



# Learning Theories & Theorists

## A Visual Quickstart Guide



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# BEHAVIORISM

## The Concept

Behaviorism emerged in the early 20th century when Nobel-prize winning physiologist Ivan Pavlov made an interesting discovery; he had inadvertently trained his experiment subjects to involuntarily react to an outside stimulus. (David, 2014). The idea of a “stimulus-response” is the simplest form of associative learning, and behaviorists felt that all behaviors could be explained without considering internal mental states or consciousness (David, 2014). Two dominant forms of associative learning emerged from this theory: classical conditioning and operant conditioning.

Behaviorism assumes that a passive learner responds to environmental stimuli (David, 2007) and that the learner is a “tabula rasa,” or a blank slate (Skinner, 1974). Behaviorism defines learning as a change of behavior and is overwhelmingly teacher-driven. Skinner asserts that learning requires an active reinforcement schedule with constant repetition of the material, otherwise learned responses will not become permanent (Skinner, 1974).

## The Players



### Ivan Pavlov

Pavlov discovered the stimulus-response concept while working with dogs and their conditioned salivating response when a bell would ring. This response came to be known as **classical conditioning**: a reflexive or automatic mode of learning where a deliberate stimulus replaces a natural stimulus to evoke a response (David, 2014).



### John B. Watson

Watson applied Pavlov’s concept on humans in what would be an entirely unethical experiment today. Watson used loud noises to condition an 11-month child to fear rats, using the noise as the unconditioned stimulus. Each time Watson presented a rat to the young child, he produced a loud noise, eventually conditioning the young child to fear rats (David, 2014).

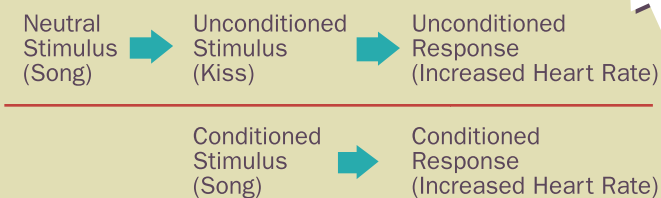


### B.F. Skinner

Skinner introduced the idea of **operant conditioning**, which is a process that attempts to modify behavior through either positive or negative reinforcement., giving the subject a distinct consequence. There are two categories: Positive and negative reinforcers, and positive and negative punishment.

**Positive reinforcement** often looks like praise or a reward for a specific behavior. A **negative reinforcer** removes an undesired or unpleasant outcome after the desired behavior. **Positive punishment** is when an unfavorable outcome is given in order to weaken a behavior, while **negative punishment** is removing a favorable event after an undesired behavior occurs (Skinner, 1974). These techniques are still prevalent in many classrooms across America today.

### CLASSICAL CONDITIONING EXAMPLE



**Consider only those facts which can be objectively observed in the behavior of one person in its relation to his [or her] prior environmental history.** *-B.F. Skinner*

### OPERANT CONDITIONING CONCEPTS

REINFORCEMENT	
<i>Positive</i> Praise or reward for a behavior	<i>Negative</i> Removes undesired or unpleasant outcome after a behavior
PUNISHMENT	
<i>Positive</i> Unfavorable outcome given to weaken a behavior	<i>Negative</i> Removing a favorable event after an undesired behavior

*(Skinner, 1974)*

## Main Idea

*Learning is Stimulus/Response*



**Knowledge is action, or at least rules for action**  
*-B.F. Skinner*



### INSTRUCTION TYPE

Teacher-Centered

Student-Centered

### MOTIVATION

Intrinsic

Extrinsic

### Bloom's Level (Cognitive Processes)



Behaviorism methods are most effective for rote memorization of important facts and formulas, putting traditional behaviorism teaching methods in the understanding/remembering section of the cognitive processes.

