

Unit 1

Bloom's Taxonomy, (in full: 'Bloom's Taxonomy of Learning Domains', or strictly speaking: Bloom's 'Taxonomy Of Educational Objectives') was initially (the first part) published in 1956 under the leadership of American academic and educational expert Dr Benjamin S Bloom. 'Bloom's Taxonomy' was originally created in and for an academic context, (the development commencing in 1948), when Benjamin Bloom chaired a committee of educational psychologists, based in American education, whose aim was to develop a system of categories of learning behaviour to assist in the design and assessment of educational learning. Bloom's Taxonomy has since been expanded over many years by Bloom and other contributors (notably Anderson and Krathwhol as recently as 2001, whose theories extend Bloom's work to far more complex levels than are explained here, and which are more relevant to the field of academic education than to corporate training and development).

.Bloom's Taxonomy was primarily created for academic education, however it is relevant to all types of learning.

Interestingly, at the outset, Bloom believed that education should focus on 'mastery' of subjects and the promotion of higher forms of thinking, rather than a utilitarian approach to simply transferring facts. Bloom demonstrated decades ago that most teaching tended to be focused on fact-transfer and information recall - the lowest level of training - rather than true meaningful personal development, and this remains a central challenge for educators and trainers in modern times. Much corporate training is also limited to non-participative, unfeeling knowledge-transfer, (all those stultifyingly boring powerpoint presentations...),

bloom's taxonomy definitions

Bloom's Taxonomy model is in three parts, or 'overlapping domains'. Again, Bloom used rather academic language, but the meanings are simple to understand:

1. Cognitive domain (intellectual capability, ie., knowledge, or 'think')
2. Affective domain (feelings, emotions and behaviour, ie., attitude, or 'feel')
3. Psychomotor domain (manual and physical skills, ie., skills, or 'do')

This has given rise to the obvious short-hand variations on the theme which summarise the three domains; for example, Skills-Knowledge-Attitude, KAS, Do-Think-Feel, etc.

Various people have since built on Bloom's work, notably in the third domain, the 'psychomotor' or skills, which Bloom originally identified in a broad sense, but which he never fully detailed. This was apparently because Bloom and his colleagues felt that the academic environment held insufficient expertise to analyse and create a suitable reliable structure for the physical ability 'Psychomotor' domain. While this might seem strange, such caution is not uncommon among expert and highly specialised academics - they strive for accuracy as well as innovation. In Bloom's case it is as well that he left a few gaps for others to complete the detail; the model seems to have benefited from having several different contributors fill in the detail over the years, such as Anderson,

Krathwhol, Masia, Simpson, Harrow and Dave (these last three having each developed versions of the third 'Psychomotor' domain).

In each of the three domains Bloom's Taxonomy is based on the premise that the categories are ordered in degree of difficulty. An important premise of Bloom's Taxonomy is that each category (or 'level') must be mastered before progressing to the next. As such the categories within each domain are levels of learning development, and these levels increase in difficulty.

The simple matrix structure enables a checklist or template to be constructed for the design of learning programmes, training courses, lesson plans, etc. Effective learning - especially in organisations, where training is to be converted into organisational results - should arguably cover all the levels of each of the domains, where relevant to the situation and the learner.

The learner should benefit from development of knowledge and intellect (Cognitive Domain); attitude and beliefs (Affective Domain); and the ability to put physical and bodily skills into effect - to act (Psychomotor Domain).

bloom's taxonomy overview

Here's a really simple adapted 'at-a-glance' representation of Bloom's Taxonomy. The definitions are intended to be simple modern day language, to assist explanation and understanding. This simple overview can help you (and others) to understand and explain the taxonomy. Refer back to it when considering and getting to grips with the detailed structures - this overview helps to clarify and distinguish the levels.

