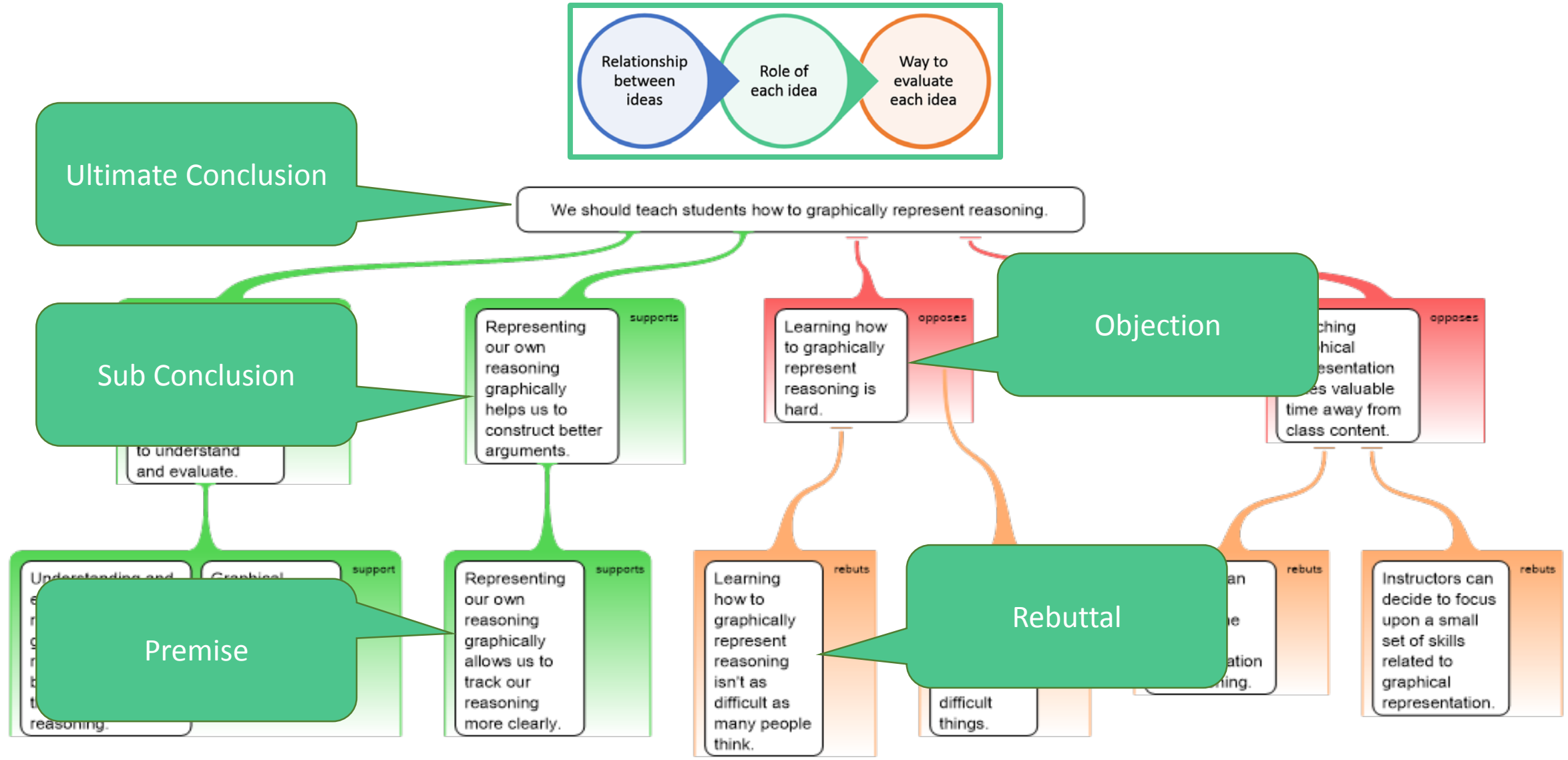
How might you represent this argument graphically?

How can we help our students to reason better? What methodology should we employ? Well, first of all, understanding and evaluating reasoning requires grasping the relationships between the ideas that make up the reasoning, and graphical representations make these relationships between ideas easier to see. It follows from this that representing other people's reasoning in graphical form makes that reasoning easier to understand and evaluate. Additionally, representing our own reasoning graphically helps us to construct better arguments because it allows us to track our own reasoning more clearly. It follows from this that we should teach students how to graphically represent reasoning. Of course, there are two common objections to this approach: the claim that learning how to graphically represent reasoning is hard and the concern that teaching graphical representation takes valuable time away from class content. Neither of these objections is successful. Learning how to graphically represent reasoning isn't as difficult as many people think, and even if it were, we are often justified in teaching students things that are difficult to learn. Furthermore, it's a mistake to think that teaching graphical representation takes time away from class content because content can be taught through the graphical representation of reasoning and because instructors can decide to focus upon a small set of skills related to graphical representation.




Relationship between ideas
Role of each idea
Way to evaluate each idea


Relationship between ideas
Role of each idea
Way to evaluate each idea
Support Relationship
Objection Relationship
We should teach students how to graphically represent reasoning.
Representing other people's reasoning in graphical form makes that reasoning easier to understand and evaluate.
supports
Representing our own reasoning graphically helps us to construct better arguments.
supports
Learning how to graphically represent reasoning is hard.
opposes
Teaching graphical representation takes valuable time away from class content.
opposes
Understanding and evaluating reasoning requires grasping the relationships between the ideas that make up the reasoning.
Graphical representations make these relationships between ideas easier to see.
Representing our own reasoning graphically allows us to track our reasoning clearly.
supports
rebuts
We are often justified in requiring students to learn difficult things.
rebuts
Content can be taught through the graphical representation of reasoning.
rebuts
Instructors can decide to focus upon a small set of skills related to graphical representation.
rebuts
Dependence Relationship
Independence Relationship


Relationship between ideas
Role of each idea
Way to evaluate each idea
Ultimate Conclusion
We should teach students how to graphically represent reasoning.
Sub Conclusion
Objection
Premise
Rebuttal
to understand and evaluate.
Representing our own reasoning graphically helps us to construct better arguments.
supports
Learning how to graphically represent reasoning is hard.
opposes
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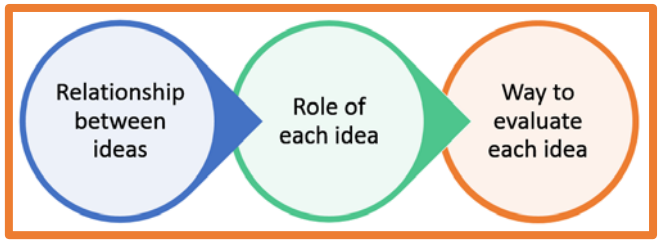


Has the argument given us to reason to believe this?

We should teach students how to graphically represent reasoning.

Representing other people's reasoning in graphical form makes that reasoning easier to understand and evaluate. — supports

Representing our own reasoning graphically helps us to construct better arguments. — supports

Learning how to graphically represent reasoning is hard. — opposes

Teaching graphical representation takes valuable time away from class content. — opposes

Understanding and evaluating reasoning requires grasping the relationships between the ideas that make up the reasoning.

Graphical representations make these relationships between ideas easier to see. — support

Representing our own reasoning graphically allows us to track our reasoning more clearly. — supports

difficult as many people

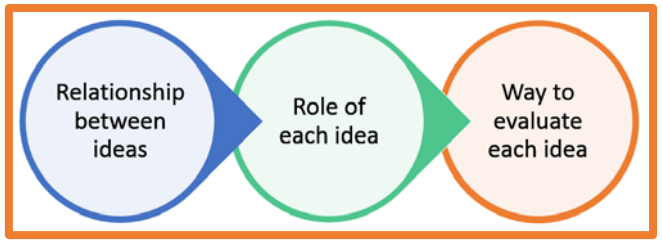
difficult things. — rebuts

Content can be taught through the graphical representation of reasoning. — rebuts

Instructors can decide to focus upon a small set of skills related to graphical representation. — rebuts

Is this inference strong?