### The Pros

Behaviorist teaching methods have proven most successful in areas where there is a “correct” response or easily memorized material

### The Cons

Efficacy in teaching comprehension, composition, and analytical abilities is questionable

Does not account for the mental state of the learner

Does not allow for social learning

Does not consider the reciprocation of the learner on the environment

Requires substantial review to keep behavior from reverting

Predominantly instructor-driven

### Teaching Methods

Lecture and testing, skill and drill assignments, and rote learning methods fall under the behaviorist category. Many would classify these methods as “traditional” or “old-school” teaching.

These methods rely on stimulus/response interactions. During lectures, a teacher may respond with praise for a correct answer, and the reward for correct responses on a test would be a good grade.

Motivation is largely extrinsic in this model, as it relies heavily on cues from environmental sources as a reaction to behavior.

Assessment methods measure observable behaviors.  
*Ex. Multiple Choice Tests, where the question is the stimulus and the answer is the response.*

### EdTech

#### Vocabulary.com

Vocabulary.com uses positive reinforcement methods to reward students with points each time they guess a vocabulary definition correctly. The question is the stimulus, and the correct answer is the response. The point structure follows the operant conditioning method of positive reinforcement.

#### iLearn.com

iLearn provides an online video lesson (lecture), allows students to practice (skill and drill), then delivers an assessment. Correct answers are rewarded with points (positive reinforcement).

#### Quizizz

Quizizz is an online assessment program that gamifies content. Students compete to earn points for correct answers (positive reinforcement), or are given a disapproving meme when they answer incorrectly (positive punishment). The winner is showcased at the end in a trophy “ceremony” (prize).

# CONSTRUCTIVISM

## The Concept

Constructivism is based on the theory that people construct their own knowledge and understanding of the world by experiencing things, then reflecting on those experiences. Learning depends on what stage of cognitive development they have achieved, and is limited by their existing cognitive structures. Every learner's experience is dependent on their interpretation of previous experiences, which include their cultural influences, their personal history, and their stage of cognitive development (Berkley Graduate Division. (n.d.). Acquiring knowledge is an active process, which differs from behaviorism theory where the learner is a passive recipient of the stimulus that the environment provides.

## The Players



### Jean Piaget

In the 1950's, Piaget's four stages of **cognitive development** became popular. These four stages attempted to define how cognitive processes developed in children. However, by the late 1970's, the framework began to lose popularity. This cognitive approach began to evolve into a more constructivist approach when Piaget recognized that the human mind is hardwired to do specific things without instruction. Piaget's framework of **assimilation**, **accommodation**, and **equilibration** is still widely accepted (Piaget, 1968).



### William Perry

While Perry accepted many of Piaget's notions, he did not agree with Piaget's rigid stage structure. Perry agreed that the sequence of cognitive structures followed a logical and hierarchical pattern, but laid greater emphasis on the thought that learners approach knowledge differently, introducing the idea that factors such as race, gender, class, and culture influenced a person's approach to learning as much as cognitive development (Perry, 1999).



### Lev Vygotsky

Vygotsky rejected Piaget and Perry's idea that learning was separated from its social context; he believed that language and culture were essential in both intellectual development as well as human perception of the world. Social interactions are the central method that cognitive functions develop within, and those interactions allowed for equilibration as learners integrated into a community of knowledge. Vygotsky's view of cognitive development also included social interaction; he believed that learning was passed down through generations. These guided social interactions allowed for growth, and that guidance allows the student to grow past their basic potential. This process is called scaffolding and is a key concept in Vygotsky's **Zone of Proximal Development** (Vygotsky, 1978).

4 STAGES OF COGNITIVE DEVELOPMENT	
<b>Sensorimotor</b> <i>Birth to 18-24 months old</i>	<b>Object permanence</b>
<b>Pre-operational</b> <i>2 to 7 years old</i>	<b>Symbolic thought</b>
<b>Concrete Operational</b> <i>7 to 11 years old</i>	<b>Operational thought</b>
<b>Formal Operational</b> <i>Adolescence to adulthood</i>	<b>Abstract concepts</b>

<b>ASSIMILATION</b>	When a person perceives a new object in terms of existing knowledge
<b>ACCOMMODATION</b>	Modification of existing cognitive structures based on new information
<b>EQUILIBRATION</b>	Includes both assimilation and accommodation and is considered the master developmental process



## Zone of Proximal Development

What the learner is capable of doing with guidance

## Main Idea

*Learning is active discovery*

A special feature of human perception ... is the perception of real objects ... I do not see the world simply in color and shape but also as a world with sense and meaning. I do not merely see something round and black with two hands; I see a clock ...