For the more precise original Bloom Taxonomy terminology and definitions see the more detailed domain structures beneath this at-a-glance model. It's helpful at this point to consider also the '[conscious competence](#)' [learning stages model](#), which provides a useful perspective for all three domains, and the concept of developing competence by stages in sequence.

| Cognitive | Affective | Psychomotor |
|----------------|--------------------------|---------------------------------------|
| knowledge | attitude | Skills |
| 1. Recall data | 1. Receive (awareness) | 1. Imitation (copy) |
| 2. Understand | 2. Respond (react) | 2. Manipulation (follow instructions) |
| 3. Apply (use) | 3. Value (understand and | 3. Develop Precision |

| | | |
|---|---|---|
| | act) | |
| 4. Analyse (structure/elements) | 4. Organise personal value system | 4. Articulation (combine, integrate related skills) |
| 5. Synthesize (create/build) | 5. Internalize value system (adopt behaviour) | 5. Naturalization (automate, become expert) |
| 6. Evaluate (assess, judge in relational terms) | | |

(Detail of Bloom's Taxonomy Domains: 'Cognitive Domain' - 'Affective Domain' - 'Psychomotor Domain')

N.B. In the Cognitive Domain, levels 5 and 6, Synthesis and Evaluation, were subsequently inverted by Anderson and Krathwhol in 2001. Anderson and Krathwhol also developed a complex two-dimensional extension of the Bloom Taxonomy, which is not explained here. If you want to learn more about the bleeding edge of academic educational learning and evaluation there is a list of further references below. For most mortals in teaching and training what's on this page is probably enough to make a start, and a big difference.

Note also that the Psychomotor Domain featured above is based on the domain detail established by RH Dave (who was a student of Bloom) in 1967 (conference paper) and 1970 (book). The Dave model is the simplest and generally easiest to apply in the corporate development environment. Alternative Psychomotor Domains structures have been suggested by others, notably [Harrow and Simpson's models detailed below](#). I urge you explore the [Simpson](#) and [Harrow](#) Psychomotor Domain alternatives - especially for the development of children and young people, and for developing skills in adults that take people out of their comfort zones. This is because the Simpson and Harrow models offer different emotional perspectives and advantages, which are useful for certain learning situations, and which do not appear so obviously in the structure of the Dave model.

[\(Back to the development of Bloom's Taxonomy.\)](#)

Bloom's Taxonomy in more detailed structure follows, with more formal terminology and definitions. Refer back to the [Bloom Taxonomy overview](#) any time you need to refresh or clarify your perception of the model. It is normal to find that the extra detail can initially cloud the basic structure - which is actually quite simple - so it's helpful to keep the simple overview to hand.

bloom's taxonomy learning domains - detailed structures

1. bloom's taxonomy - cognitive domain - (intellect - knowledge - 'think')

Bloom's Taxonomy 1956 Cognitive Domain is as follows. An adjusted model was produced by Anderson and Krathwhol in 2001 in which the levels five and six (synthesis and evaluation) were inverted (reference: Anderson & Krathwohl, A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives, 2001). This is why you will see different versions of this Cognitive Domain model. Debate continues as to the order of levels five and six, which is interesting given that Bloom's Taxonomy states that the levels must be mastered in order.

In my humble opinion it's possible to argue either case (Synthesis then Evaluation, or vice-versa) depending on the circumstances and the precise criteria stated or represented in the levels concerned, plus the extent of 'creative thinking' and 'strategic authority' attributed to or expected at the 'Synthesis' level. In short - pick the order which suits your situation. (Further comment about synthesis and evaluation priority.)

| cognitive domain | | | | | |
|------------------|------------------|----|---|---|--|
| level | category 'level' | or | behaviour descriptions | examples of activity to be trained, or demonstration and evidence to be measured | 'key words' (verbs which describe the activity to be trained or measured at each level) |
| 1 | Knowledge | | recall or recognise information | multiple-choice test, recount facts or statistics, recall a process, rules, definitions; quote law or procedure | arrange, define, describe, label, list, memorise, recognise, relate, reproduce, select, state |
| 2 | Comprehension | | understand meaning, re-state data in one's own words, interpret, extrapolate, translate | explain or interpret meaning from a given scenario or statement, suggest treatment, reaction or solution to given problem, create examples or metaphors | explain, reiterate, reword, critique, classify, summarise, illustrate, translate, review, report, discuss, re-write, estimate, interpret, theorise, paraphrase, reference, example |

