Erich W. Vogt:

The Last Lecturer?

An attempt to broker peace between Lectures & Learning

by

Jess H. Brewer

Vogt Symposium
07 Feb 2015

OUTLINE

- What Erich Said & Did
- What **P**hysics **E**ducation **R**esearch Shows
- How to Please [almost] Everyone

Teaching with Erich

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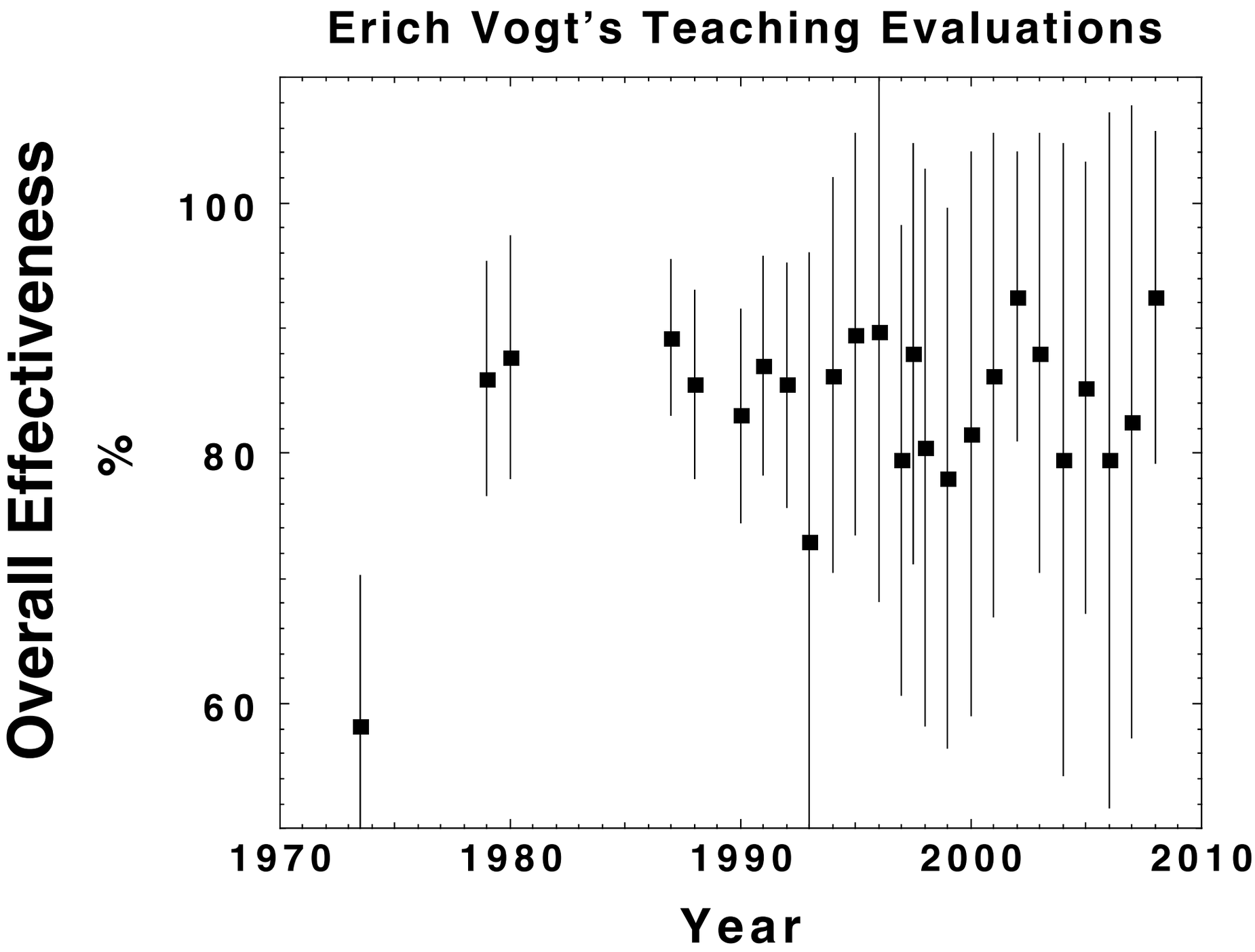
Nevertheless I think there are more things he would want to say….

