

Learning and teaching

unit-3

**MODES OF COGNITIVE DEVELOPMENT -
BRUNER**

Three modes of representation

Learning Modes

Enactive

Learn through movement or action



Play with a book



Iconic

Learn through images or icons



Look at pictures



Symbolic

Learn through abstract symbols



Read for research



2. Bruner's Three Modes of Representation

- ▶ Modes of representation are the way in which information or knowledge are stored and encoded in memory. Rather than neat age related stages (like Piaget), the modes of representation are integrated and only loosely sequential as they "translate" into each other.

Enactive (0 - 1 years)

- ▶ This appears first. It involves encoding action based information and storing it in our memory.
- ▶ For example, in the form of movement as a muscle memory, a baby might remember the action of shaking a rattle.
- ▶ The child represents past events through motor responses, i.e. an infant will “shake a rattle” which has just been removed or dropped, as if the movements themselves are expected to produce the accustomed sound. And this is not just limited to children.
- ▶ Many adults can perform a variety of motor tasks (typing, sewing a shirt, operating a lawn mower) that they would find difficult to describe in iconic (picture) or symbolic (word) form.

Shaking a Rattle



 alamy stock photo

C86FHC
www.alamy.com

Enactive (0 - 1 years)



Iconic (1 - 6 years)

- ▶ This is where information is stored visually in the form of images (a mental picture in the
- ▶ mind's eye). For some, this is conscious; others say they don't experience it. This may explain why, when we are learning a new subject, it is often helpful to have diagrams or illustrations to accompany verbal information.

Symbolic (7 years onwards)

- ▶ This develops last. This is where information is stored in the form of a code or symbol, such as language.
- ▶ This is the most adaptable form of representation, for actions & images have a fixed relation to that which they represent.
- ▶ Dog is a symbolic representation of a single class.
- ▶ Symbols are flexible in that they can be manipulated, ordered, classified etc., so the user isn't constrained by actions or images.
- ▶ In the symbolic stage, knowledge is stored primarily as words, mathematical symbols, or in other symbol systems.

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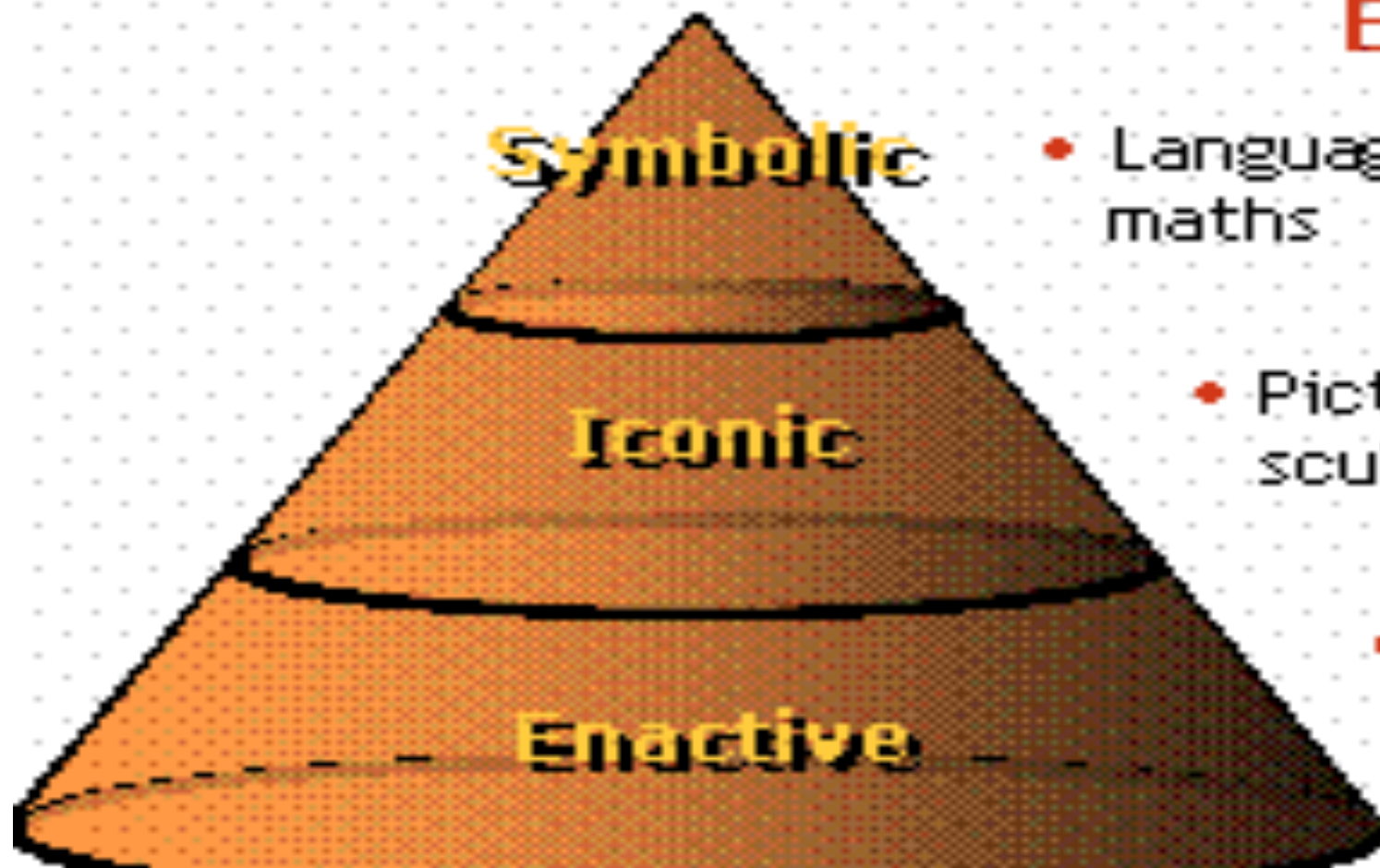


Bruner's constructivist theory

- ▶ Bruner's constructivist theory suggests it is effective when faced with new material to follow a progression from enactive to iconic to symbolic representation; this holds true even for adult learners.
- ▶ A true instructional designer, Bruner's work also suggests that a learner even of a very young age is capable of learning any material so long as the instruction is organized appropriately, in sharp contrast to the beliefs of Piaget and other stage theorists.