Is this true?

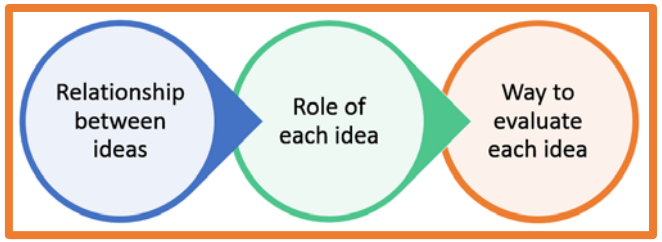


We should teach students how to graphically represent reasoning.

- Representing other people's reasoning in graphical form makes that reasoning easier to understand and evaluate. — supports
  - Understanding and evaluating reasoning requires grasping the relationships between the ideas that make up the reasoning.
  - Graphical representations make these relationships between ideas easier to see. — support
- Representing our own reasoning graphically helps us to construct better arguments. — supports
  - Representing our own reasoning graphically allows us to track our reasoning more clearly. — supports
- Learning how to graphically represent reasoning is hard. — opposes
  - Learning how to graphically represent reasoning isn't as difficult as many people think. — rebuts
  - We are often justified in requiring students to learn difficult things. — rebuts
- Teaching graphical representation takes valuable time away from class content. — opposes
  - …rs can …o focus …mall …ills …o …al representation. — rebuts

An objection to the connection

An objection to the idea



We should teach students how to graphically represent reasoning.

Representing other people's reasoning in graphical form makes that reasoning easier to understand and evaluate. — supports

Understanding and evaluating reasoning requires grasping the relationships between the ideas that make up the reasoning. — support

Graphical representations make these relationships between ideas easier to see. — support

Representing our own reasoning graphically helps us to construct better arguments. — supports

Representing our own reasoning graphically allows us to track our reasoning more clearly. — supports

Learning how to graphically represent reasoning is hard. — oppose

If something is hard to learn then we shouldn't teach it to students. — oppose

Learning how to graphically represent reasoning isn't as difficult as many people think. — rebuts

We are often justified teaching students things that are difficult to learn. — rebuts

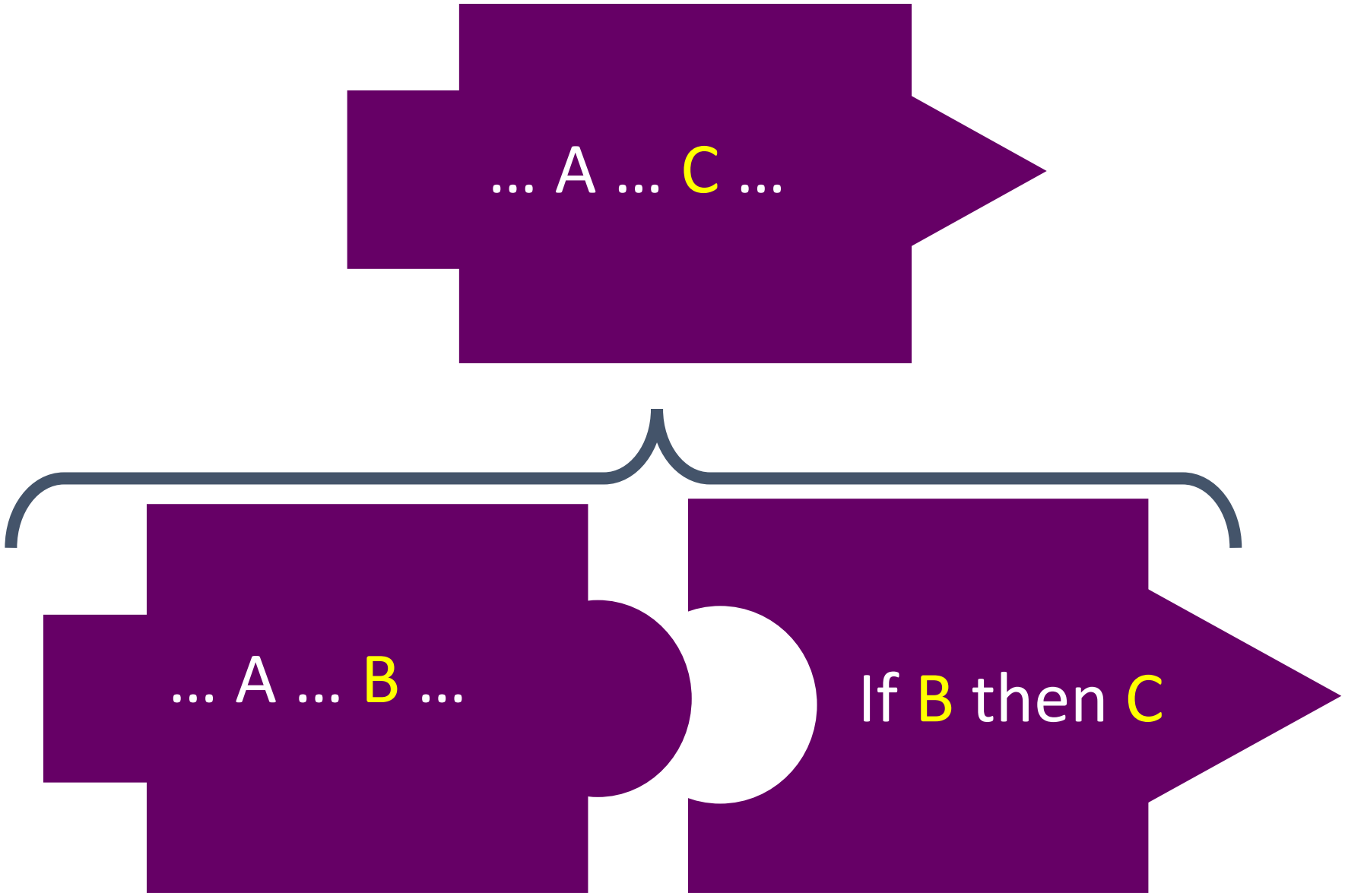
Teaching graphical representation takes valuable time away from class content. — opposes