The Obvious:


Erich Vogt's Teaching Evaluations
Overall Effectiveness
%
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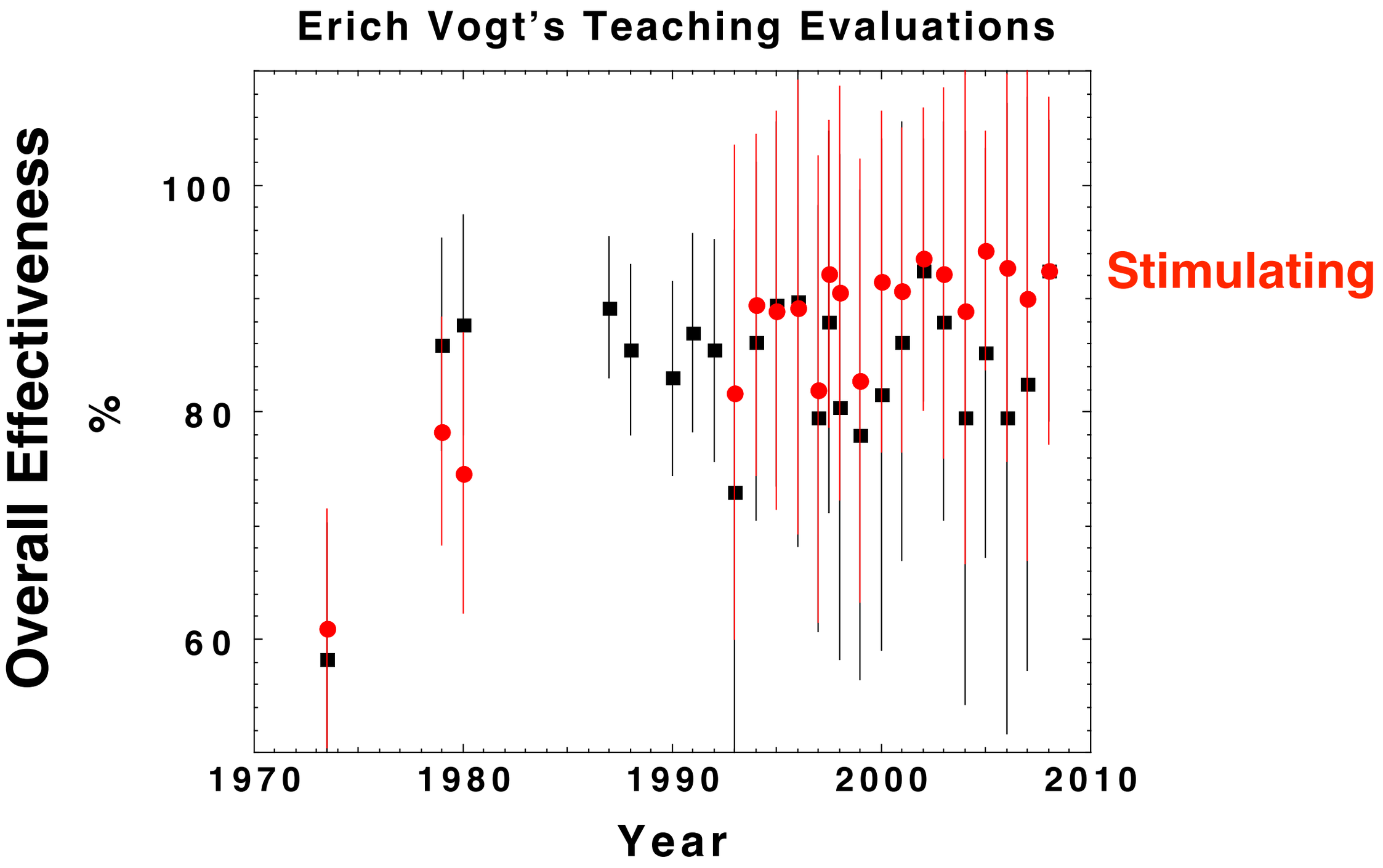
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