



Technological Pedagogical Content Knowledge

How do you teach technology?



Goal of Embedded Technology

Interpreting the subject matter and finding different ways to represent it and make it accessible to learners.



"Quit fooling around, Gog. Do the assignment."

Inquiry can lead to
amazing discoveries!

However.....!



MCHUMOR.com by T. McCracken



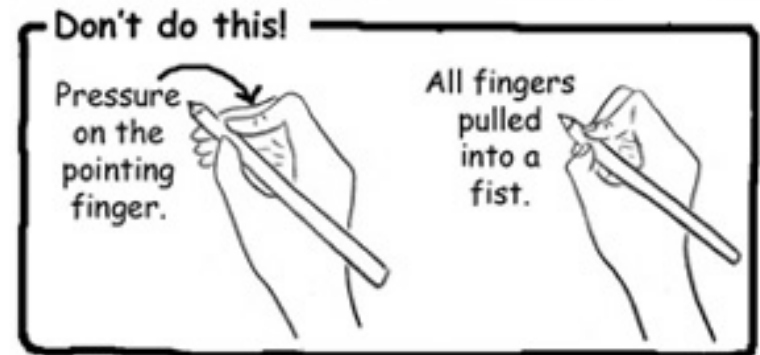
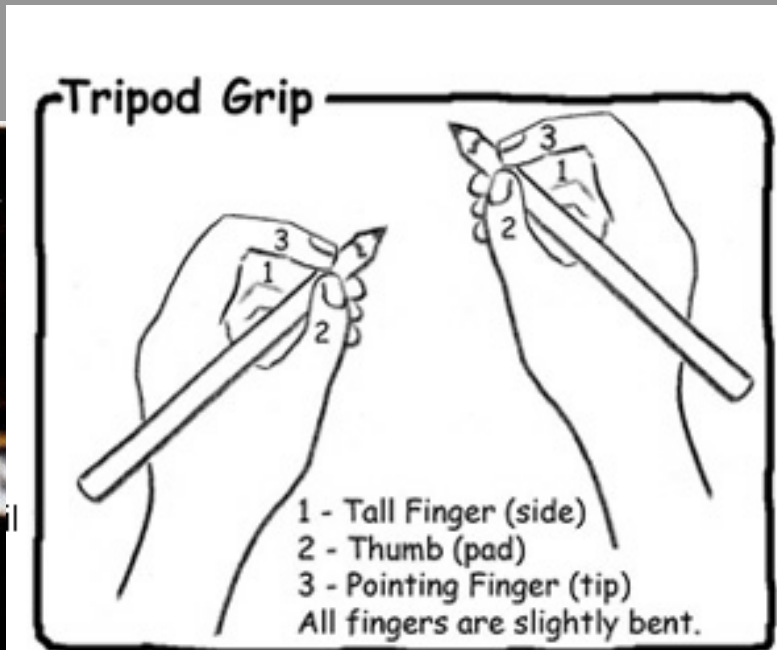
"There was a slight accident in shop class.
I welded my braces together."

http://www.pioneer.net/~mchumor/shop_class2_bframe.html

http://i.pbase.com/o4/69/496969/1/58878899.IMG_2481web.jpg

"It was hard to hold my pencil like this at first, but I kept trying. Now I do it all the time."

— Sarah, first-grade student



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We often teach how to use tools!

http://curriculum.qca.org.uk/uploads/Ma-604_tcm8-6137.JPG

http://www.drawyourworld.com/i_write/griptripod3.jpg

Multiple Approaches

- Direct instruction - Drill-and-practice – Lecture
 - Introducing some skills
 - Introduce concepts
 - Build awareness
 - Reinforce habits
- Constructivist
 - Personalize and internalize ideas
 - Solve problems
 - Explore ideas
 - Generate solutions
 - Synthesize knowledge

Inductive

- Use of examples to teach a concept, principle, generalization or academic rule.
- Goal is for area of study to become clear and hypotheses and skills can be developed and tested.

Skills Education

Developing Expertise for Science Inquiry

When specific, pre-determined, conclusions are to be learned, instruction should mainly be directed; otherwise, students might have trouble 'discovering' intended conclusions.

Developing Expertise for Science Inquiry

- If the intention is to allow students to determine conclusions, based on data/evidence and theory available to them (Open Ended), they also should control procedures (Student Directed).
- If teachers intend to teach certain procedures (e.g., graph construction – Geospatial technology), they should control learning of such procedures (Teacher Directed), while leaving conclusions (Open Ended).

Mishra and Koehler (2006) Concerning Technological Pedagogical Content Knowledge

Though not all teachers have embraced these new technologies for a range of reasons, including:

- A fear of change
- Lack of time
- Lack of support

The benefits may outweigh the cost