

# NYSTCE EAS Exam review

## Educational theory

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## 1 Educational theory

### 1.1 Constructivist education theory

- continuing and building upon Piaget's theories of cognitive development (1.3), *constructivism* is a theory of education that posits that learning is a process through which students construct knowledge individually through the two fundamental processes of *assimilation* and *accommodation*
- *assimilation* of information is a process in which a learner incorporates new information into a pre-existing framework of conception and understanding
- *accommodation* of information is a process in which learners reframe their mental representation of the outside world in order to render it compatible with new information that may contradict or be otherwise incompatible with the current framework of conception and understanding
- implicit in this theory is the fundamental axiom that all students are capable of learning, and that the best way to promote learning is by helping students to:
  - o use their prior knowledge and skills to progressively construct individual understanding of new and increasingly more complex concepts and situations
  - o recognize multiple perspectives
  - o think critically
  - o solve problems
  - o work together
- in other words, constructivists tend to adhere to the philosophy that the purpose of schooling is to teach individuals how to think and learn, rather than to fill them with any particular collection of data, facts, and concepts

- this conceptualization of the learning process is in many ways the philosophical backbone of the contemporary American education system, informing decisions and planning at every level from curricular design to best practices in classroom management
- in the rest of this section, we review some of the key figures and concepts associated with constructivist education theory
- the rest of this document (Sections 3 through ??) will explore practical implications of constructivist education theory
- in our discussion of praxis, we will attempt to indicate the theoretical foundations and justifications that gave rise to our contemporary perspectives on the praxis of education with relevant references to Section 1 whenever possible

**References:** [Gub16, NYS17, Wik20d]

## 1.2 Dewey's progressive education movement

- John Dewey (1859–1952) was a philosopher, a psychologist, and an education reformer
- Dewey promulgated the *progressive education movement*
- the philosophy behind Dewey's movement was that education should emphasize and focus on creating and understanding experiences, rather than rote memorization of mindless facts that are soon forgotten
- Dewey also believed that school should not be separate from but rather connected with students' lives and life experiences outside the classroom in order to facilitate more meaningful and, hence, more memorable and valuable learning experiences
- Dewey emphasized the importance of active learning, student participation, and classroom democracy, rather than authoritarianism and rote methods that treat students as empty vessels to be filled with knowledge by an omniscient instructor

**References:** [Wik20g, Wik20k]

## 1.3 Piaget's theory of cognitive development

- Jean Piaget (1896–1980) was a psychologist who studied childhood development
- Piaget proposed a theory of cognitive development to explain the nature and development of human intelligence
- according to Piaget's theory, humans pass through the following four stages of development:
  - *sensorimotor stage*:
    - ▷ this stage typically corresponds to the ages of 0 to 2 years, beginning at birth and lasting until the acquisition of language
    - ▷ in this stage, infants construct knowledge by coordinating sensory experiences through physical interactions with objects
  - *preoperational stage*:
    - ▷ this stage typically corresponds to the ages of 2 to 7 years
    - ▷ during this period, children are not yet able to understand concrete logic, to manipulate information mentally, or to understand the perspectives of others
    - ▷ they are, however, able to form stable concepts and magical beliefs

- *concrete operational stage*:
  - ▷ this stage typically corresponds to the ages of 7 to 11 years
  - ▷ during this period, a child's thought processes develop and begin to resemble those of an adult
  - ▷ the child begins to solve problems logically and perform inductive reasoning
  - ▷ nevertheless, the child is not yet able to think hypothetically as his/her problem-solving skills are limited in application to concrete situations
- *formal operational stage*:
  - ▷ this is the final stage of development, typically lasting from the age of 12 years to adulthood
  - ▷ during this period, the individual is able to use symbols and abstract concepts logically, to think hypothetically and metacognitively (3.9.1), and to perform deductive reasoning

**References:** [Gub16, Wik20f, Wik20j]

## 1.4 Vygotsky's zone of proximal development

- Lev Vygotsky (1896–1934) was a psychologist who developed a theory of bio-social development
- the *zone of proximal development (ZPD)*, as conceptualized by Vygotsky, consists of those tasks that a student can accomplish with help, but could not accomplish without help
- this zone is contrasted with two others:
  - on the one hand, there is the zone consisting of the tasks that a student could accomplish without help, and there's no need for teachers to dwell on tasks that students have already mastered independently, and there's no point in attempting to devote instructional time to tasks that students will not be able to master
  - on the other hand, there is the zone consisting of the tasks that the student could not accomplish even with help
- the ZPD is the Goldilocks territory in between, and teachers should present activities in the ZPD to provide realistic opportunities for student learning

**References:** [Pos15, Wik20h, Wik20m]

## 1.5 Bloom's taxonomy of objectives

- Benjamin Bloom (1913–1999) was an educational psychologist
- Bloom introduced a *taxonomy of educational objectives*, a rubric attempting to classify levels of learning in within each of three categories of learning: cognitive, affective, and psychomotor
- within the cognitive category, Bloom's taxonomy consists of the following six levels that allow teachers to classify objectives for their lessons:
  - *memorization*: remembering specific facts, details, procedures, and recalling vocabulary, terms, and theories
  - *comprehension*: understanding or using ideas, but not necessarily relating them to other ideas
  - *application*: using concepts in novel situations
  - *analysis*: breaking concepts and statements down into component parts, so that their structure may be understood