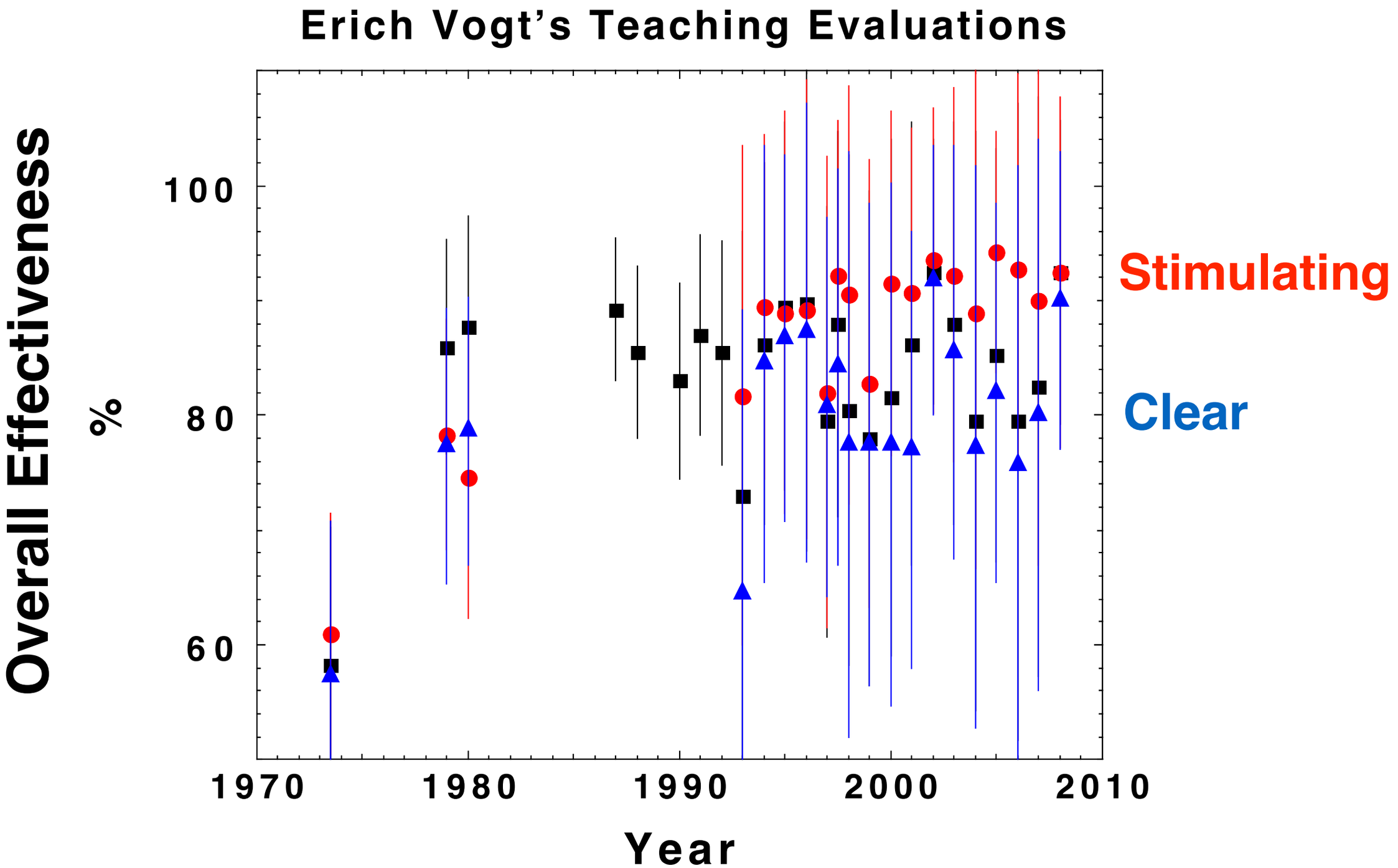
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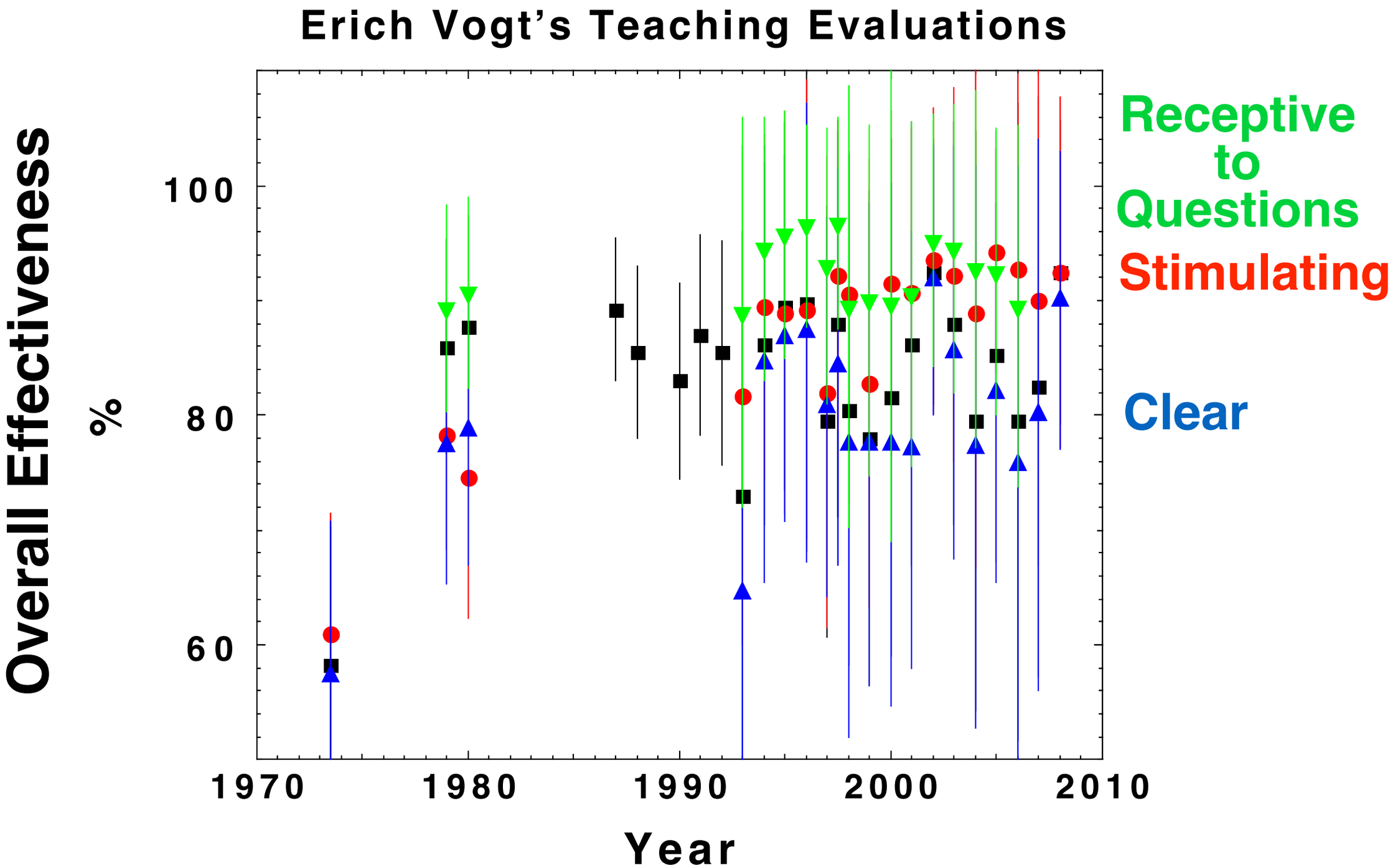
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Erich generally