| | | | | |
|---|--------------------------|--|---|---|
| 3 | Application | use or apply knowledge, put theory into practice, use knowledge in response to real circumstances | put a theory into practical effect, demonstrate, solve a problem, manage an activity | use, apply, discover, manage, execute, solve, produce, implement, construct, change, prepare, conduct, perform, react, respond, role-play |
| 4 | Analysis | interpret elements, organizational principles, structure, construction, internal relationships; quality, reliability of individual components | identify constituent parts and functions of a process or concept, or de-construct a methodology or process, making qualitative assessment of elements, relationships, values and effects; measure requirements or needs | analyse, break down, catalogue, compare, quantify, measure, test, examine, experiment, relate, graph, diagram, plot, extrapolate, value, divide |
| 5 | Synthesis (create/build) | develop new unique structures, systems, models, approaches, ideas; creative thinking, operations | develop plans or procedures, design solutions, integrate methods, resources, ideas, parts; create teams or new approaches, write protocols or contingencies | develop, plan, build, create, design, organise, revise, formulate, propose, establish, assemble, integrate, re-arrange, modify |
| 6 | Evaluation | assess effectiveness of whole concepts, in relation to values, outputs, efficacy, viability; critical thinking, strategic comparison and review; judgement relating to external criteria | review strategic options or plans in terms of efficacy, return on investment or cost-effectiveness, practicability; assess sustainability; perform a SWOT analysis in relation to alternatives; produce a financial justification for a proposition or venture, calculate the effects of a plan or strategy; perform a detailed and | review, justify, assess, present a case for, defend, report on, investigate, direct, appraise, argue, project-manage |

| | | | | |
|--|--|--|--|--|
| | | | costed risk analysis with recommendations and justifications | |
|--|--|--|--|--|

2. bloom's taxonomy - affective domain - (feeling, emotions - attitude - 'feel')

Bloom's Taxonomy second domain, the Affective Domain, was detailed by Bloom, Krathwhol and Masia in 1964 (Taxonomy of Educational Objectives: Volume II, The Affective Domain. Bloom, Krathwohl and Masia.) Bloom's theory advocates this structure and sequence for developing attitude - also now commonly expressed in the modern field of personal development as 'beliefs'. Again, as with the other domains, the Affective Domain detail provides a framework for teaching, training, assessing and evaluating the effectiveness of training and lesson design and delivery, and also the retention by and affect upon the learner or trainee.

| affective domain | | | | | |
|------------------|------------------|----|-------------------------------------|---|---|
| level | category 'level' | or | behaviour descriptions | examples of experience, demonstration and evidence to be measured | 'key words' (verbs which describe the activity to be trained or measured at each level) |
| 1 | Receive | | open to experience, willing to hear | listen to teacher or trainer, take interest in session or learning experience, take notes, turn up, make time for learning experience, participate passively | ask, listen, focus, attend, take part, discuss, acknowledge, hear, be open to, retain, follow, concentrate, read, do, feel |
| 2 | Respond | | react and participate actively | participate actively in group discussion, active participation in activity, interest in outcomes, enthusiasm for action, question and probe ideas, suggest interpretation | react, respond, seek clarification, interpret, clarify, provide other references and examples, contribute, question, present, cite, become animated or excited, help team, write, perform |

| | | | | |
|---|------------------------------------|--|---|--|
| 3 | Value | attach values and express personal opinions | decide worth and relevance of ideas, experiences; accept or commit to particular stance or action | argue, challenge, debate, refute, confront, justify, persuade, criticise, |
| 4 | Organise or Conceptualize values | reconcile internal conflicts; develop value system | qualify and quantify personal views, state personal position and reasons, state beliefs | build, develop, formulate, defend, modify, relate, prioritise, reconcile, contrast, arrange, compare |
| 5 | Internalize or characterise values | adopt belief system and philosophy | self-reliant; behave consistently with personal value set | act, display, influence, solve, practice, |

Based on the 'Taxonomy Of Educational Objectives: Volume 2, The Affective Domain' (Bloom, Masia, Krathwohl) 1964. See also 'Taxonomy Of Educational Objectives: Handbook 1, The Cognitive Domain' (Bloom, Engelhart, Furst, Hill, Krathwohl) 1956. This table is adapted and reproduced with permission from Allyn & Bacon, Boston USA, being the publishers and copyright owners of 'Taxonomy Of Educational Objectives' (Bloom et al 1956).

This domain for some people can be a little trickier to understand than the others. The differences between the levels, especially between 3, 4, and 5, are subtle, and not so clear as the separations elsewhere in the Taxonomy. You will find it easier to understand if you refer back to the [bloom's taxonomy learning domains at-a-glance](#).