Content can — rebuts

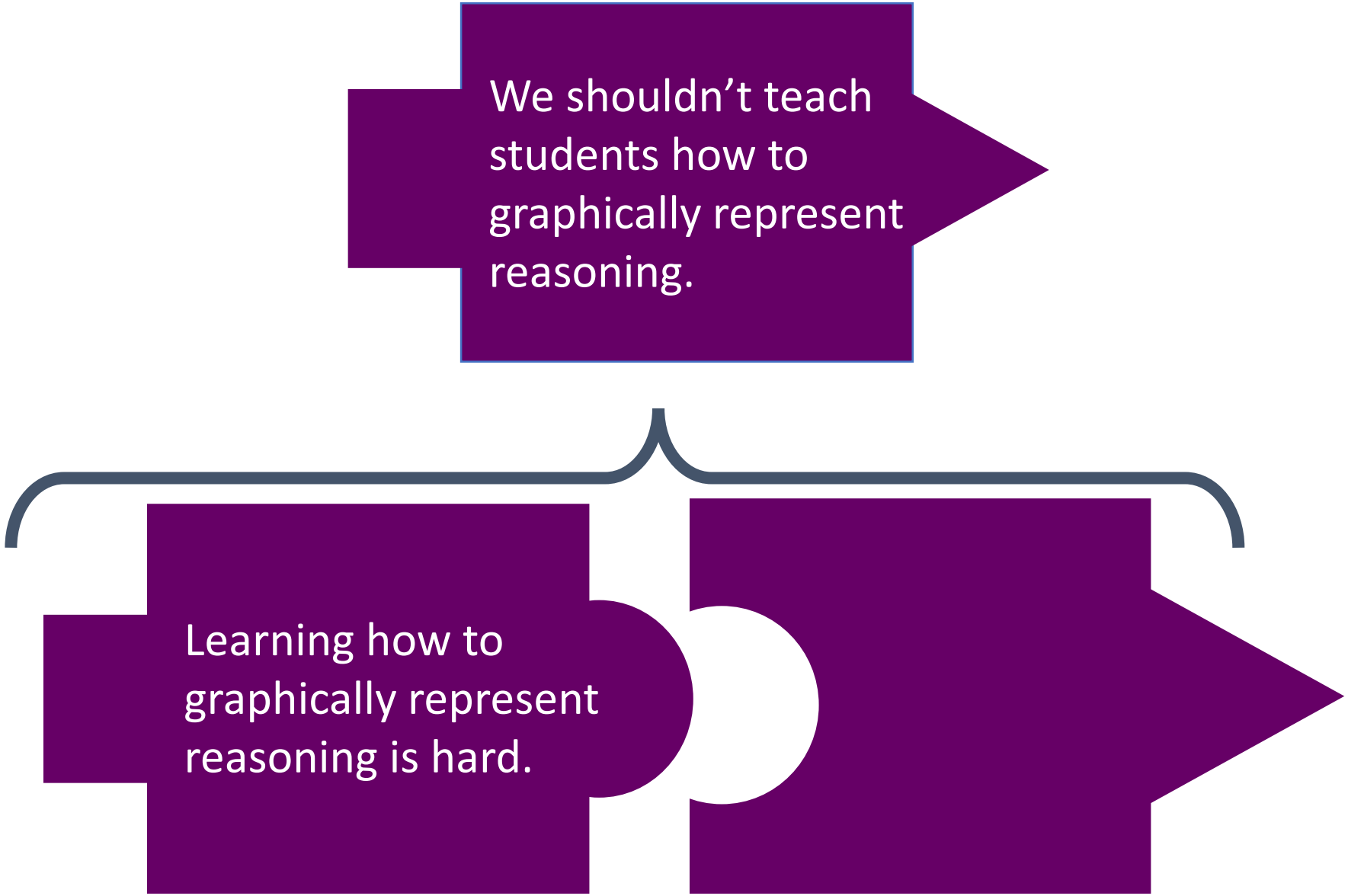
Instructors can — rebuts

An objection to the connection is an objection to a hidden assumption.

