



Intelligence

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What is Intelligence?



Intelligence is the aggregate or global capacity of an individual to act purposefully, to think rationally, and to deal effectively with his environment.

All the definitions have been systematized by Vernon and Freeman .

Vernon's classification of definition



Biological approach



**Adaptive nature
of human beings.**



**Psychological
approach**



**Effect of heredity
and environment**

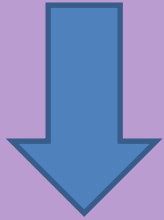


**Operational
approach**



**Observable conditions for
searching truth**

Freeman's classification of definition



**Adjustment
ability**



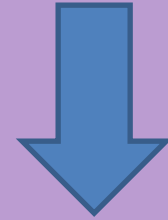
**Adjustment
ability of an
individual to
his
environment**



**Ability to
learn**



**An
individual's
ability to
learn**



**Ability to
abstract thinking**



**Able to carry
on abstract
thinking**

Definition of Intelligence:

Ability to adjust

Binet: “The ability to an individual to direct his behaviour towards a goal”.

Burt: “It is the power of readjustment to relatively novel situations by organizing new psycho-physical coordination.”

J. Piaget: Adaptation of self to physical and social environment”.

Colvin – “Intelligence is the ability to learn to adjust to one’s environment.”

Ability to learn

Buckingham: “Intelligence is the learning ability.”

Spearman: Intelligence may be thought of in terms of two abilities, i.e. general and specific.

Woodrow: “It is the capacity to acquire.”

William Stern – “Intelligence is general adaptability to new problems and conditions of life.”

Ability to do abstract reasoning

Terman – “An individual is intelligent in proportion as he is able to carry on abstract thinking.”

Vernon: Intelligence as, all round thinking capacity or mental efficiency.”

One another category of definition is

Operational Definition

Boring – “Intelligence is what intelligence tests test.”

Stoddard – “Intelligence is the ability to undertake activities that are characterized by difficulty, complexity, abstraction, economy, adaptiveness to a goal, social value and the emergence of originals and to maintain such activities under conditions that demand a concentration of energy and a resistance to emotional forces.”

Burt – “Intelligence is inborn, all round efficiency.”

David Wechsler – “Intelligence is the aggregate or global capacity of the individual to act purposefully, to think rationally and to deal effectively with his environment.”

Types of intelligence

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graph TD; A[Types of intelligence] --> B[Concrete intelligence]; A --> C[Abstract intelligence]; A --> D[Social intelligence]; B --> E[Intelligence in relation to concrete materials]; C --> F[Ability to respond to words, numbers and letters]; D --> G[To react to social situations of daily life];
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**Concrete
intelligence**

**Intelligence
in relation to
concrete
materials**

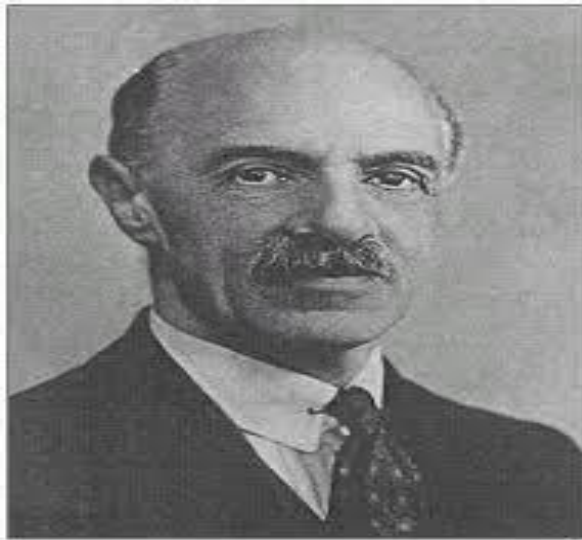
**Abstract
intelligence**

**Ability to respond
to words, numbers
and letters**

**Social
intelligence**

**To react to
social situations
of daily life**

Theory of Intelligence



Two Factor theory of Spearman

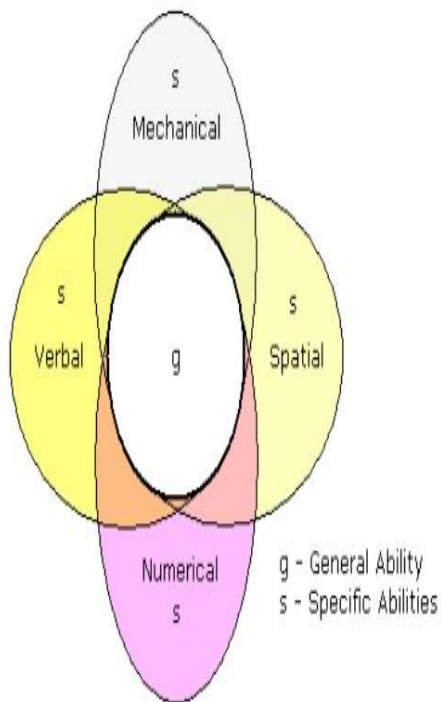
➤ **Spearman proposed this Two factor theory of intelligence in 1904.**