3. bloom's taxonomy - psychomotor domain - (physical - skills - 'do')

The Psychomotor Domain was ostensibly established to address skills development relating to manual tasks and physical movement, however it also concerns and covers modern day business and social skills such as communications and operation IT equipment, for example telephone and keyboard skills, or public speaking. Thus, 'motor' skills extend beyond the originally traditionally imagined manual and physical skills, so always consider using this domain, even if you think your environment is covered adequately by the Cognitive and Affective Domains. Whatever the training situation, it is likely that the Psychomotor Domain is significant. The Dave version of the Psychomotor Domain is featured most prominently here because in my view it is the most relevant and helpful for work- and life-related development, although the Psychomotor Domains suggested by Simpson and Harrow are more relevant and helpful for certain types of adult training and development, as well as the teaching and development of young people and children, so do explore them all. Each has its uses and advantages.

dave's psychomotor domain taxonomy

| psychomotor domain (dave) | | | | |
|---------------------------|---------------------|--|--|---|
| level | category 'level' or | behaviour descriptions | examples of activity or demonstration and evidence to be measured | 'key words' (verbs which describe the activity to be trained or measured at each level) |
| 1 | Imitation | copy action of another; observe and replicate | watch teacher or trainer and repeat action, process or activity | copy, follow, replicate, repeat, adhere |
| 2 | Manipulation | reproduce activity from instruction or memory | carry out task from written or verbal instruction | re-create, build, perform, execute, implement |
| 3 | Precision | execute skill reliably, independent of help | perform a task or activity with expertise and to high quality without assistance or instruction; able to demonstrate an activity to other learners | demonstrate, complete, show, perfect, calibrate, control, |
| 4 | Articulation | adapt and integrate expertise to satisfy a non-standard objective | relate and combine associated activities to develop methods to meet varying, novel requirements | construct, solve, combine, coordinate, integrate, adapt, develop, formulate, modify, master |
| 5 | Naturalization | automated, unconscious mastery of activity and related skills at strategic level | define aim, approach and strategy for use of activities to meet strategic need | design, specify, manage, invent, project-manage |

Based on RH Dave's version of the Psychomotor Domain ('Developing and Writing Behavioral Objectives', 1970. The theory was first presented at a Berlin conference 1967, hence you may see Dave's model attributed to 1967 or 1970).

Refresh your understanding of where the Psychomotor Domain fits into the Bloom Taxonomy overview.

It is also useful to refer to the '**Conscious Competence**' model, which arguably overlays, and is a particularly helpful perspective for explaining and representing the 'Psychomotor' domain, and notably Dave's version. (The 'Conscious Competence' model also provides a helpful perspective for the other two domains - Cognitive and Affective, and for the alternative Psychomotor Domains suggested by Harrow and Simpson below.)

alternative psychomotor domain taxonomy versions

Dave's Psychomotor Domain above is probably the most commonly referenced and used psychomotor domain interpretation. There are certainly two others; Simpson's, and Harrow's, (if you know any others please [contact us](#)).

It's worth exploring and understanding the differences between the three Psychomotor Domain interpretations. Certainly each is different and has a different use.

In my view the Dave model is adequate and appropriate for most adult training in the workplace.

For young children, or for adults learning entirely new and challenging physical skills (which may require some additional attention to awareness and perception, and mental preparation), or for anyone learning skills which involve expression of feeling and emotion, then the Simpson or Harrow models can be more useful because they more specifically address these issues.

Simpson's version is particularly useful if you are taking adults out of their comfort zones, because it addresses sensory, perception (and by implication attitudinal) and preparation issues. For example anything fearsome or threatening, like emergency routines, conflict situations, tough physical tasks or conditions.

Harrow's version is particularly useful if you are developing skills which are intended ultimately to express, convey and/or influence feelings, because its final level specifically addresses the translation of bodily activities (movement, communication, **body language**, etc) into conveying feelings and emotion, including the effect on others. For example, public speaking, training itself, and high-level presentation skills.