-Lev Vygotsky



### INSTRUCTION TYPE

Teacher-Centered

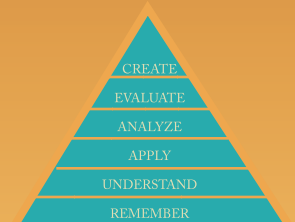
Student-Centered

### MOTIVATION

Intrinsic

Extrinsic

### Bloom's Level (Cognitive Processes)



Constructivism can be used to engage any of the cognitive levels. Activities can be designed to introduce new facts and formulas for memorization, to compare information to existing knowledge, or challenge the learner towards higher cognitive levels by evaluating and creating new products based on their knowledge.

### The Pros

Constructivism allows hands-on learning, and engages the student's prior knowledge, building on an existing schema. It stimulates critical thinking and problem solving skills, and encourages the students to explore subject matter that is of interest to them. It also promotes collaboration with other students, and gives them an opportunity to choose their role based on their abilities and interest.

### The Cons

- Requires extended preparation time
- Students must be trained in the process
- Students may arrive to the wrong conclusion
- Prior knowledge may differ from student to student
- May require multiple assessment options

### Teaching Methods

Project-based and discovery approach learning are popular constructivist methods. Collaborative group work allows students to explore the content via the lens of their personal interest.

While the content is established by the instructor, the method of discovery is student-driven. This requires the instructor to prepare for a variety of scenarios to ensure that the students arrive at the correct conclusions.

The idea of constructivism is inherently intrinsically-driven; in theory, students will pursue the knowledge due to a personal interest. However, if a student has no interest in discovering the content, extrinsic rewards may be necessary. Students are also extrinsically rewarded by contributing to a larger knowledge community.

Assessment techniques require differentiation; while simple facts and formulas can use behaviorist methods, constructivist activities can benefit from a rubric or peer review.

### EdTech

#### Padlet

Padlet is an online collaborative bulletin board with the ability to host a variety of materials such as images, audio, video, files, and hyperlinks. The ability to collaborate makes it an ideal constructivist tool; instructors can host a board to create discoverable material, or students can use it to create an artifact of learning.

#### Google Apps For Education

Google's suite of online tools include the ability to collaborate via a word processor, a spreadsheet, a presentation, or a drawing. The suite is a constructivist toolbox, making a variety of products available to collaborate and present content knowledge.

#### Metaverse

Metaverse is an online augmented reality adventure creator. Students can use this tool to create an AR experience that demonstrates content knowledge that can be shared with others, and instructors can use it to create an AR trail that will lead their students to required content.



# PRAGMATISM & SOCIAL DEVELOPMENT THEORY

## The Concept

Pragmatism features thought as a tool for problem solving and prediction, rather than a simple description or a mirror of reality. Pragmatists believe that learning is the practical application of ideas. Those ideas require action and testing within human experiences. Pragmatism differs from constructivism because learning starts with the learner; where constructivism requires an instructor to scaffold or lead the learner to the material, pragmatism starts with the learner's individual interests (Sleeper, 1987).

Social Learning Theory takes that concept further, bridging both behaviorist and cognitive learning theories. The theory suggests that observation, imitation, and modeling of other people are the building blocks of learning. It encompasses attention, memory, and motivation, explaining human behavior as a constant relationship between cognitive processes, behavioral conditioning, and environmental influences (Bandura, 1977).