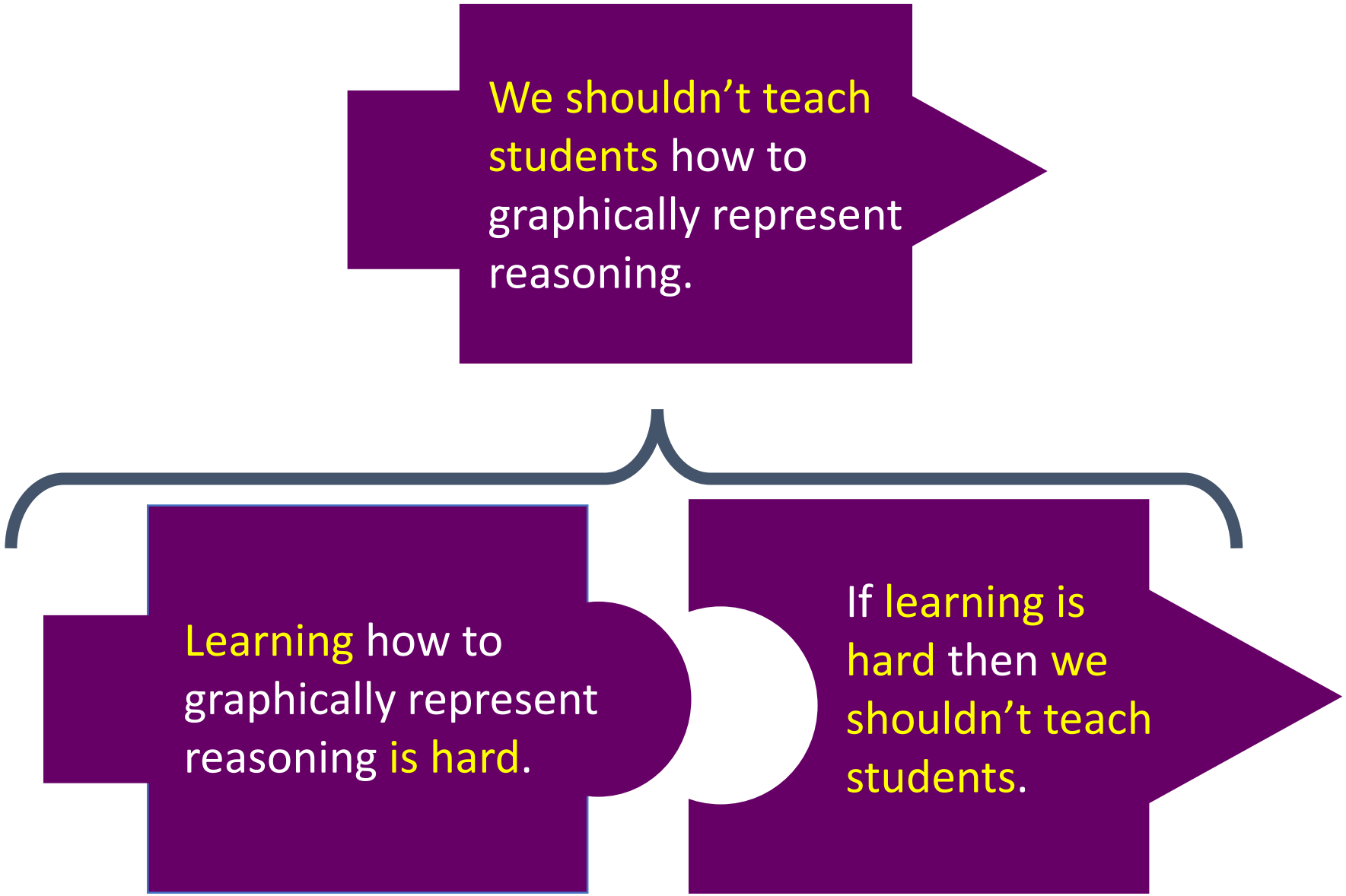
Uncovering Hidden Assumptions



Uncovering Hidden Assumptions



Uncovering Hidden Assumptions



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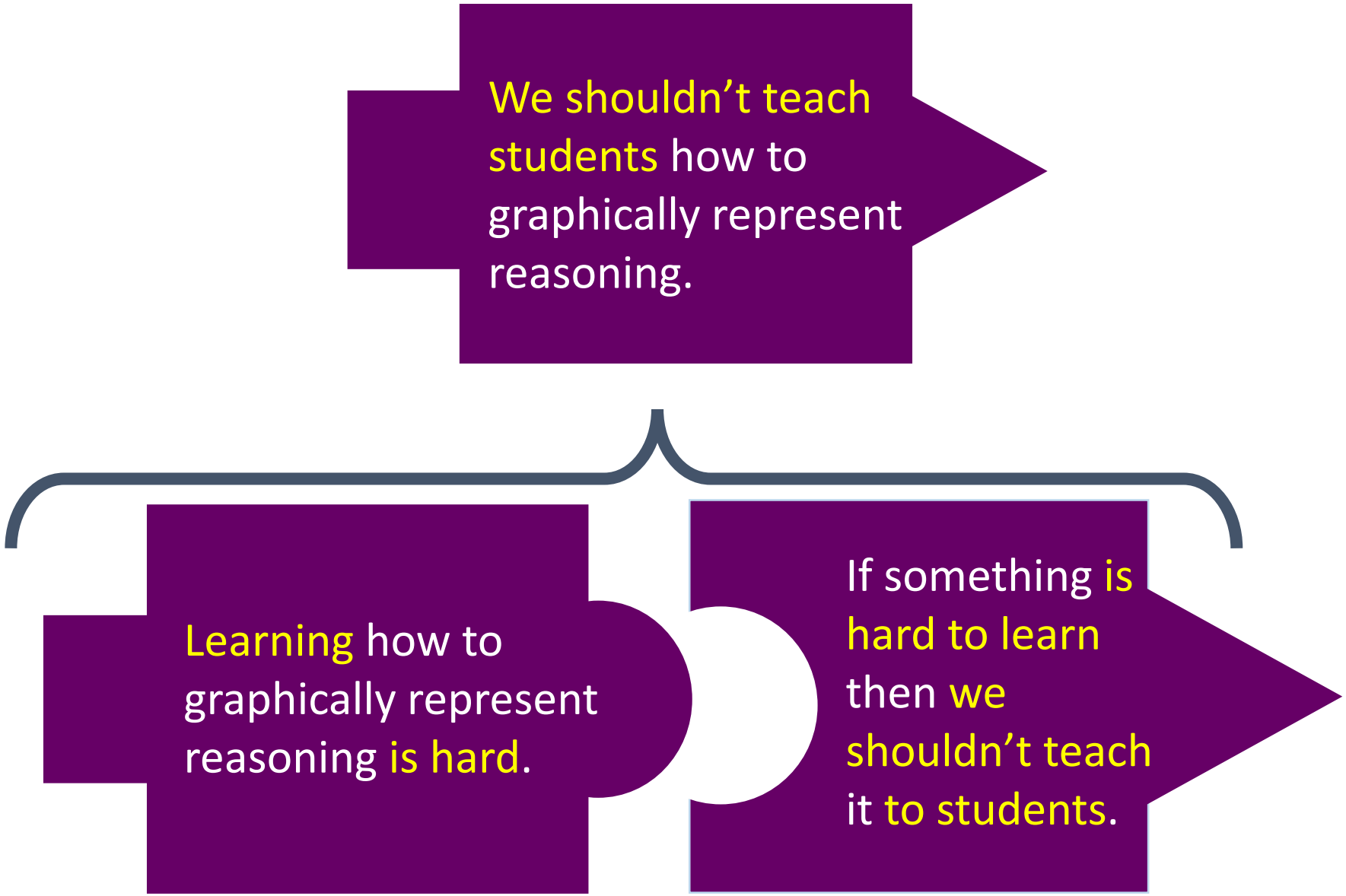
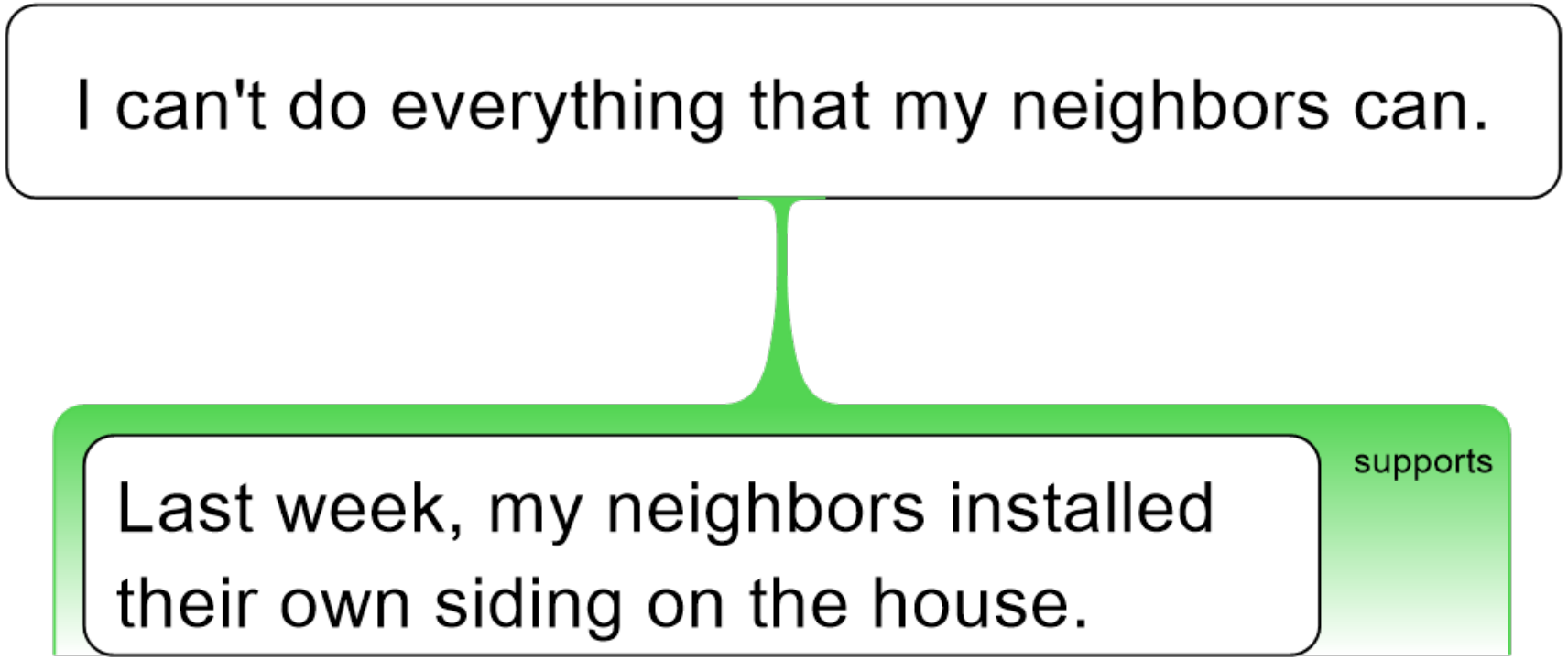