The Harrow and Simpson models are also appropriate for other types of adult development. For example, teaching adults to run a difficult meeting, or make a parachute jump, will almost certainly warrant attention on sensory perception and awareness, and on preparing oneself mentally, emotionally, and physically. In such cases therefore, Simpson's or Harrow's model would be more appropriate than Dave's.

simpson's psychomotor domain taxonomy

Elizabeth Simpson's interpretation of the Psychomotor domain differs from Dave's chiefly because it contains extra two levels prior to the initial imitation or copy stage. Arguably for certain situations, Simpson's first two levels, 'Perception' and 'Set' stage are assumed or incorporated within Dave's first 'Imitation' level, assuming that you are dealing with fit and healthy people (probably adults rather than young children), and that 'getting ready' or 'preparing oneself' is part of the routine to be taught, learned or measured. If not, then the more comprehensive Simpson version might help ensure that these two prerequisites for physical task development are checked and covered. As such, the Simpson model or the Harrow version is probably preferable than the Dave model for the development of young children.

psychomotor domain (simpson)

| level | category 'level' | or description | examples of activity or demonstration and evidence to be measured | 'key words' (verbs which describe the activity to be trained or measured at each level) |
|-------|------------------------|-----------------------|---|---|
| 1 | Perception | awareness | use and/or selection of senses to absorb data for guiding movement | recognise, distinguish, notice, touch, hear, feel, etc |
| 2 | Set | readiness | mental, physical or emotional preparation before experience or task | arrange, prepare, get set |
| 3 | Guided Response | attempt | imitate or follow instruction, trial and error | imitate, copy, follow, try |
| 4 | Mechanism | basic proficiency | competently respond to stimulus for action | make, perform, shape, complete |
| 5 | Complex Overt Response | expert proficiency | execute a complex process with expertise | coordinate, demonstrate, fix, |
| 6 | Adaptation | adaptable proficiency | alter response to reliably meet varying | adjust, integrate, solve |

| | | | | |
|---|-------------|----------------------|---|--|
| | | | challenges | |
| 7 | Origination | creative proficiency | develop and execute new integrated responses and activities | design, modify, trouble-shoot formulate, re-design, |

harrow's psychomotor domain taxonomy

Harrow's interpretation of the Psychomotor domain is strongly biased towards the development of physical fitness, dexterity and agility, and control of the physical 'body', to a considerable level of expertise. As such the Harrow model is more appropriate to the development of young children's bodily movement, skills, and expressive movement than, say, the development of a corporate trainee's keyboard skills. By the same token, the Harrow model would be perhaps more useful for the development of adult public speaking or artistic performance skills than Dave's or Simpson's, because the Harrow model focuses on the translation of physical and bodily activity into meaningful expression. The Harrow model is the only one of the three Psychomotor Domain versions which specifically implies emotional influence on others within the most expert level of bodily control, which to me makes it rather special.

As ever, choose the framework that best fits your situation, and the needs and aims of the trainees or students.

psychomotor domain (harrow)

| level | category or 'level' | description | examples of activity or demonstration and evidence to be measured | 'key words' (verbs which describe the activity to be trained or measured at each level) |
|-------|-----------------------------|-----------------------|---|---|
| 1 | Reflex Movement | involuntary reaction | respond physically instinctively | react, respond |
| 2 | Basic Fundamental Movements | basic simple movement | alter position, move, perform simple action | grasp, walk, stand, throw |

| | | | | |
|---|------------------------------|--|---|---|
| 3 | Perceptual Abilities | basic response | use than one ability in response to different sensory perceptions | catch, write, explore, distinguish using senses |
| 4 | Physical Abilities | fitness | develop strength, endurance, agility, control | endure, maintain, repeat, increase, improve, exceed |
| 5 | Skilled Movements | complex operations | execute and adapt advanced, integrated movements | drive, build, juggle, play a musical instrument, craft |
| 6 | Non-discursive Communication | meaningfully expressive activity or output | activity expresses meaningful interpretation | express and convey feeling and meaning through movement and actions |

HERBARTIAN FIVE STEPS TEACHING

While Herbart emphasized only four steps his followers modified the above four steps. Ziller, a disciple of Herbart, divided the first step i.e., clarity into two introduction and presentation. Ryan

incorporated one more step termed as „Statement of Aim“ in between these two. Still other disciples of Herbart changed the names of other three steps. The term comparison was used in place of association, generalization in place of system and application in place of method. Thus, resulted five steps in place of four. These five steps are termed as Herbartian five steps of teaching.

Preparation/ Introduction-

Some question is asked from the pupils in order to test their previous knowledge so that curiosity may arouse in them for learning of new knowledge. By testing their previous experiences the pupils are prepared for acquiring new knowledge.