## The Players



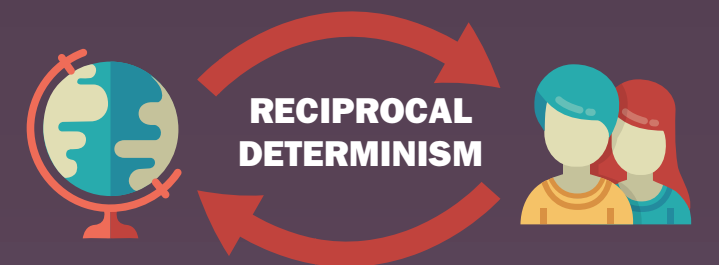
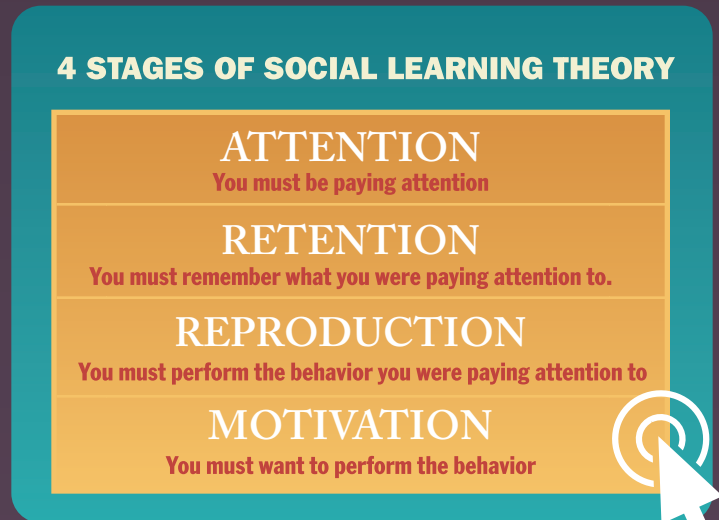
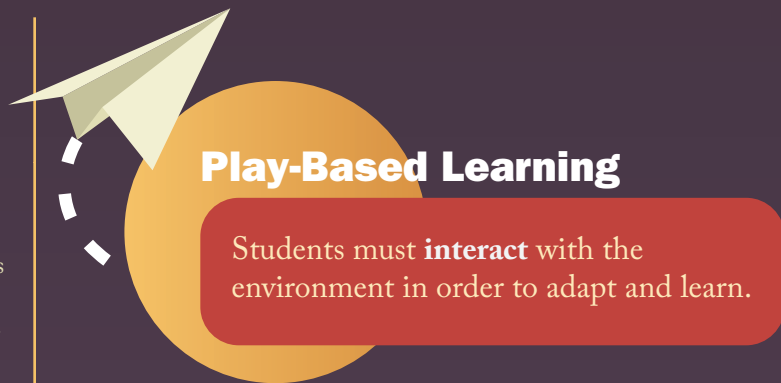
### John Dewey

John Dewey is known for bringing progressive views of education into the field. He argued that learning is an interactive process, and school is the central location where students encounter these interactions. Therefore, schools are more than a place for rote memorization, but a social institution where social reform can and should happen (Ties, 1988). He felt that students should take an active role in their own learning, and that they should explore their interests to not only reach their full potential, but use their skills for the greater good. Content knowledge is discovered through **play and interaction**; children learn best by doing, then acting upon the world. Continuity of these experiences are essential to growth.



### Albert Bandura

Bandura believed that observation, imitation & modeling fuels learning (Bandura, 1969). By observing others, the learner determines how new behaviors are performed, and the internal coding of that experience is the guide for their action (Bandura, 1973). Bandura identified four necessary conditions for successful modeling: **attention, retention, reproduction, and motivation**. He also believed in "**reciprocal determinism**," which is the belief that the world and a person's behavior cause each other (Bandura, 1977). This differs from behaviorism, where the environment is the sole cause of behavior. Later in his career, Bandura defined personality as an interaction between environment, behavior, and the psychological processes of the learner.