Cone of Experience

Dale/Bruner "Cone of Experience"




- Language and maths

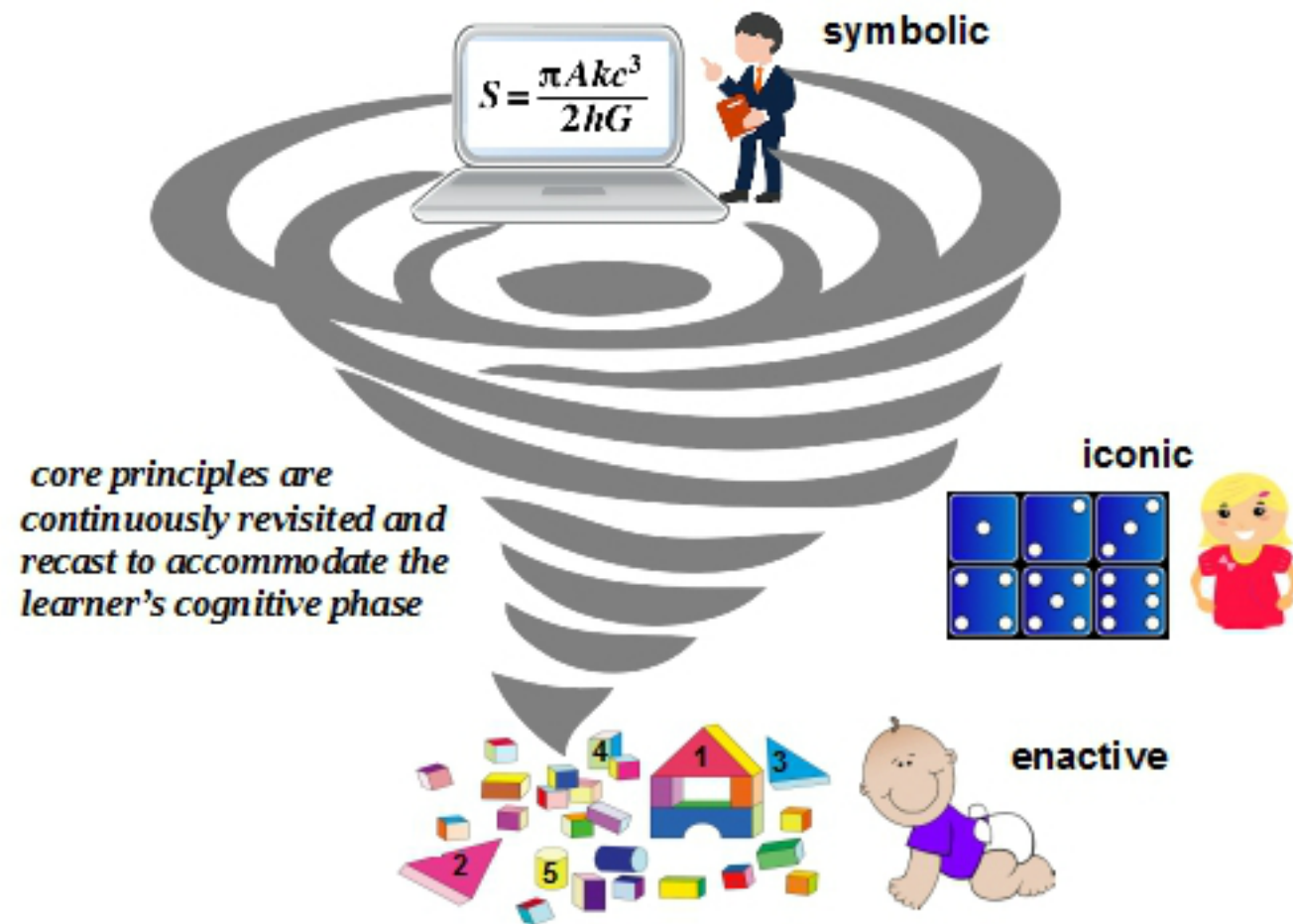
- Pictures, film, sculpture (dolls)...

- The real thing

3. Educational Implications

- ▶ Bruner (1960) explained how it was possible through the concept of the spiral curriculum.
 - ▶ This involved information being structured so that complex ideas can be taught at a simplified level first, and then re-visited at more complex levels later on.
 - ▶ Therefore, subjects would be taught at levels of gradually increasing difficulty (hence the spiral analogy).
 - ▶ Ideally, teaching his way should lead to children being able to solve problems by themselves.
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Spiral curriculum



Educational Implications

- ▶ The role of the teacher should not be to teach information by rote learning, but instead to facilitate the learning process.
 - ▶ This means that a good teacher will design lessons that help student discover the relationship between bits of information.
 - ▶ To do this a teacher must give students the information they need, but without organizing for them.
 - ▶ The use of the spiral curriculum can aid the process of discovery learning.
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