

Reflections & Conclusions

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Bringing Inquiry Into One's Mathematics Classroom (webinar)

Approaching the problem: ambiguity

John Mason, Leon Burton, and Kaye Stacey, Thinking Mathematically

“Watch out for **ambiguity!**”

William Byers, How mathematicians think: Using ambiguity, contradiction, and paradox to create mathematics

“Ambiguity opens up a world that is never boring because it is a world of **continual change** and **creativity.**”



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Attacking the problem: conjecturing

John Mason, Leon Burton, and Kaye Stacey, Thinking Mathematically

“**Make a conjecture, however wild.**

Now **check your conjecture**, looking for why it is right/wrong.

You may find yourself **making** and **modifying** several conjectures before you find one succinct statement that covers all cases.”



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Improving mathematical thinking: enquiry

John Mason, Leon Burton, and Kaye Stacey, Thinking Mathematically

“The plan for **improving your thinking** has concentrated on these two distinguishable but nevertheless intertwined factors:

- processes of **enquiry**;
- **emotional states.**”



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Epistemological issue: Enquiry vs Inquiry

“A joke is an example of ambiguity and creativity - you have to get a joke.”

William Byers

John Mason's Enquiry: from the Old French word *enquerre*; is deemed (a wild conjecture) to be inspired by the work of **E**uclide, Leonhard **E**uler, Paul **E**rdős, and (to a much larger extent) of Clinton **E**astwood Jr.



PLATINUM's Inquiry: derives from **I**rrationality, is based on **I**ndependent variables, respects **I**nvariance, tends to **I**nfinity



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Enquiry and professional development

John Mason, *Researching your own practice: The discipline of noticing*

“The product of enquiry is not a collection of assertions of uncertain generality, but rather **a way of working** which may enhance sensitivity to notice, or, in other words, **educate awareness.**”

“**Professional development** is a form of personal enquiry in order to broaden and deepen professional sensitivities to **notice** and to **act.**”



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Conjecturing and happiness

William Byers, How mathematicians think: Using ambiguity, contradiction, and paradox to create mathematics

“In working on a **mathematical conjecture**, life's ambiguities solidify into a concrete problem. That is, the situation of doing research is isomorphic to some extent with the situation we face in our personal lives. This is one reason that working on mathematics is **so satisfying**. In resolving the mathematical problem we, for a while at least, **resolve that larger, existential problem** that is consciously or unconsciously always with us.”



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Noticing and enquiring: an ongoing journey

John Mason, *Researching your own practice: The discipline of noticing*

“One of the features of the Discipline of Noticing is that there are **no final answers, only ongoing development and enquiry.**”

Mikhail Bakhtin, *Toward a methodology for the human sciences*

“There is neither a first nor last word and there are **no limits** to the **dialogic context** (it extends into the boundless past and the boundless future).”



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