

# Learning mechanics



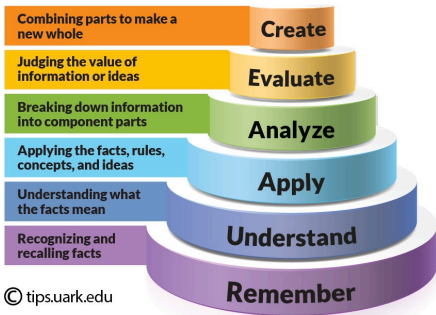
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**SECRIOUS**  
PROJECT

# Levels of learning



# Example learning verbs

## Create

design, formulate, build, invent, create,  
compose, generate, derive, modify,  
develop

# Example learning verbs

## Evaluate

choose, support, relate, determine,  
defend, judge, grade, compare, contrast,  
argue, justify, convince, select, evaluate

# Example learning verbs

## Analyze

classify, break down, categorize,  
analyze, diagram, illustrate, criticize,  
simplify, associate

# Example learning verbs

## Apply

calculate, predict, apply, solve, illustrate,  
use, demonstrate, determine, model,  
perform, present

# Example learning verbs

## Understand

describe, explain, paraphrase, restate,  
give original examples of, summarize,  
contrast, interpret, discuss

# Example learning verbs

## Remember

list, recite, outline, define, name, match,  
quote, recall, identify, label, recognize



# Sources

Anderson, L. and Krathwohl, D. (2001) *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives*. Boston, MA: Allyn & Bacon.

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Lim, T. et al. (2013) 'Strategies for Effective Digital Games Development and Implementation', in Baek, Y. and Whitton, N. (eds) *Cases on Digital Game-Based Learning: Methods, Models, and Strategies*. Hershey, PA: IGI Global, pp. 168–198. doi: 10.4018/978-1-4666-2848-9.ch010.

Suttie, N. et al. (2012) 'In pursuit of a 'serious games mechanics' : A theoretical framework to analyse relationships between "game" and "pedagogical aspects" of serious games', in *Procedia Computer Science*. doi: 10.1016/j.procs.2012.10.091.

Bloom's Extended Taxonomy image: Jessica Shabatura (<https://tips.uark.edu/using-blooms-taxonomy/>)

# How to use this deck

**Title**

**Explanation**

**Card border colour suggests what learning level the mechanic mostly involves. See Levels of Learning card for key and Example Learning Verbs cards for more ideas.**

**Examples of learning verbs that could be involved in this mechanic are listed below the text (colours show the learning level.)**

**1**

## Instructional

Arrangement of learning activities which have been designed to facilitate specific learning objective(s).

Intentional, sequential, arrangement (i.e. an instructional model) provides direction for the achievement of educational goals.

recall interpret perform identify

The diagram illustrates a sample card from a deck. The card has a blue background and a purple border. It is numbered '1' in the top right corner. The title 'Instructional' is written in white. Below the title, there is a paragraph of text: 'Arrangement of learning activities which have been designed to facilitate specific learning objective(s). Intentional, sequential, arrangement (i.e. an instructional model) provides direction for the achievement of educational goals.' At the bottom of the card, there are four rounded rectangular buttons with the words 'recall', 'interpret', 'perform', and 'identify' written on them. The buttons are colored: 'recall' is purple, 'interpret' is grey, 'perform' is light blue, and 'identify' is pink. Three curved arrows point from the text annotations to the card: one from 'Title' to the top left, one from 'Explanation' to the left side, and one from the bottom text to the bottom right. A larger curved arrow points from the right side text to the purple border of the card.

# Instructional

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Intentional, sequential, arrangement (i.e. an instructional model) provides direction for the achievement of educational goals.

recall

interpret

perform

identify

# Guidance

Help for students to understand and complete learning tasks and navigate course material.

Guidance facilitates students to identify their capacities and competencies and to manage their own educational, training, occupational, and personal decisions.

outline

interpret

apply

summarize

# Demonstration

Systematically performing a task to teach a concept, typically used to develop practical techniques.

Demonstration helps develop procedural knowledge and connect theory to practice. Learners start with *Observation* and *Imitation* before achieving competency that enables autonomy and/or adaptation of psychomotor and cognitive objectives.

illustrate

model

perform

recall

# Action / Task

Doing meaningful tasks and reflecting on the results, in order to help apply learning to real situations.

Action learning or Task-based learning is an experiential approach where students implement what they know (in individual or group tasks) and consider their learning and its applications before planning for the next action-reflection cycle.

apply

recall

use

relate

# Generalisation / Discrimination

Generalisation is responding in similar ways to similar situations. Discrimination is noticing subtle differences in situations and responding differently.

The greater the similarity between stimuli, the greater the generalisation. For example, a schoolchild might generalise between two adults (a teacher and a doctor) but discriminate for a third adult (a parent.)

categorize

recognize

compare/contrast

identify

# Observation

Learning by watching, memorising, and copying the behaviour of others.