➤ **Theory involves two factors namely General (G) and Specific (S) factors.**

➤ **“G” factor was a general capacity which was basically a reasoning factor. According to this theory every different mental ability involves a general factor (G). This factor is largely innate and accounts for success in all activities.**

➤ **“S” factor was a specific factor (S), which is shared with none. It differs from individual to individual. But success in any specialized field very much depends on the concern specific factor which is essentially learned.**

➤ **Performance in any situation of an individual is predicted by the amount of share of general and specific factors in different intellectual activities.**



Multifactor theory of Thorndike

- ❖ According to the theory intelligence is said to be constituted of multitude of separate factors or elements each being a minute element or ability. A mental act involves a number of these minute elements operating together. If any task is correlated, the degree of correlation is due to the common elements involved in the two tasks.
- ❖ Thorndike distinguished 4 attributes of intelligence. They are:



Attributes of
Intelligence

1. Level
2. Range
3. Area
4. Speed

Level:

- ❑ It refers to the difficulty of a task that can be solved.
- ❑ If we think of all test items arranged in a sequential order of increasing difficulty, then the height that we can ascend on this ladder of difficulty determines our level of intelligence.

Range:

- ❑ This refers to the number of tasks at any given degree of difficulty that we can solve.
- ❑ Theoretically an individual possessing a given level of intelligence should be able to solve the whole range of the task at the level.
- ❑ Range determined not only by level but also by the Breadth of the experience and by opportunity to learn.
- ❑ In intelligence tests range is represented by items of equal difficulty.

Area:

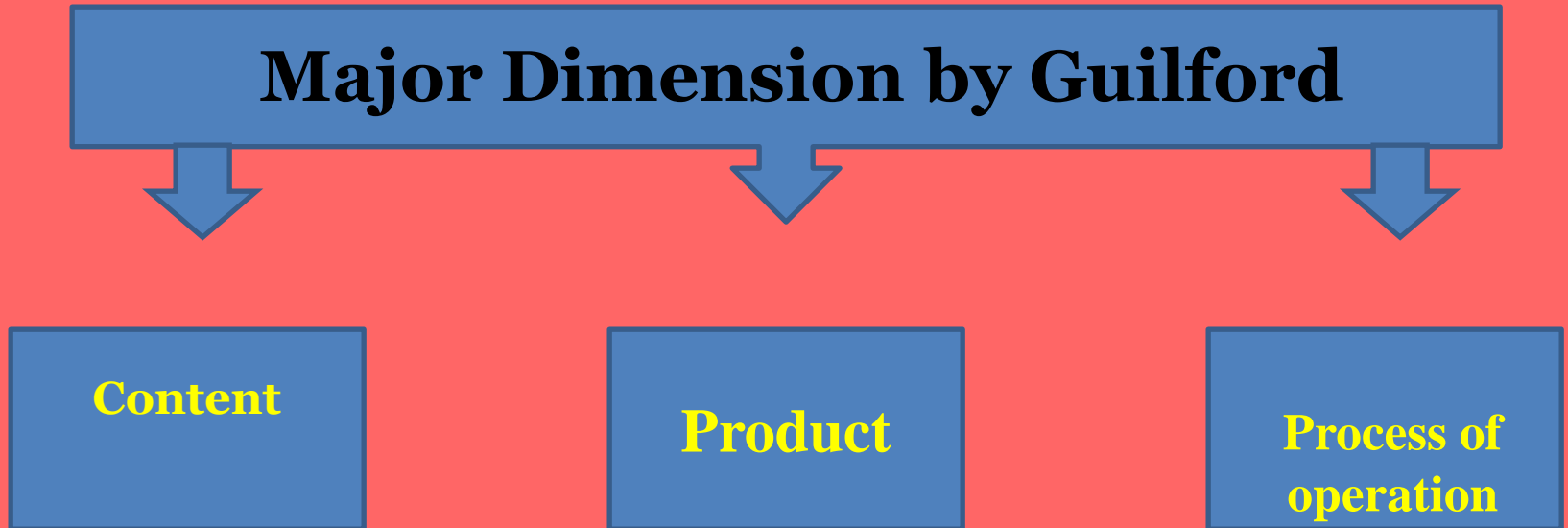
- ❑ It refers to total number of situations at each level to which the individual is able to respond.
- ❑ Area is summation of all the ranges at each level of intelligence processed by an individual.

Speed:

- ❑ This is the rapidity with which an individual can respond to items.
- ❑ Speed and altitude are positively related. Speed is much closely bound up with altitude than are the other attributes. We should not therefore emphasis speed too much in our intelligence test.