Statement of Aim

-. Here, the topic becomes clear to the pupils and the teacher himself is supposed to write the topic on the black-board in clear words.

Presentation

. The lesson is developed with the cooperation of the pupils. Opportunities are provided to pupils to learn themselves by stimulating their mental activity. The teacher tries to

receive most of the points from the pupils by questioning so that the new knowledge may get related to the previous knowledge.

Comparison and Association

- In this, the facts, events and application taught are related mutually by comparison to enable the pupils to understand the taught material. The teacher establishes a relationship between two subjects and also between the facts and events of one subject and the facts and events of the other subject. He compares them so that the new knowledge may get stabilized and clarified in the minds of the pupils.

Generalization

-

. Herbart termed this step as „system“ After explaining the main lesson, the pupils are provided with opportunities to think. They formulate such principles and rules which may be used in various situations of the future life.

o

Application-

. In Application it is observed whether the acquired knowledge may be applied to the new situations. The teacher verifies this by asking recapitulate questions or by providing opportunities to apply the acquired knowledge in the new situations. This stabilizes the new knowledge and validity of the rules may also be proved.

HERBARTIAN LESSON PLAN MODEL

Date.....

Class.....

Period.....

Subject.....

Topic.....

1.

1.

General Objectives

. These objectives are formulated by the teacher in his subject keeping in view the entering behaviors of the learners. For example: 1. to develop the knowledge of grammar among the students...

2.

Specific Objective

. These objectives are formulated on the basis of general objectives and considering the nature of the topic and level of students. These are specified in terms of knowledge, skill or appreciation. These objectives are written in behavioral terms. For Example:(i) Students will be able to recall the definition of noun. (ii) Students will be able to enumerate the examples of noun

....
3.

Introduction.

Here, the teacher employs his insight and experiences for linking new knowledge with the previous knowledge of the students. The topic is not introduced directly but it is usually emitted by the student's responses by asking introductory questions.4.

Teaching Aids

. Audio-visual aids are selected according to the proposed topic.5.

Previous knowledge

. Students' previous knowledge is mentioned. For example: Students are familiar with figure of speech. They know that nouns are naming words.6.

Statement of Aim

. The teacher gives his statement of teaching topic by incorporating the student's responses. For Example: "Today, we will study about the noun and its kinds."
7.

Presentation

. The teacher prepares the developing questions after introducing the topic. The questions are arranged in logical sequence, i.e., from simple to complex, considering the structure of the topic.8.

Explanation

. The teacher is supposed to explain the answers of the given developing question. As a whole of the content-matter is in the question-answer form.9.

Black

-

board Summary

. The teacher has to prepare the black-board summary of his teaching point and explanations.10.

Review Questions

. The purpose of these questions is to practice the student's learning and to evaluate their performance whether they have comprehended the teaching unit or not. These review questions are asked only after rubbing the black-board summary. For example: Q.1.

What is the definition of „Noun“? Q.2. Give some examples of Noun.....

11.

Home assignments

. At the end of the lesson plan, home assignment is given to the students on the same teaching unit. The purpose of home work is to practice, to organize and to study the topic for better understanding and retention.

Advantages

1.

Organized Teaching

. Each step has been organized in a logical order which provides an opportunity to the fresh teacher to become aware of future mistakes. Originality is never affected and the teaching goes on in a very organized way.2.

Acquiring thoughts as apperception.

Herbart believed that when the new thought related to the thoughts lying in unconscious mind of the pupils are presented, the thoughts of unconscious mind come to the conscious mind, establish relationship with the new thought and again go to the unconscious mind. Herbart termed this material process of acquiring thoughts as apperception.3.

Use of Inductive and Deductive Methods

. While presenting the new knowledge, help of various examples is sought through „generalization“ and rules are derived. It is an inductive

method. In the step application, these rules are to be executed, this is a deductive method. Thus, both inductive and deductive methods are used in this five steps approach.4.

Recapitulation

. Such question is asked while recapitulating which, on answering, result in the learning and application of the acquired knowledge in new situations.5.

Correlation Possible

. Herbart considered entire knowledge as a single unit. The knowledge of the pupils is acquired in a single unit. This allows to establishing a correlation between previous and new knowledge and between all subjects of the curriculum.

Limitations

1.