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- Don’t worry, be happy!

Erich on Teaching

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- “One of the reasons I liked to teach first year was that the students’ eyes still light up when you tell them something new.”

- “[Teachers] should focus on their own strengths and use those to get the response from the class that is necessary.” […] “*I don’t think there is such a thing as a uniform approach to teaching.* You have to work it out for yourself.”

What ***P****hysics*
E*ducation* ***R****esearch*
Shows

Excerpts from PER Review (Doktor *et al.*, 2014)

"*Synthesis of discipline-based education research in physics*"

DOI: 10.1103/PhysRevSTPER.10.020119

(58 pages, 539 references)

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- "…teaching done in a clear, elegant manner, even [by] charismatic instructors, quite often does not help students overcome misconceptions. […] research showed… that quality of lecturing or instructor charisma had little to do with helping students learn concepts about which they held deeply rooted beliefs that contradicted physical laws."

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- PER has confirmed that having concepts explained to you, no matter how cogently, does not implant them into your long-term understanding. For that you must take some initiative, work it out for yourself, or discuss it with others ("*interactive engagement*").

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- The *science* of Physics Education Research (PER) reminds me of astronomy before Kepler. A plenitude of tools and expertise have not yet spawned a *general explanatory theory.*

- PER is a crucial discipline, but the current literature seems to encourage a phenomenological, if not reductionist, approach ("*Just find out what works best!*") which impoverishes the holistic educational experience.