## Main Idea

*Learning begins with play/others*



**Education is not preparation for life:  
Education is life itself.**

*-John Dewey*



### INSTRUCTION TYPE

Teacher-Centered

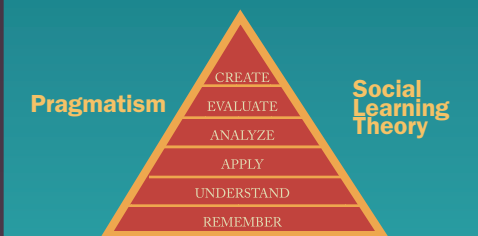
Student-Centered

### MOTIVATION

Intrinsic

Extrinsic

### Bloom's Level (Cognitive Processes)



Pragmatism has the ability to trigger any of the cognitive processes due to the personal connections that the learner has with the content. Social learning theory can also be used at all levels of Blooms, since all content can be socially modeled, remembered and reproduced.

### The Pros

Pragmatism is entirely student-driven, giving the highest intrinsic motivation factor in all of the theories. There is also a social factor that allows students to make a positive contribution to society. Social learning theory puts the students in charge of the learning, promoting collaboration, peer idea exchange, and intrinsically-driven learning that results in deeper understanding of the content.

### The Cons

Bandura's experiments did not account for biological factors and their effect on learning.

Care must be taken that social majority does not follow fallacies

Students must buy in to the purpose of the class and realize their place within the classroom structure

### Teaching Methods

Dewey believed in unstifled creative play with few boundaries, making his theory more appropriate for early childhood education. However, pragmatism can be practiced in the classroom by finding "teachable moments" within student-driven activities.

Flipped classrooms are a good place to practice social learning theory. Peer coaching is fosters retention, and gamification can be used to foster motivation.

Because these theories are predominately student-motivated, the instructor must act as a guide and facilitator, and be relatively flexible in curriculum exploration.

Assessments in a social classroom require an additional criteria of social collaboration: does the student have the ability to demonstrate knowledge, and the ability to glean the information from modeling?

### EdTech

#### Lightbot

Lightbot is game application that teaches students the basic functions of coding through play. The player must navigate the bot through increasingly difficult levels, learning the concepts of object-oriented programming such as sequencing, procedures, loops, and execution.

#### CoSpaces

CoSpaces combines virtual reality, code, and collaborative spaces to allow students to create a functional space that others can contribute to or interact with. As students build virtual worlds, they can use mobile VR devices to explore and interact with one another's creations.

#### FlipGrid

Flipgrid is a social discussion board where students can discuss topics in asynchronous time. As topics are posted, students reply with their own videos, promoting a robust discussion with a sense of community.

# BLENDED THEORIES

## The Concept

Later theorists recognized the value in each learning theory but sought to reconcile issues within them. Robert Gagne's Conditions of Learning stipulated that learning contained several levels, and different internal and external processes were necessary for each one (Gagne, 1985). Each level required a different type of instruction in order to be successful. Gagne's theory evolved during the course of his research; in the beginning, he leaned more on behaviorist principles and resembled more of a constructivist approach near the end.

Jerome Bruner also referenced several prior theories in his approach to learning, and emphasized that learning consisted of stages. He borrowed Skinner's behaviorist principles of reinforcements and punishments, and blended those with Piaget's cognitive and constructivist concepts of learner stages. He also considered the social aspects of learning as well, creating a unique scaffold incorporating several theories (Bruner, 1966).

## The Players



### Robert Gagne

Gagne's Conditions of Learning were a large part of moving education forward to its current state. He stated that learning tasks for intellectual skills followed a hierarchy of complexity, and ranged from behaviorist cues to constructivist tasks. The hierarchy drives instruction: stimulus recognition, response generation, following, use of terminology, discriminations, concept formation, rule application, and problem-solving. The system identifies prerequisites required for learning to occur at each level, and require a task analysis that provides a basis of instruction sequencing (Gagne, 1985).

