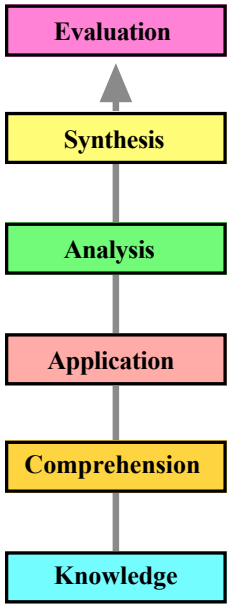
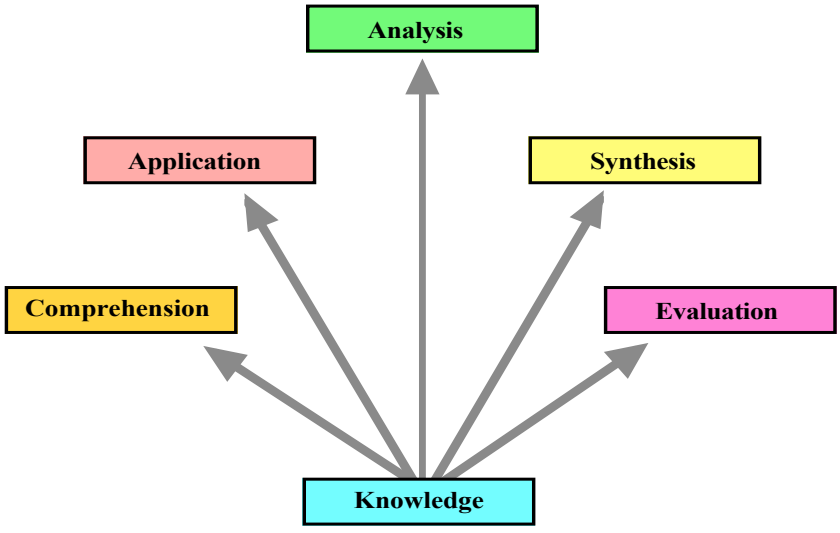
Thoughts on Bloom

by Norman Reid March 2010

The original model saw things as a taxonomy, with six skills placed in hierarchical order:



In the 1990s, Alex Johnstone started to question this and suggested that five of the skills were simply separate skills, all building on knowledge. This was picked up by Yang (2000) in her thesis:



Following this, I started to question the description of *comprehension* and began to realise that this was not really anything more than routine use of a memorised procedure or idea. I played with ideas and then, in the context of assessment, suggested five discrete cognitive skills:

- What they **know**
- What they **understand**
- What they can **do**
- How they can **think**
- How well they can **evaluate**

Broad Areas	Working Description
What they know	What the student knows (facts, concepts, skills) or can be accessed.
What they understand	The extent to which the student can apply their knowledge in novel situations with some prospect of success.
What they can do	Skills (practical or procedural) which the student can demonstrate successfully.
How they can think	Four broad areas: critical thinking, creative thinking, scientific thinking and problem solving
How well they can evaluate	The extent to which the student can assess the validity and relevance of knowledge

I then developed (based on much literature) descriptions for:

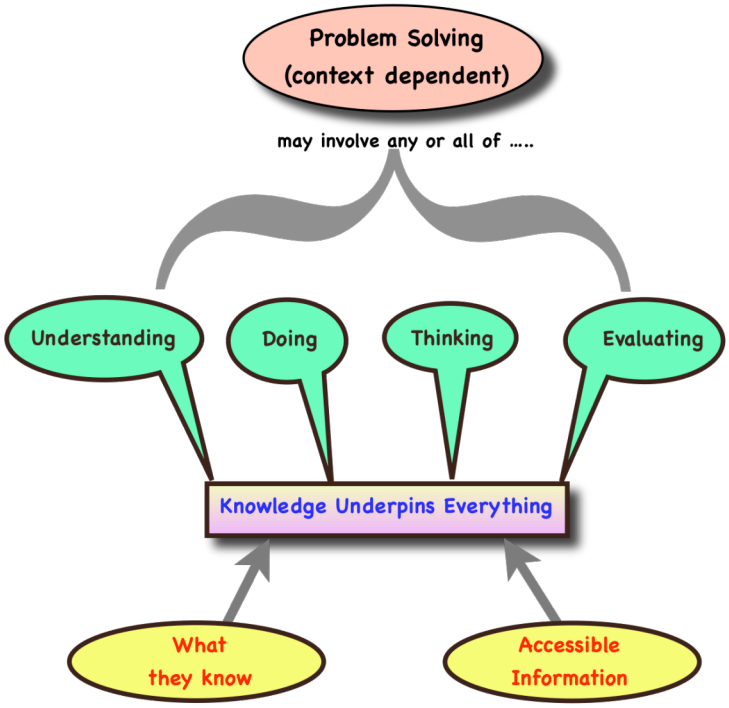
Critical thinking: The extent to which the student can ask the questions *why? what?* and *how?* of new information, its sources and the way it links to which is already known.

Creative Thinking: The ability to Imagine or invent something new of perceived value.

Scientific Thinking: Grasping the nature, place and handling of experimentation, including the place of hypothesis formation.

Problem Solving: Here I fell back on Alex's excellent analysis (1993) which describes 8 types of problems. The work of Yang and many others shows that problem solving is almost certainly not a generic skill and is not easily taught. The work of Bennett and others had shown that most problems set at school and university level examinations tend to be closed problems. These are basically algorithmic exercise where students are given information, use an established procedure to reach a specified goal.

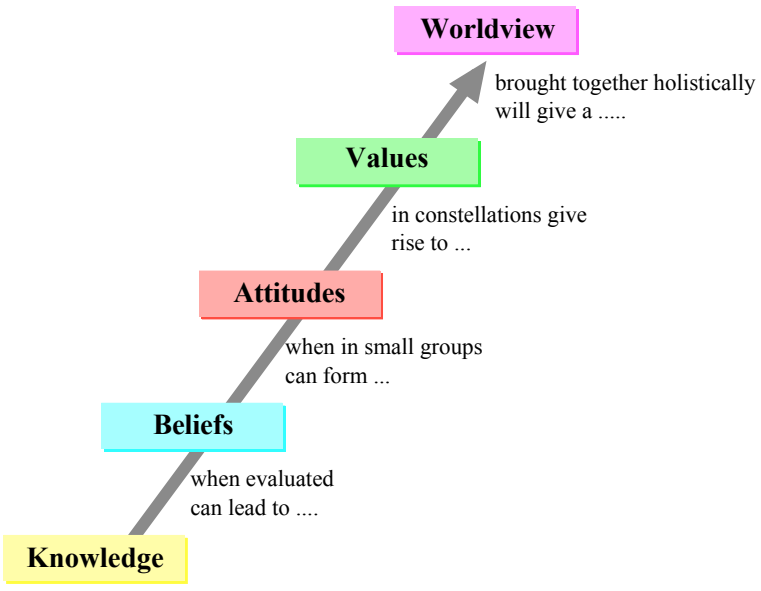
I then brought it all together in the following way (I like pictures!).



Understanding, doing, thinking and evaluating cannot exist in a vacuum but all depend on knowledge which is stored in long term memory or knowledge to which the student has access.

Similarly, genuine problem solving may depend on all of the skills of understanding, doing, thinking and evaluating.

I also used the affective taxonomy in the 1970s. I have developed an alternative model here also. The problem that forced this into the open was to distinguish between belief and attitude.



References

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