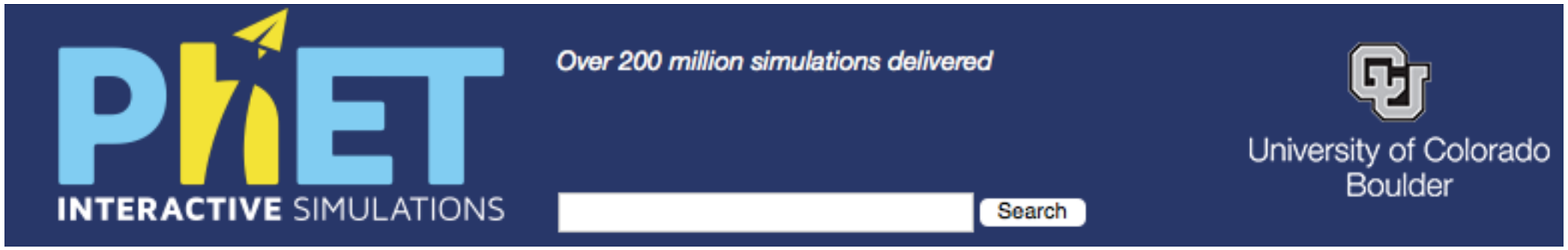
- The *memory of having understood* (due to a great lecture) can provide the **motivation** to *understand again*. With that motivation firmly in place, PER-based techniques *can* facilitate the learning process.

How to Please

[almost]

Everyone

?



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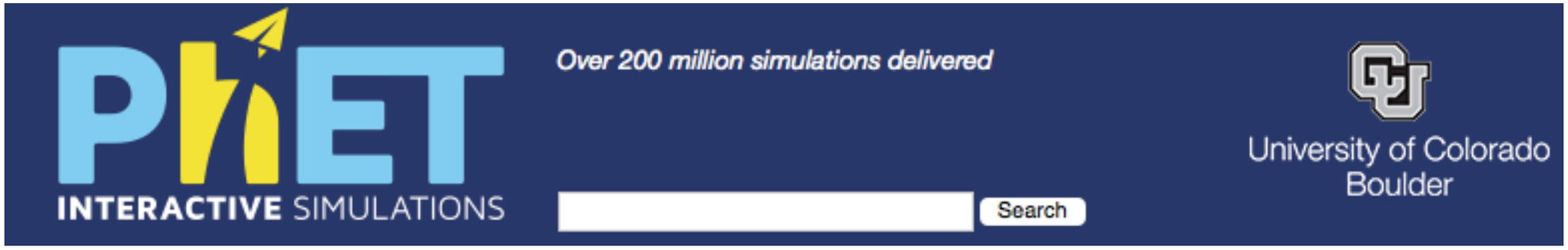

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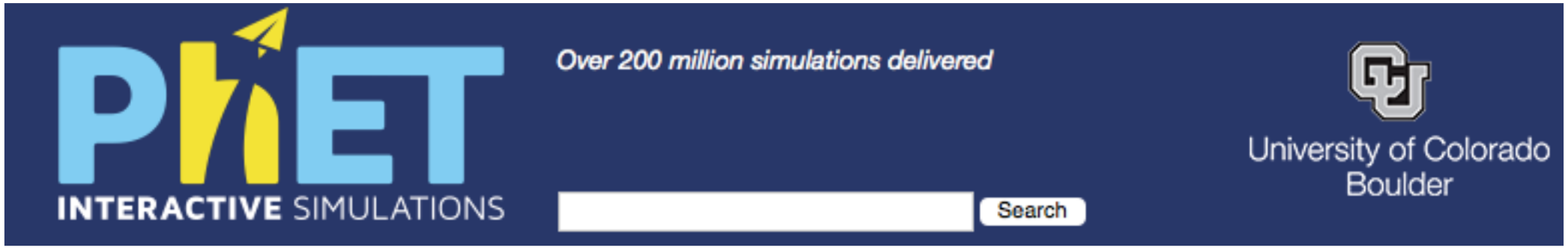