Critical Thinking and You

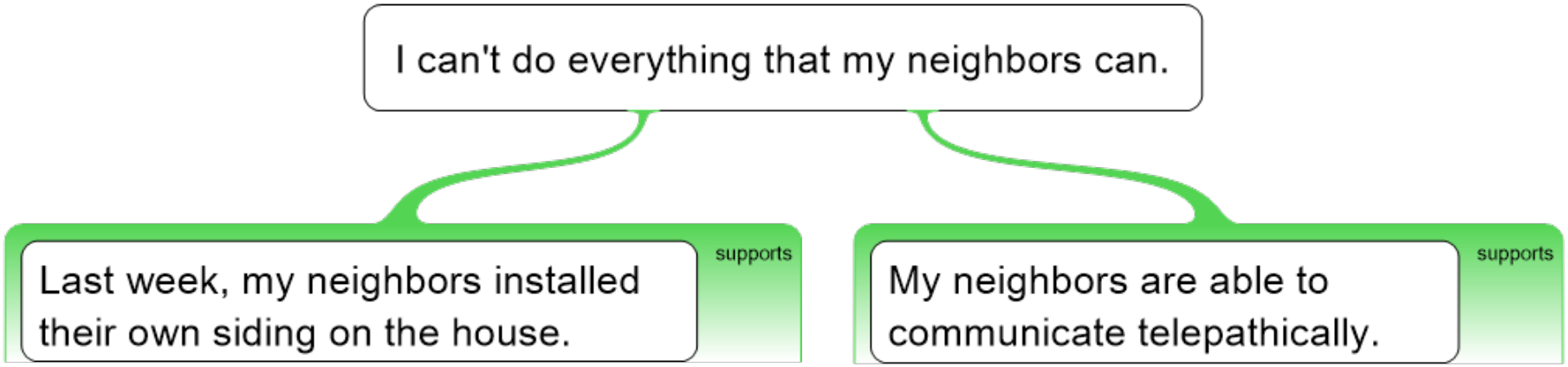
Introduction to Argument Mapping

Practice Argument Mapping

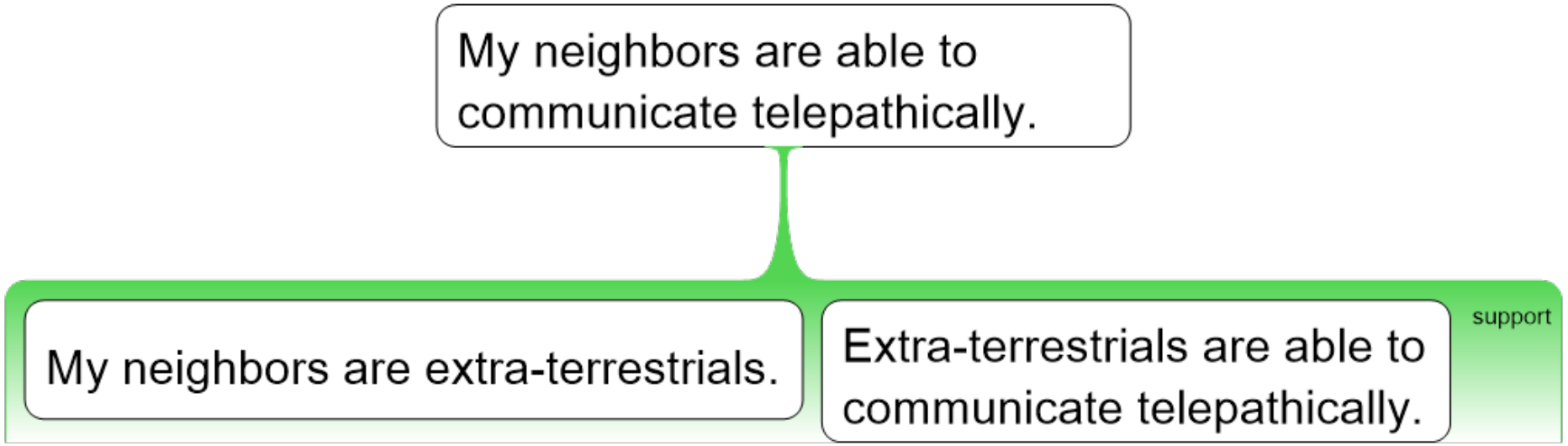
1) I can't do everything that my neighbors can because last week they installed their own siding on their house!



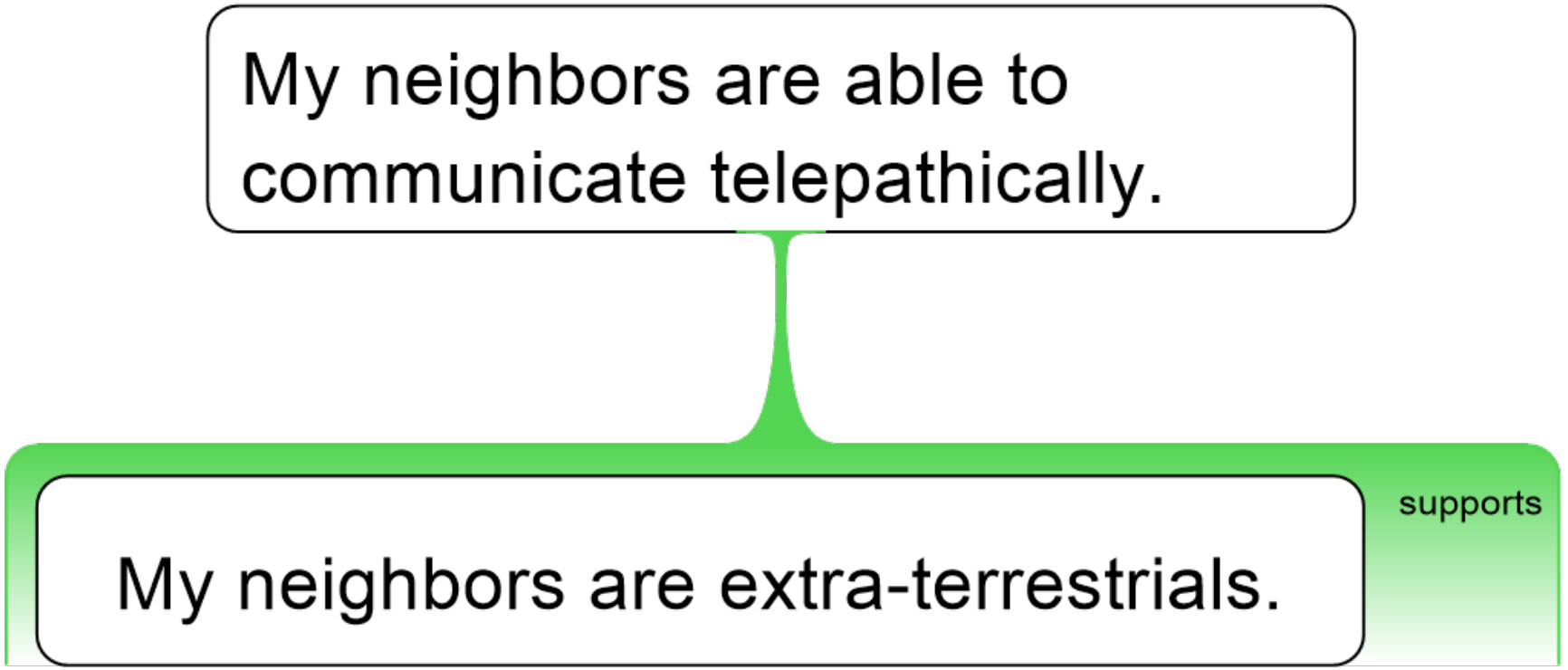
2) I can't do everything that my neighbors can. Last week they installed their own siding on their house and they are able to communicate telepathically.



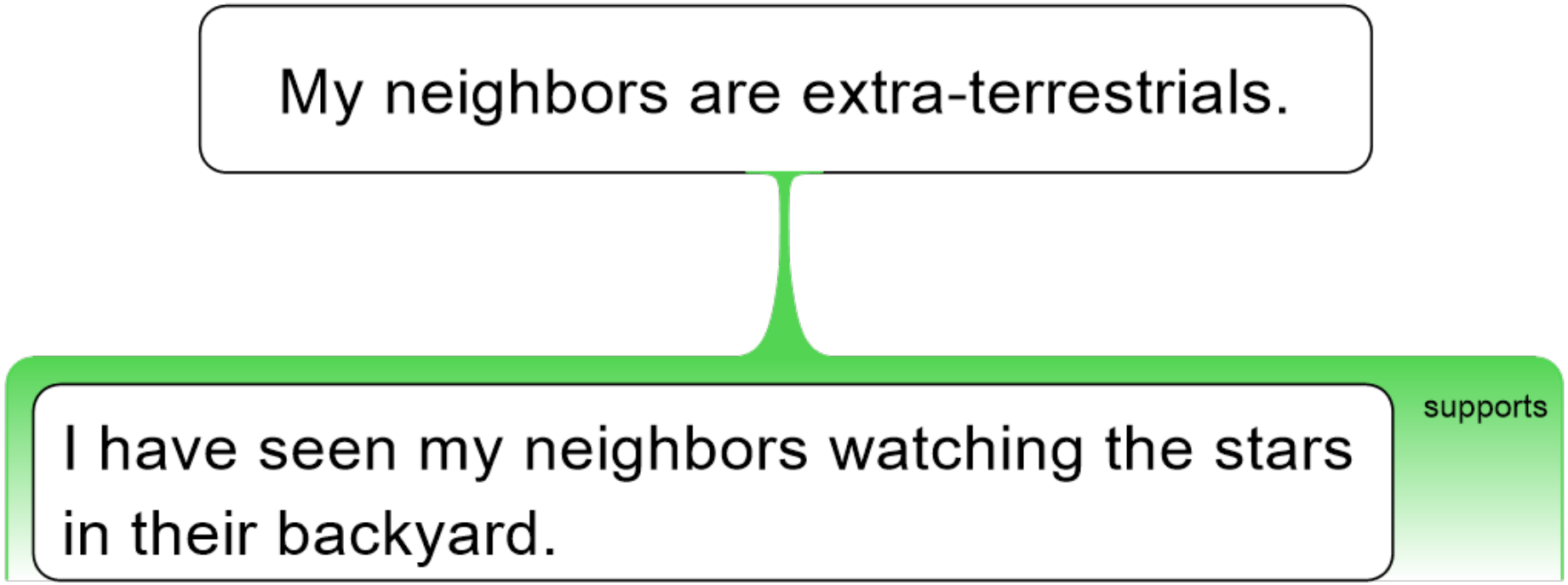
3) Since my neighbors are extra-terrestrials and extra-terrestrials are able to communicate telepathically, it means that my neighbors are able to communicate telepathically.