**Learning has two parts; one that is external to the learner and one that is internal**  
*-Robert Gagne*



### Jerome Bruner

Bruner stated that four aspects were important in a theory of instruction: the learner's predisposition towards learning, the structure of the knowledge presented, the most effective sequence of the material, and the type and pace of rewards and punishments. A good method would simplify the knowledge, generate interest in new propositions concerning the content, and increase the manipulation of the information (Bruner, 1966). The instruction requires an analysis of the learner to determine readiness, scaffolding of the information, and an opportunity for further discovery based on learner interest.

### GAGNE'S 9 EVENTS OF INSTRUCTION

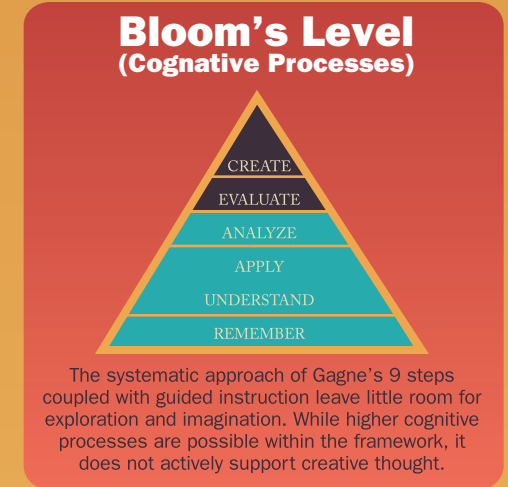
- 1 **RECEPTION**  
Gaining attention
- 2 **EXPECTANCY**  
Informing learners of the objective
- 3 **RETRIEVAL**  
Stimulating recall of prior learning
- 4 **SELECTIVE PERCEPTION**  
Presenting the stimulus
- 5 **SEMANTIC ENCODING**  
Providing learning guidance
- 6 **RESPONDING**  
Eliciting performance
- 7 **REINFORCEMENT**  
Providing feedback
- 8 **RETRIEVAL**  
Assessing performance
- 9 **GENERALIZATION**  
Enhancing retention and transfer

### BRUNER'S 4 CONDITIONS OF LEARNING

- The learner's predisposition towards learning,
- The structure of the knowledge presented
- The most effective sequence of the material
- The type and pace of rewards and punishments

## Main Idea

*Learning has several components*



### The Pros

Gagne's systematic formula provides a sequence of events that make a process easy to follow. The instructor can adjust for a variety of learning modalities, and it can be adapted to suit the needs of varied learners. Used in conjunction with Bruner's theory, instruction is thoughtfully planned and executed.

### The Cons

- Gagne's steps require a lot of guidance while learning a new skill.
- Not a lot of independent or unassisted exploration
- Learner becomes dependent on guided information

### Teaching Methods

Gagne's framework requires flexibility of instruction styles; different outcomes require different methods of instruction. Instructors must have a clear understanding of student's prior knowledge to adjust the material, and be prepared to guide the student while learning a new skill.

Bruner stresses that the instruction must also account for the student's experiences and contexts so that the student will be willing to learn the material.

While Gagne's instruction framework begins heavily teacher-driven, it transitions into a more student-driven approach. Bruner's framework leaves more opportunities for student-driven exploration.

A variety of assessments need to be considered, as each learning outcome will require a different type of instruction.