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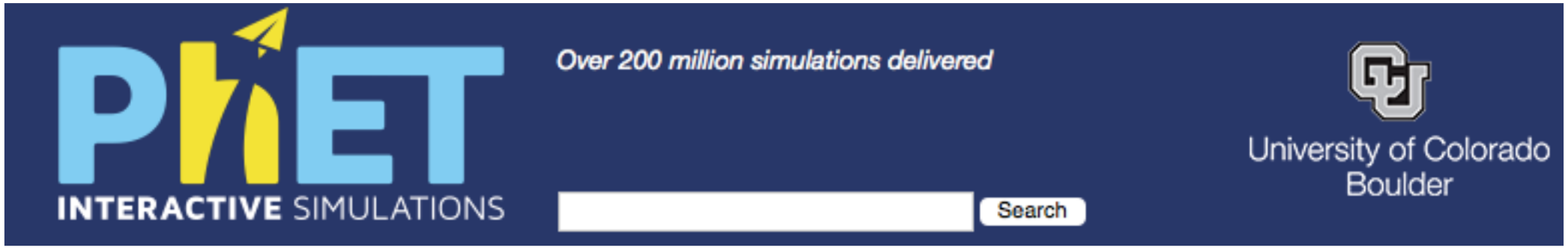

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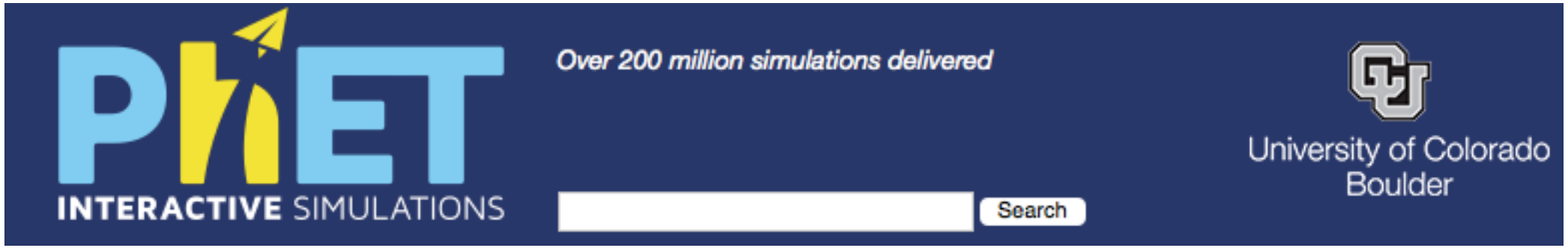

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- "If machines can be programmed to display intelligent behavior, there is no reason, at least in principle, that systems could not be designed to assume the role of a skilled teacher. Since **one-on-one tutoring is commonly considered the gold standard against which other methods of instruction are measured**, the [CSCL] paradigm is founded on the proposition that **education could be globally improved by providing every student with a personal (albeit machine-based) tutor**."

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Acknowledgements

- ***Erich***, of course, and his UBC *Legacy interview*
- Alan Poon (whose *talk* on Erich's teaching is online)
- Carl Wieman and the CWSEI team at UBC
- PER review by Doktor *et al*. and its 539 references
- Koschmann & other developers of CAI/ITS/CSCL

This talk is at `http://jick.net/vogt/Vogt-teacher/`

FYSREs

- For decades Erich Vogt taught bright, eager 1st Year Physics students who are ineligible for NSERC Undergraduate Student Research Award (USRA) subsidies (only for 2nd & higher years).

- The *Erich Vogt **F**irst **Y**ear **S**tudent **R**esearch **E**xperience* (***FYSRE***) awards offer budding academic stars in 1st Year Physics courses at UBC an opportunity for paid work experience in Physics or Astronomy research at UBC or TRIUMF. Outstanding 1st Year students apply as if for an NSERC USRA. A chosen student's summer salary is shared by the supervisor and the FYSRE grant.

- The first FYSRE recipient (Summer 2014) was *Walter Wasserman*. We now have a batch of excellent applicants for Summer 2015.

- More endowment = more FYSREs! ***Make Your Donation Now!***

Appendix: ***Tidbits***

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- *“You didn’t teach us anything; we had to learn it all by ourselves!”* Most teachers must choose between showing how it’s done and motivating students to do it themselves; a few do both at once.

What does the (ideal) Teacher do?

- Motivate
- Explain
- Integrate
- Inspire

What does the (ideal) Student do?

- Unlearn misconceptions.
- Acquire “approved” knowledge.
- Develop deeper understanding.
- Question “common sense” (develop **un**common sense).

Metaphysics of Education

- Does analysis always enhance understanding?

Reductionism <——*spectrum*——-> Holism

Theory of Everything <——*examples*——-> Emergent Behaviour