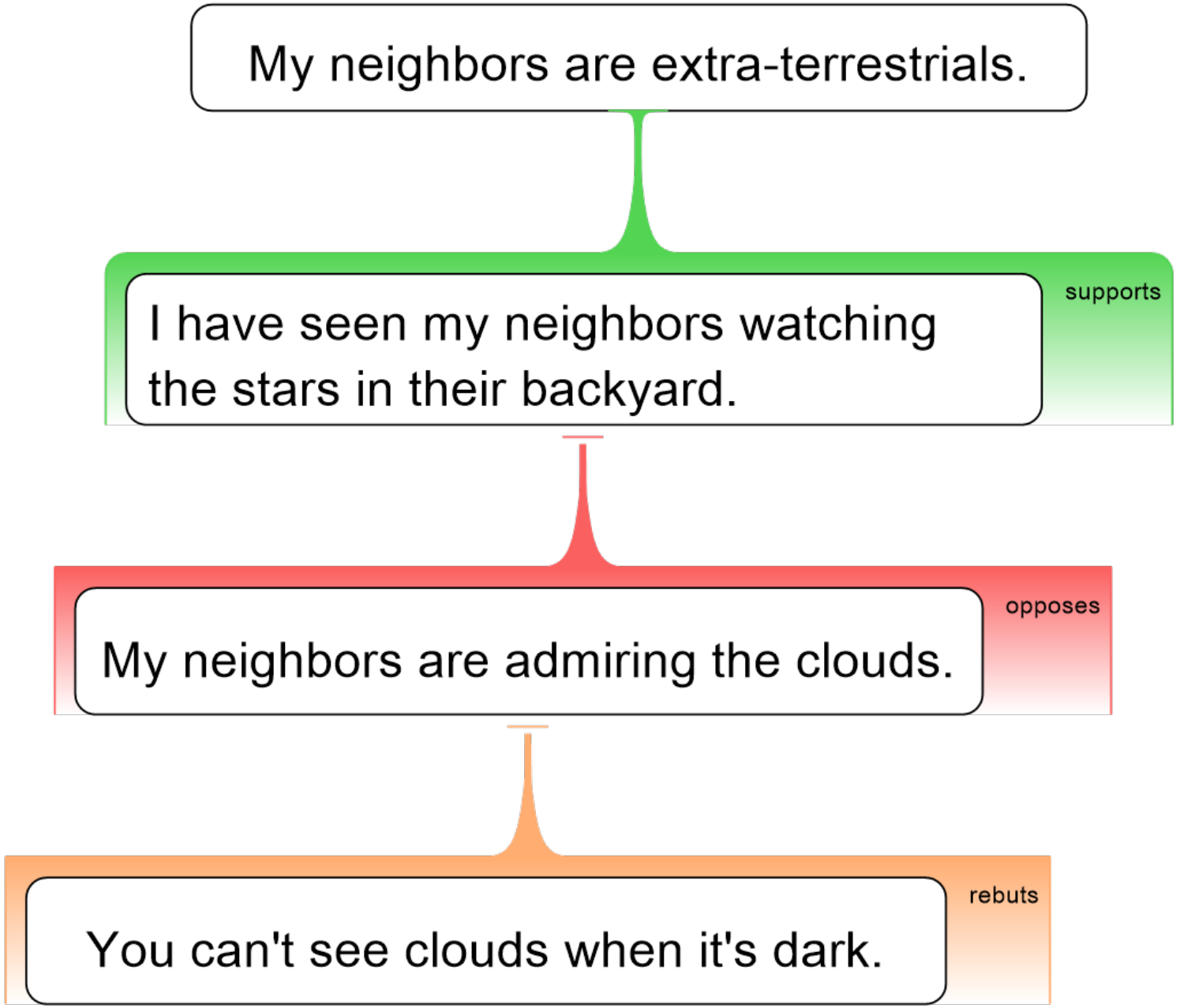
4) My neighbors are extra-terrestrials, so they can communicate telepathically.



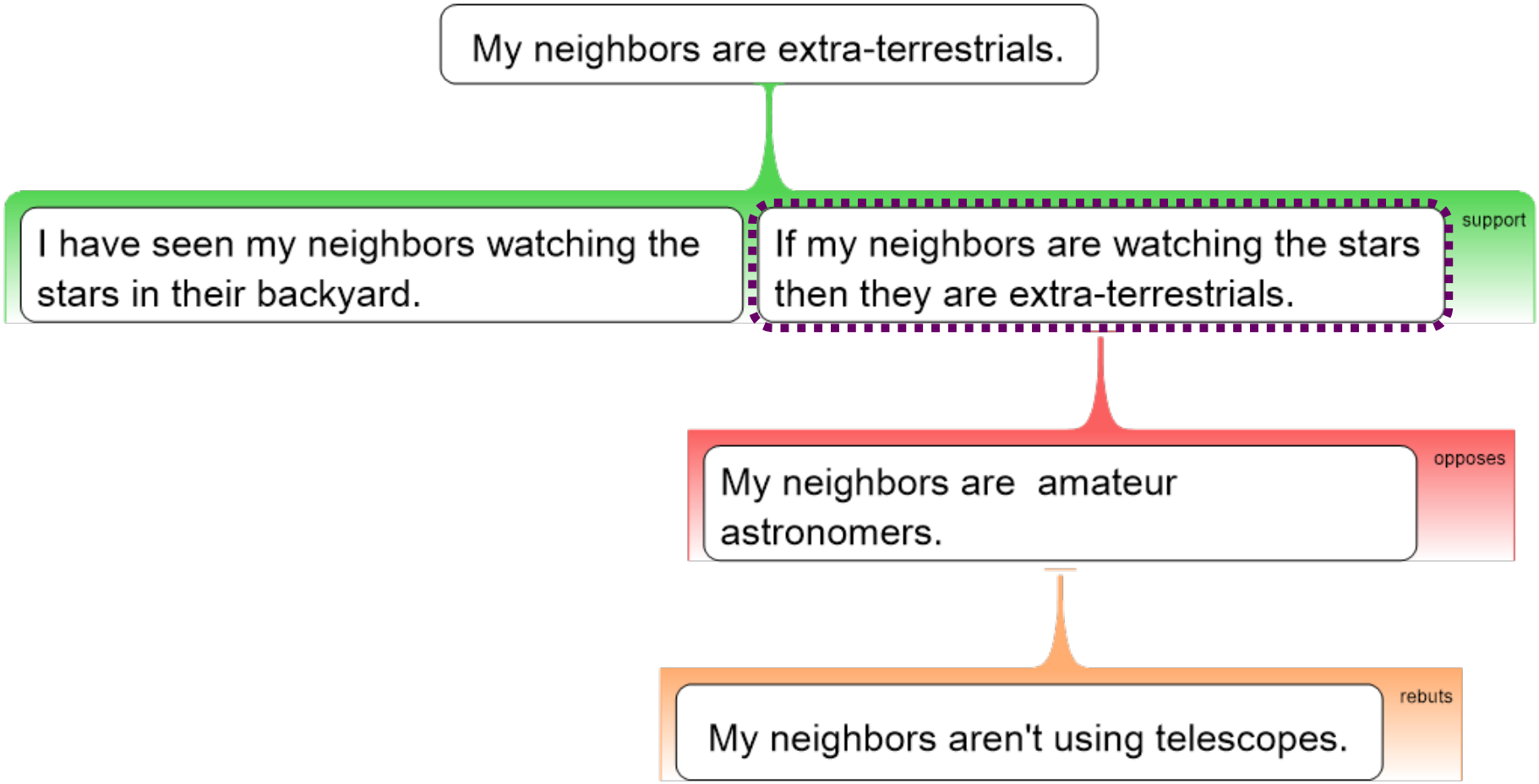
5) I know that my neighbors are extra-terrestrials because I have seen them watching the stars in their backyard.