### EdTech

#### Learning Management Systems

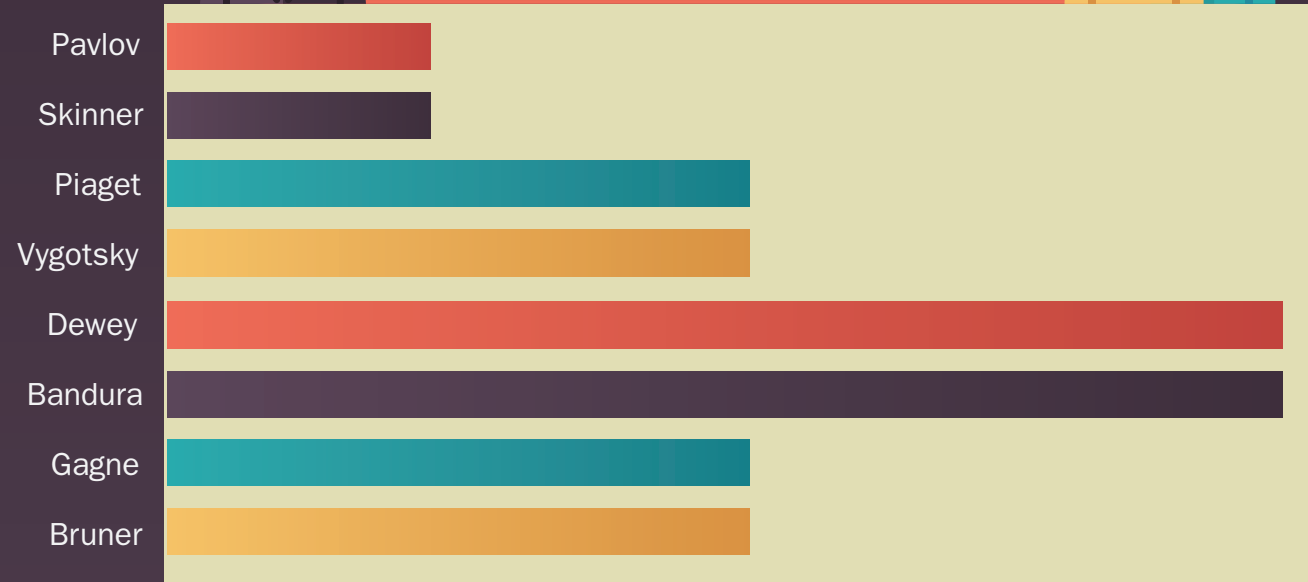
Learning management systems such as Canvas, Blackboard, Moodle, and D2L offer a variety of instructional delivery and assessment tools. Not only can they deliver differentiated materials to account for several learning styles, but they also have tireless patience for repetition and allow the learner to repeat the material as many times as necessary to master the material. Content can be organized into modules allowing the student to learn in sequential order, or as an open course so students can determine the learning order as they prefer.

The inclusion of several collaborative tools also gives students an opportunity for social interaction. Learning Management Systems can be customized to include any of the theories previously discussed.