Mechanical Method of Teaching

. The use of these steps takes away the freedom of the teacher as he cannot incorporate his independent thought in any step. This reduces his originality. Hence, Herbartian approach is a mechanical method of teaching.2.

No Place for Individual Differences

. While using Herbartian approach. Similar questions are asked to the entire. This overlooks individual differences.3.

Useful in Knowledge Lesson only

. Herbartian approach is useful in the knowledge lesson only, not in appreciation and skill lessons.4.

Teacher More Active

. In Herbartian approach, the teacher has to be more active. It is more desirable if the pupils remain more active than the teachers. As this teaching method is not activity-centered, pupils don't get any motivation for learning.

5.

No need of Generalization

. Generalization is not needed while teaching language, geography, history, music and arts etc. Thus, all the five steps are not needed while teaching.6.

Uninteresting

. This approach stresses upon the teaching of all the subjects of curriculum in a similar sequence overlooking the interests, attitudes, abilities, and capacities of the pupils according to their mental development. The entire teaching becomes monotonous. The pupil

does not show any interest in acquiring new knowledge. Thus, Herbart's teaching method is not interesting.7.

Difficulty of Correlation.

Considering the knowledge as a complete unit, Herbart emphasized correlation between different subjects for the unity in the mental life of the pupils, but following these five steps teachers impart the knowledge of different subjects to the pupils differently. They seek to establish a correlation between various subjects in order to bring integration in the mental life of the pupils which is essentially difficult, if not impossible. So in nutshell it can be concluded that Herbartian Five-Step Approach, is an impressive and psychological teaching method. It includes both inductive and deductive methods. A correlation among all the subjects of the curriculum is possible by its use. There is a provision of recapitulation in the step

under „application“. However, some educationists point out that this method is useful only for

knowledge lessons. G

eneralization is not needed in every lesson. Herbart's

method is mechanical. There is no place for individual differences. It does not motivate the pupils to learn by doing. The correlation between the different subjects is essentially difficult. Glower points out that in Herbartian approach; emphasis is laid on teaching only instead of learning. This reduces the freedom of the teacher. Pupils also become passive. Neither is their character formed nor do they reach their desired goals. However, the pupils-teachers should follow this approach with necessary changes keeping its merits in view.

Unit 3

Dale's Cone of Experience is a model that incorporates several theories related to instructional design and learning processes. During the 1960s, Edgar Dale theorized that learners retain more information by what they "do" as opposed to what is "heard", "read" or "observed". His research led to the development of the Cone of Experience. The Cone was originally developed in 1946 and was intended as a way to describe various learning experiences. Essentially, the Cone shows the progression of experiences from the most concrete (at the bottom of the cone) to the most abstract (at the top of the cone).

sadbhavna

When Dale researched learning and teaching methods he found that much of what we found to be true of direct and indirect (and of concrete and abstract) experience could be summarised in a pyramid or 'pictorial device'. He stated that the cone was not offered as a perfect or mechanically flawless picture to be taken absolutely literally. It was merely designed as a visual aid to help explain the interrelationships of the various types of audio-visual materials, as well as their individual 'positions' in the learning process.

It is important to note that Dale never intended the Cone to depict a value judgment of experiences; in other words, his argument was not that more concrete experiences were better than more abstract ones. Dale believed that any and all of the approaches could and should be used, depending on the needs of the learner.

Dr. Bilash Bio argues that the figure above shows what students will be able to do at each level of the Cone (the learning outcomes they will be able to achieve) relative to the type of activity they are doing (reading, hearing, viewing images, etc.). The numerical figures on the left side of the image, what people will generally remember indicate that practical, hands-on experience in a real-life context will allow students to remember best what they do. Again, it is important to remember that this doesn't mean reading and listening are not valuable learning experiences, simply that "doing the real thing" can lead to the retention of the largest amount of information. This is in part because those experiences near the bottom of the Cone, closer to and including real-world experiences, make use of more of our senses; it is believed that the more senses that are used, the greater our ability to learn from and remember an event or experience.

“It has been well said that “teaching” means “causing to learn.” Nothing has been given until it has been taken; nothing has been taught until it has been learnt. Teaching is more than the efficient delivery of thoroughly prepared lectures, and a clear realisation of this simple fact will save many beginners in the art of teaching from much disappointment.” (Hughes 1959) This clearly points us to the fact that until a theory or concept you are relaying to a pupil or a group of pupils have been understood, you have not actually taught.