- *evaluation*: judging and critiquing ideas, concepts, statements according to given criteria
  - *creation*: generating new ideas, products, perspectives
- this list is ordered from most basic to most advanced, and learners must generally proceed from level to level in this order
- for instance, it is generally not possible demonstrate comprehension without first having memorized the essential terms and facts involved, and it's not possible to apply concepts before understanding them, etc.
- teachers should keep these levels in mind while planning instruction, starting with activities that help students to master the material at the basic levels of memorization, comprehension, and application, followed by activities that allow students to develop and demonstrate capacities for analysis, evaluation, and creation

**References:** [Gub16, Pos15, Wik20b, Wik20c]

## 1.6 Maslow's hierarchy of needs and human motivation

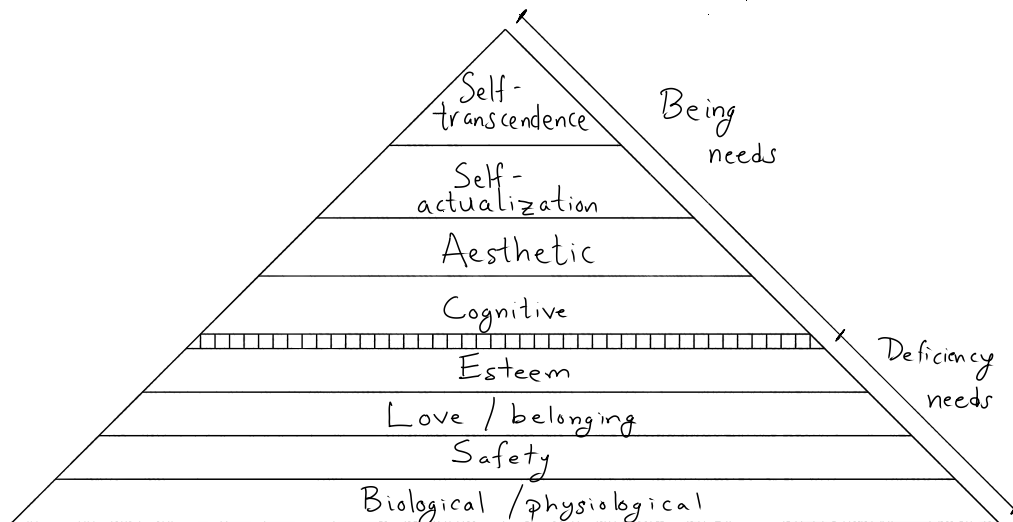


Figure 1.6.1: Maslow's hierarchy of needs and human motivations

- Abraham Maslow (1908–1970) was a psychologist
- Maslow proposed a hierarchy of the human needs, with the idea being that individuals must satisfy certain basic, fundamental needs before they can pursue higher-level needs
- Maslow's hierarchy is relevant to education insofar as learning, understanding, analytical skills, and imagination all pertain to the higher-level needs, and education is not possible unless students' lower-level needs are satisfied
- Maslow's hierarchy is divided into two classes: the lower-level needs, which we refer to as the *deficiency needs*, and the higher-level needs, which we refer to as the *being needs*

- the specific low-level, deficiency needs on Maslow's hierarchy are as follows:
  - o *biological and physiological needs*: hunger, thirst, bodily comfort
  - o *safety*: the feeling of security, the absence of danger
  - o *love and belonging*: the feeling of acceptance and love from others, including from a family
  - o *esteem*: the feeling that one is respected by others and also by oneself, and regarded as capable and valuable
- the specific high-level, being needs on Maslow's hierarchy are as follows:
  - o *cognitive needs*: to know, to understand, to explore
  - o *aesthetic needs*: to appreciate and to seek out beauty, order, and form
  - o *self-actualization*: to pursue self-fulfillment, and to realize one's potential
  - o *self-transcendence*: to help others to self-actualize and to fulfill themselves
- the total hierarchy is illustrated in Figure 1.6.1

**References:** [Pos15, Wik20a, Wik20i]

## 1.7 Gardner's multiple intelligences

- Howard Gardner (b. 1943) is a developmental psychologist
- Gardner proposed a *theory of multiple intelligences*, according to which human intelligence operates according to various different modalities, as opposed to a single category of "general ability"
- Gardner proposes the following list of modalities:
  - o *visual-spatial thinkers* learn best by visualizing problems;
  - o *linguistic thinkers* learn best through words and language;
  - o *logical-mathematical thinkers* learn best through abstract, scientific thought and through solving numerical problems
  - o *bodily-kinesthetic learners* learn best through physical activity, sports, and dance
  - o *musical learners* learn best by listening, singing, and playing musical instruments
  - o *interpersonal thinkers* learn best by working with others, and they tend to be attuned to the needs of others
  - o *intrapersonal thinkers* learn best by working alone, and they tend to be introverted and intuitive
  - o *naturalistic thinkers* may learn best by relating material to nature and the world around them
  - o there may also be *existential thinkers* and *moral thinkers*
- there is little empirical data to support Gardner's theory, but some educators believe that the theory has practical value insofar as presenting material to students in various ways in accordance with this list of modalities may be more beneficial to students than a one-size-fits-all approach

**References:** [Pos15, Wik20e, Wik20l]

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