Observational learning can involve vicarious learning, social learning, modelling, or shadowing. It requires four conditions to be successful: attention, retention, replication, and motivation (having a reason to replicate the behaviour.)

recall

derive

perform

associate



# Feedback

Providing information about a learner's performance relative to their learning goals which is used as a basis for improvement.

Feedback redirects or focuses the learner's actions to achieve a goal by providing a better understanding of values, standards, criteria, and by aligning effort and activity with an outcome.

criticize

analyze

evaluate

interpret

# Question and Answer

Encouraging learners to use questioning strategies to assess what they have learned, and to develop their thinking skills.

Also known as the Socratic method, Q&A involves asking and answering questions to stimulate critical thinking, develop ideas, identify assumptions, and iteratively improve a hypothesis.

explain

discuss

criticize

justify

# Exploration/Discovery

Encouraging exploration of a problem for students to construct their own questions, relationships, meanings, and solutions.

A constructivist approach also known as inquiry- or problem-based learning. It is considered most appropriate for teaching problem-solving skills, rather than e.g. memorisation (or *Repetition*).

match

predict

analyze

formulate

# Identification

Taking on an aspect of someone else and transforming understanding through this process.

For example, roleplay can combine the imitation part of *Observation* with creative reinterpretation, to achieve a particular learning objective e.g. increased empathy or experiential learning. Close *Identification* during *Observation* is likely to increase learning.

relate

associate

interpret

create

# Plan

Preparing for future action using desired learning goals as a starting point.

Planning in learning involves using existing knowledge to identify goals, analyze the probability of various outcomes, and strategically managing resources to achieve a learning outcome.

predict

design

select

develop

# Hypothesize

Using existing knowledge or experience to make an 'educated guess' that can then be tested.

A hypothesis is a provisional idea that needs further evaluation. In formal terms, it is a specific, testable prediction which requires Experimentation to prove or disprove. Hypotheses can link theory with empirical data.

predict

argue

create

present

# Experimentation

Trying out new ideas or activities to discover the effects.

An experiment is a practical, repeatable procedure to support a *Hypothesis*. *Experimentation* gives insight into cause-and-effect by demonstrating what happens when a particular factor is manipulated. It is associated with experiential learning.

compare

analyze

determine

solve

# Repetition

Performing an action multiple times to develop a skill or help memorize knowledge.

Practising or rehearsing a skill or recollection of information becomes easier over time which frees up mental resources. Repetition can be known as rote learning, or 'drill and practice'.

recall

recite

list



# Reflection/Discussion

Consideration of an experience, or of learning, to enhance understanding or inform action.

Reflection is a conscious exploration of the self to construct new insights. It has three key stages: breakdown (e.g. dissonance); inquiry (analysis); Transformation (e.g. a new perspective or cognitive change.) Reflection can be enhanced by dialogue.

support

break down

evaluate

interpret

# Analysis

Separating something into parts in order to explain or interpret it.

Analysis breaks down a collection of evidence to enable explanation, evaluation, and clarification. It is supported by asking critical thinking questions such as WHY and HOW in order to reach conclusions.

break down

evaluate

explain

analyze

# Simulation

Imitating real-world activities or processes in a (safe) artificial environment.

Instructional scenarios with cause+effect which allows learners to practice skills without real-world consequences and try alternative approaches. It involves experiential learning, *Identification*, and the application of knowledge to realistic situations.

apply

perform

illustrate

relate

# Tutorial

Interactively transferring or reinforcing knowledge as part of a wider learning process, usually with single learners or small groups.

Tutorial has different meanings across disciplines, types of institution, and levels but generally involves a tutor supplying *Guidance* to complete a certain task.

describe

discuss

classify

identify

# Assessment

Measuring the progress and achievement of a learner.

Assessment can include: exams, quizzes, projects, coursework, presentations. Formative assessment monitors learning and provides ongoing Feedback to improve. Summative assessment evaluates learning by comparing it against a benchmark.

evaluate

grade

compare

criticize

# Competition

Explicitly comparing learners against each other (as opposed to an *Assessment* benchmark) to enhance *Motivation*.

Competitive learning can be used to develop creativity and problem solving skills. Some research shows an increase in intrinsic motivation, learners working harder, and higher achievement.

compare/contrast

judge

apply

use

# Motivation

Wanting to learn. Starting or continuing learning behaviours due to a desire to achieve outcomes.

A process of interaction between learner and environment resulting in goal-directed behaviours. Extrinsic motivation is driven by external rewards (e.g. grades.) whereas intrinsic motivation is doing an activity for personal satisfaction/pleasure.

predict

design

justify

use

# Ownership

Being personally invested in the learning process.

Ownership is when learners feel connected to, actively involved in, and in control of their learning. It is thought to facilitate understanding and retention of knowledge and increase *Motivation*. It can include self-directed learning and taking responsibility for learning activities/direction.

build

choose

justify

design



# Incentive

Creating Motivation with rewards.

Incentive learning involves a learner matching an action with a reward and changing their behaviour get the reward. This can result in greater effort and greater performance. Incentives can be extrinsic (e.g. a prize) or intrinsic (an activity being fun.)

associate

convince

generate

choose