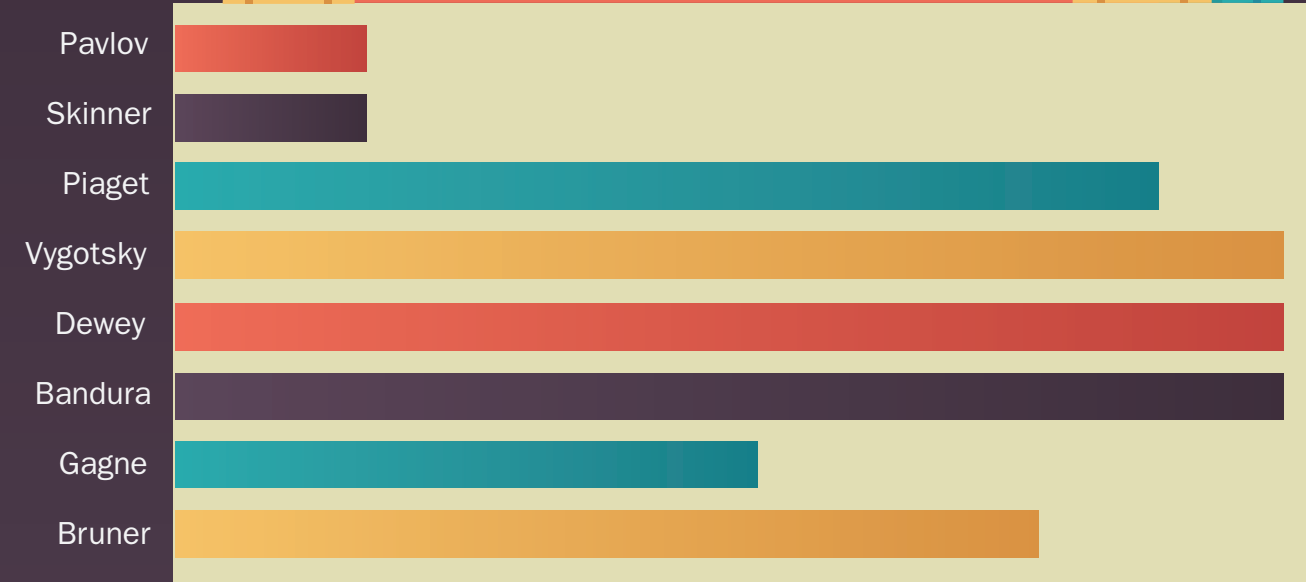
# INSTRUCTION TYPE

Instructor-Centered vs. Student Centered



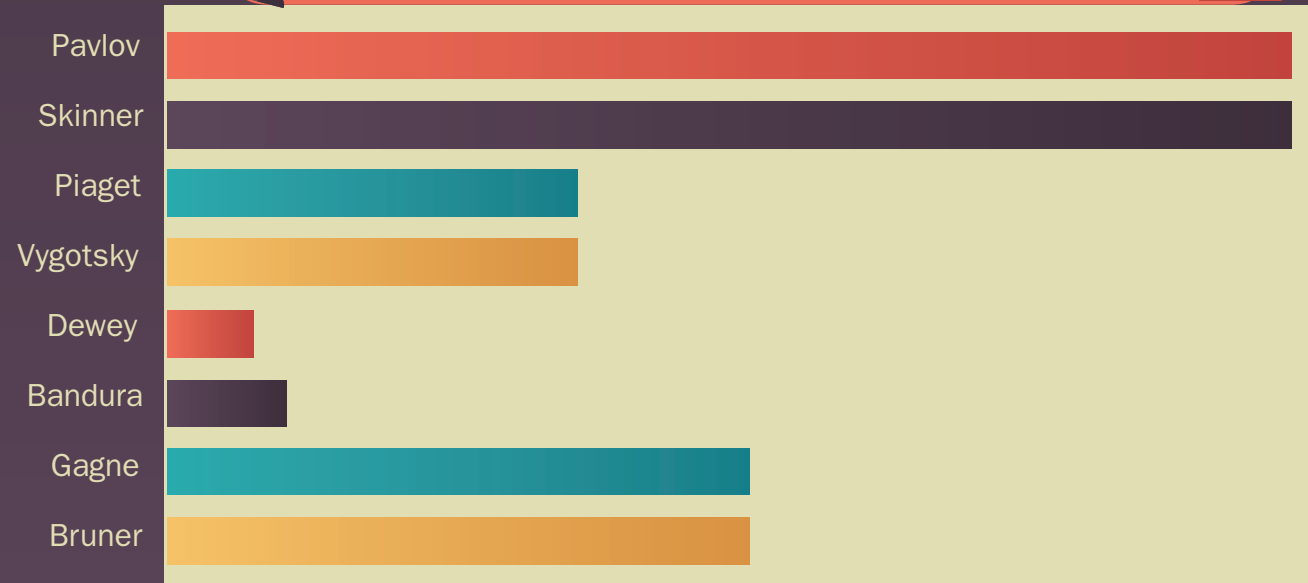
# SOCIAL STRUCTURE

Solitary vs. Social



# PRIMARY MOTIVATION

Intrinsic vs. Extrinsic



# A COMPARISON OF THEORIES

	How does learning occur?	Factors that affect learning	How does transfer occur?
<b>Behaviorism</b>	Observable behavior	Reward or punishment, stimulus	Stimulus/response
<b>Constructivism</b>	Personal experience, socially	Engagement, Culture, Social Interaction, Participation	Socially
<b>Pragmatism</b>	Personal experience, Naturally	Personal experience, Exploration	Experience, Socially
<b>Social Development</b>	Personal experience, socially	Social Interaction, Motivation	Socially

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