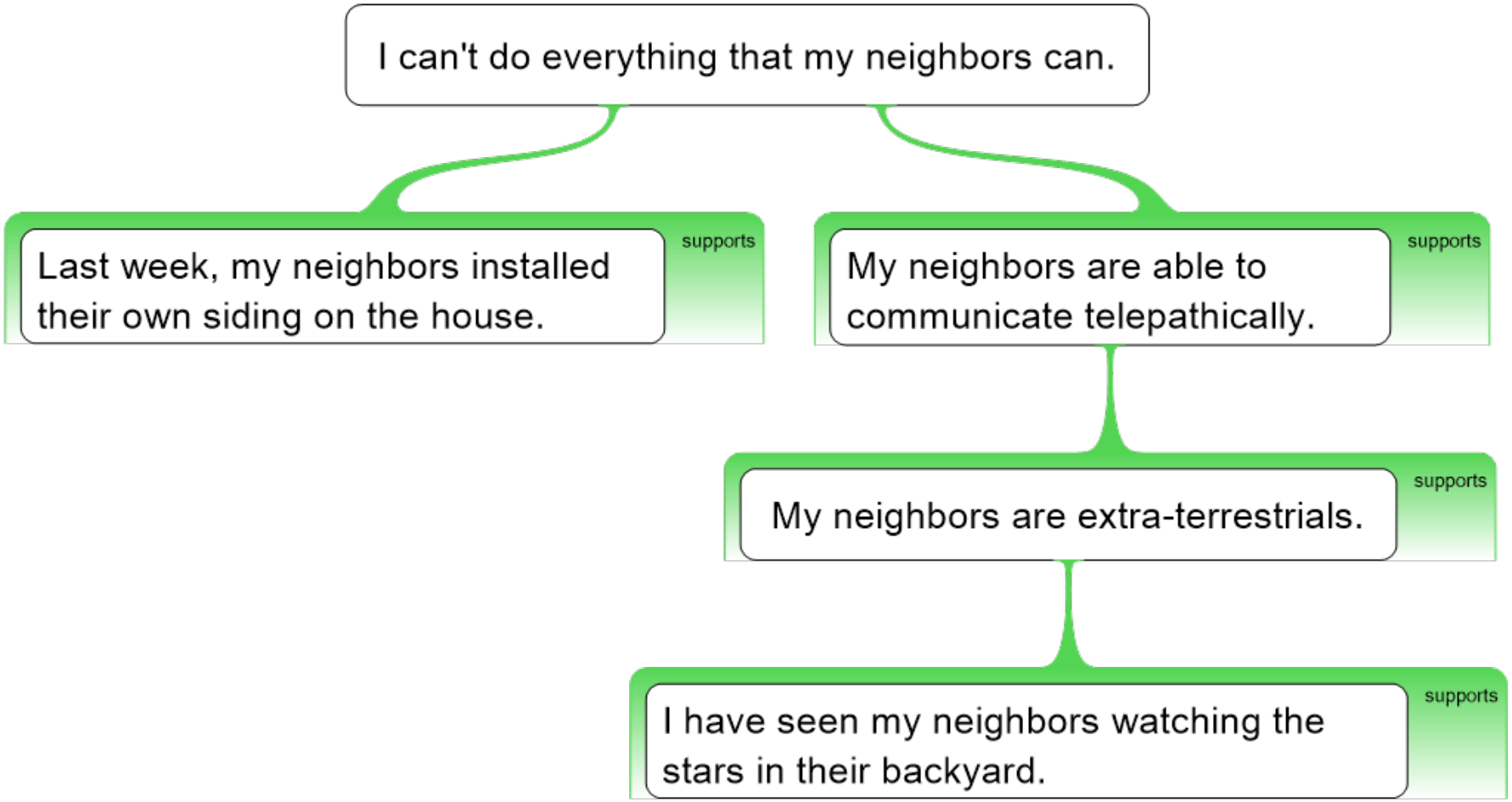
6) I know that my neighbors are extra-terrestrials because I have seen them watching the stars in their backyard. My sister says that they're admiring the clouds, but you can't see clouds when it's dark.



7) I know that my neighbors are extra-terrestrials because I have seen them watching the stars in their backyard. My husband thinks that they are amateur astronomers, but they aren't even using telescopes.



8) I can't do everything that my neighbors can. Last week they installed their own siding on their house, and they are able to communicate telepathically because they are extra-terrestrials. I know that because I've seen them watching the stars in their backyard.