Structure of Intellect by Guilford

This three dimensional theory was developed by Guilford (1966) at University of Southern California. Three major dimensions are:



Contents:

Visual content: It refers to the concrete material perceived through ideas and thoughts.

Auditory content: It refers to the matter or information perceived through ears.

Symbolic content: It refers to the composition of letters, digits or other conventional signs and symbols usually organized in general patterns.

Semantic content: It refers to the clear verbal form of meanings or ideas for which no examples are necessary.

Behavioural content: It refers to the social intelligence which enables one to understand human communications.

Products

Units: This is similar to Gestalt psychology of figure and ground; relatively segregated items.

Classes: It refers to conceptions underlying sets of information or data grouped by virtue of their common properties.

Relations: It refers to the connections between items of information based on variables. These connections are more meaningful and definable.

Systems: It refers to the aggregate of items of information or data with a structure.

Transformations: It refers to the changes like redefinition, modification in existing information or its functions.

Implications: It refers to the explorations of information in the form of expectancies, predictions and consequences.

Operations:

Cognition: This involves immediate discovery, rediscovery, awareness, comprehension and understanding.

Memory recording: It is a fundamental operation. It refers to the retention of what is recognized for a short duration.

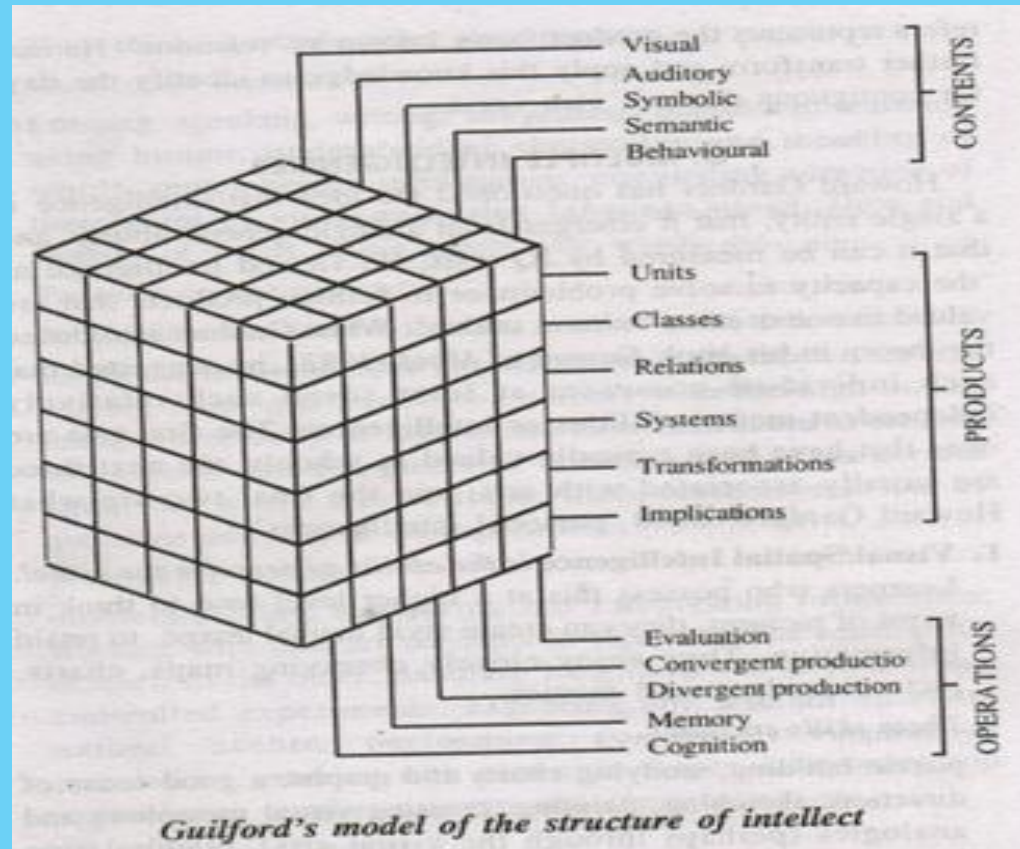
Divergent thinking: It refers to the generation of information from the given data where the emphasis is on conventionally accepted best outcomes.

Convergent thinking: It involves thinking in different directions, searching and seeking some different variety and novelty. It is closely related with creativity.

Evaluation: It refers to the reaching of conclusion and decision as the goodness, correctness, adequacy and desirability of information.

Conclusion

The structure of intelligence can be viewed in terms of the three basic parameters along with their divisions into a specific number of factors. There could be $5 \times 6 \times 5 = 150$ factors in all, which may constitute human intelligence. Each one of these factors has a trigram symbol, i.e. at least one factor from each category of the three parameters has to be present in any specific intellectual activity on mental task.



Guilford's model of the structure of intellect