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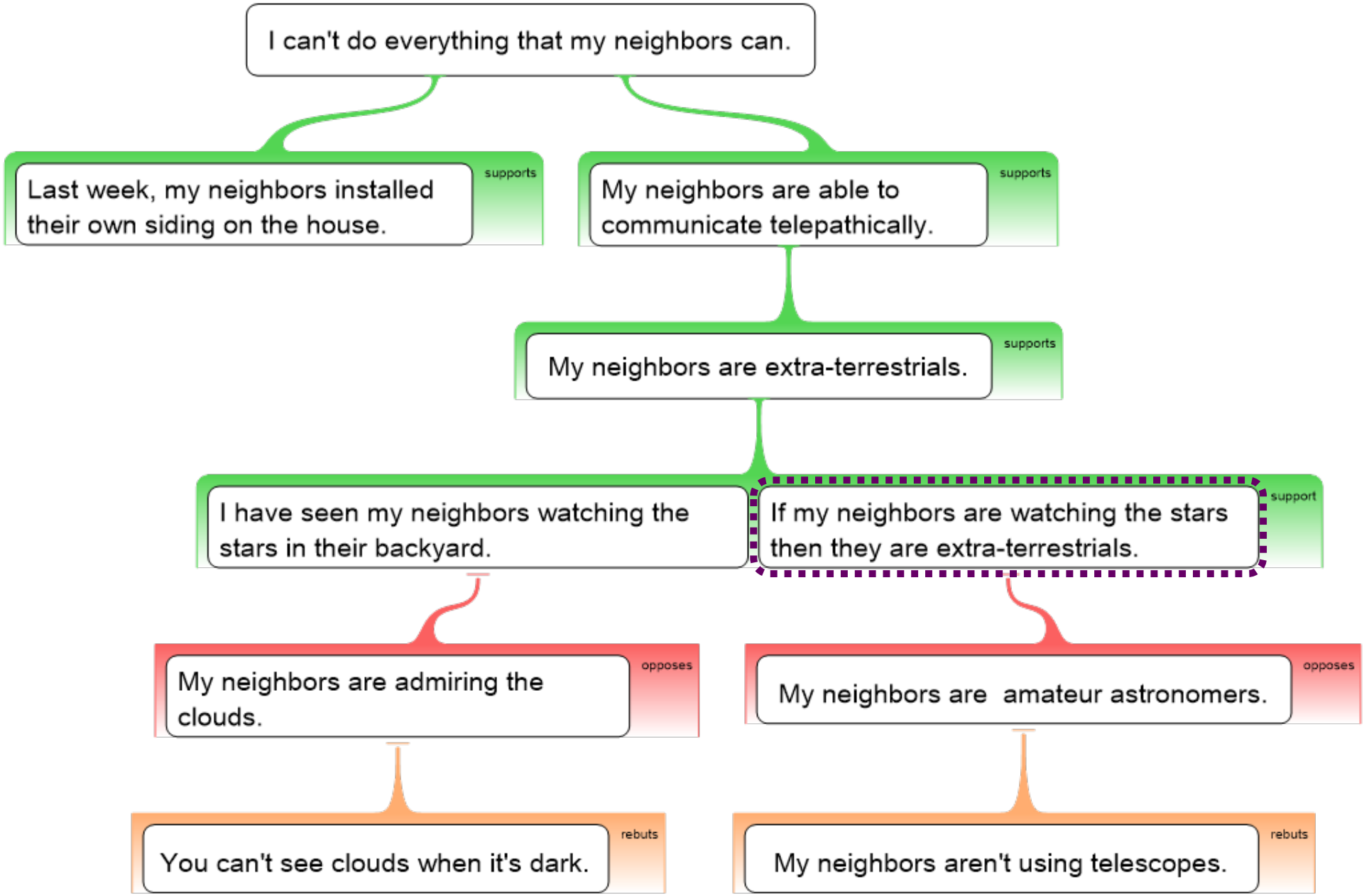
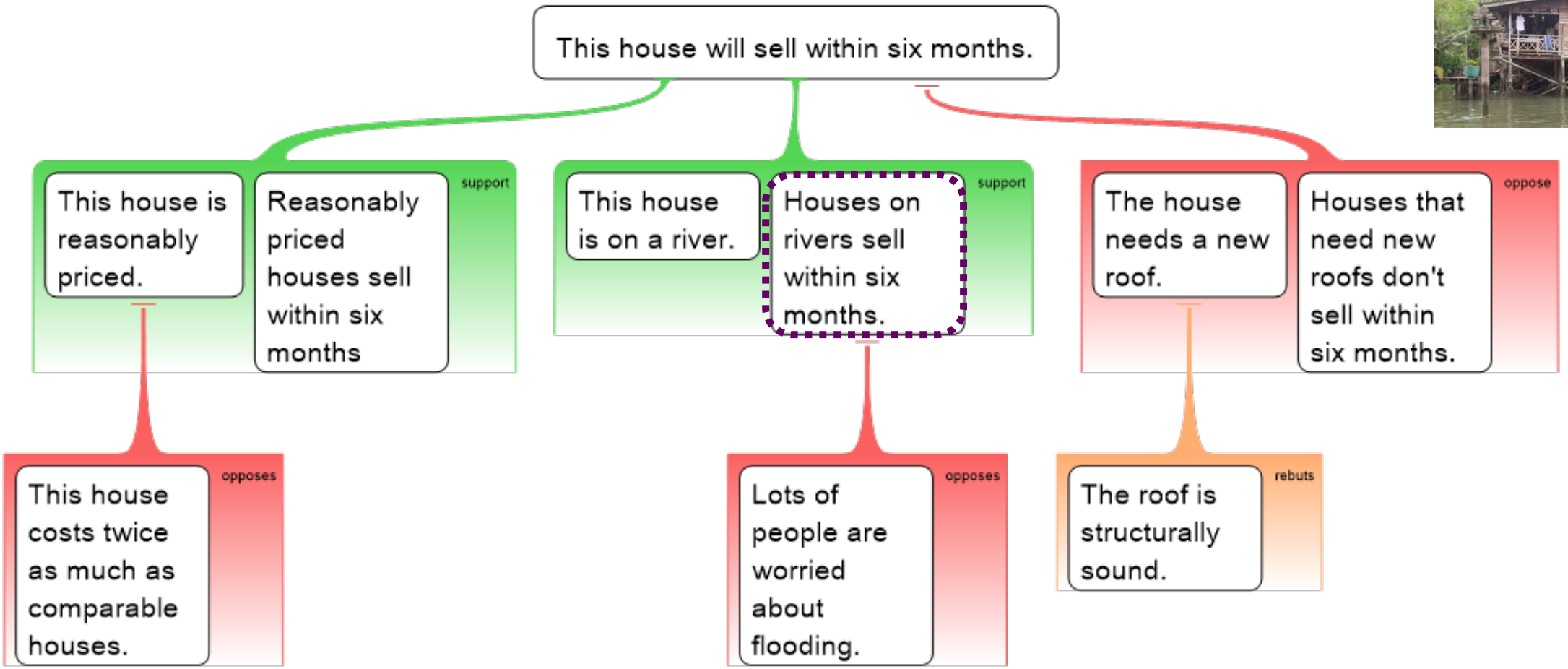


10) “I think my house will sell within six months. It’s priced reasonably (even though my nasty neighbor thinks that it’s priced twice as high as comparable houses) and reasonably priced houses always sell quickly. Besides that, it’s on a river. Of course, lots of people are worried about flooding. My husband claims that our house needs a new roof and that houses that need new roofs stay on the market longer, but as far as I can see, our roof is structurally sound.”



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(Peter Facione, 2015, "Critical Thinking W http://www.insightassessment.com/Reso Why-It-Counts)

How do you think you might apply this in your classroom?

What are your experiences with critical thinking in your classroom?

TRACKING THE REASONING IN COMPLEX ARGUMENTS

- Recognizing the claims and the relationships between the claims

EVALUATING ARGUMENTS

- Asking appropriate, role-specific, questions about the claims

CONSTRUCTING AN ARGUMENT

- Reasoning from evidence to a conclusion or attempting to support a conclusion with evidence

COMMUNICATING AN ARGUMENT

- Transposing the map into text

MAPPING A DISCUSSION

- Tracking the reasoning as it occurs

- MindMup https://www.mindmup.com/
- bCisive https://www.bcisiveonline.com/
- Rationale https://www.rationaleonline.com/
- TruthMapping https://www.truthmapping.com/#cat=3

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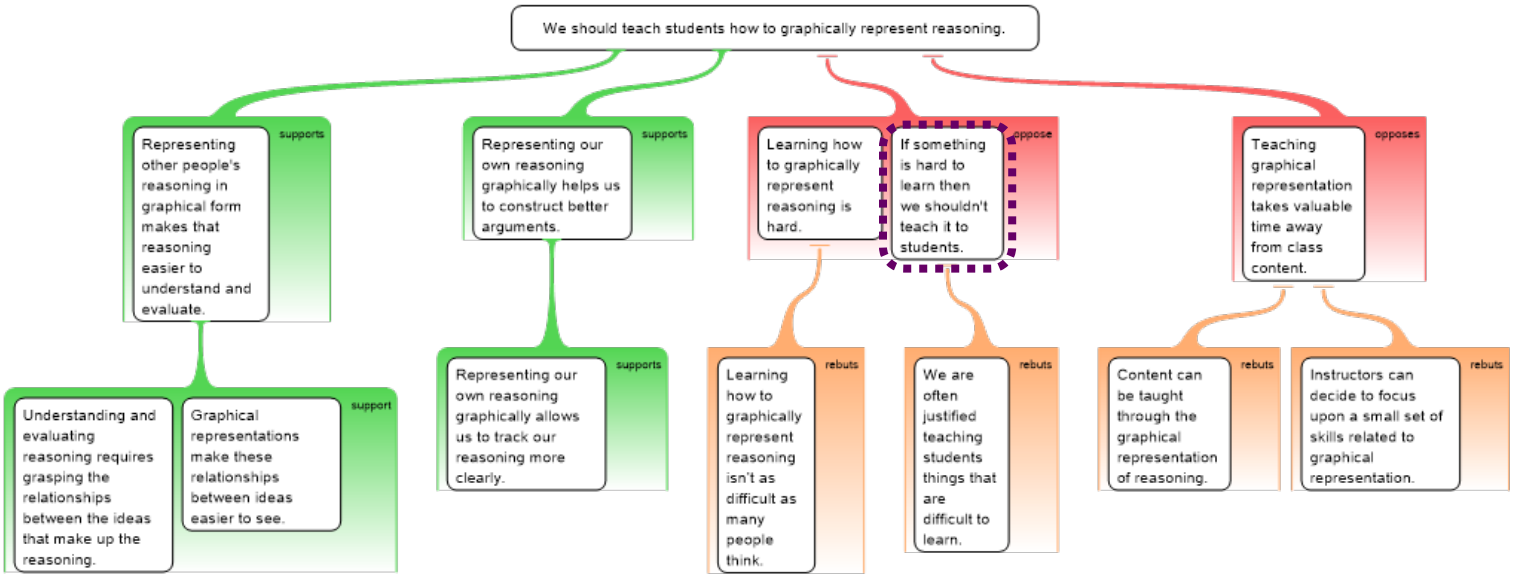

Practice

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