“Teaching is the process by which the teacher brings the learner and the subject together. Therefore, there are three focal points in teaching- the teacher, the learner and the subject. The entire process of teaching can be reduced to something simple enough to be both understandable and useful. This reduction is provided in the form of teaching model. This model consists of the teacher, the student, the subject, teacher preparation and the teaching process.” *Annoh 2003*

Hughes argues that knowledge of how children learn is the first essential for success in teaching. The teacher helps children in school to develop intellect, character, skill, taste and sociability. We teach them knowledge, habits, ideals, skills, attitudes, manners. By this statement, teachers help them to adjust themselves to their environments- spiritual, social and material. This view of education as adjustment puts us, as teachers, in our proper position. We are subsidiary to the process of learning, for in this process there are two factors- a child on the one hand and his world on the other. The teacher’s function is to bring the two into contact, to help to put them *en rapport*.

In some respects teaching is like lighting a fire. We bring heat to paper to enable it to start combining with the oxygen in its environment. In the classroom our function is similar; we bring to bear various teaching devices with a view to producing a “flash” between each child and some part of his environment. The essential activity is not the adjustment of child to teacher but of child to world.

Adamson affirms this by saying; the whole business is between the individual and his worlds, and the teacher is outside it, external to it. He may facilitate it, turning his attention to one or other member of the wedded pair. He may approach the individual, and his avenues of approach will be one or other of the instincts or emotional dispositions which are the prime movers of mental life. But whether he tries subject or object or both together he remains outside the process, a spectator, a manipulator, perhaps a disturber; he is never in it and of it. Within that mysterious synthetic activity through which the individual is at once appropriating and contributing to his environment, forming and being formed by it... the teacher has neither place nor part. For instance, when we teach children the geometry of the circle, that is, when we enable children to learn it, we do not instill into them a fraction of our own knowledge; we put

them *en rapport* with geometric facts about circles. We arrange and present certain data; we do this in ways that excite the children's interests; their minds then play with these data and as they do so flashes of illumination, or at least glows of dim understanding, are produced. If this does not happen, the children have not learnt the lesson we set out to teach them.

Hughes continues that, a growing appreciation of the subsidiary nature of the teacher's function has led many reformers to belittle the value of teaching. Children, we are told, must be left free to express themselves; they must discover knowledge for themselves; the only true education is self-education. Teachers, we are told, must stand aside; they must talk less, explain less, direct less, and correct less. All this is a very natural and a very necessary reaction against much traditional classroom practice. It must be emphasized, however, that teachers are not as superfluous as some enthusiasts suggest; teaching is not as undesirable as it is sometimes represented to be. It is true that children are by nature curious, assertive and creative, but they are also submissive, imitative and ready to appeal for help. It follows, therefore, that we are not necessarily working contrary to child nature when we teach. We must, however, know when to teach and when to stand aside, when to explain and when to leave children to make discoveries, when to demonstrate and when to leave children free to experiment, when to require children to listen and when to give them scope for free expression. No simple rule can be formulated on this matter; teaching is an art and correct procedure in given circumstances depend upon the whole situation.

We can realize that without understanding, teaching because ineffective and it misses its purpose. This means that the appropriate models needed to reach learners at the appropriate time must be an essential avenue to employ. The teacher's work is that of a disturber or a facilitator that brings the learner to the subject or object (world/environment). This brings to bear what William Arthur Ward said; "the mediocre teacher tells. The good teacher explains. The superior teacher demonstrates. The great teacher inspires."

Looking at Dale's cone of Experience, one can realize that there can be numbers of model that can be used by the teacher to reach the learner depending on the learners need. From the top, the models are in their abstract nature although not useless; teachers bring the world to the learner by the use of what they read, hear, view among others. Considering effective teaching in the eyes of what Hughes and Adamson said earlier in this discourse, "the only true education is self education" where the learner is allowed to discover knowledge for themselves with some guide. Self expression propels effective teaching however the models from the top of Dale's cone of Experience do not

allow that. I'm not surprised Dale allocated lesser percentages to those models. There is a Chinese adage that goes "Tell me and I'll forget, show me and I may remember, involve me and I'll understand." This is in line with Dale's cone of Experience because at the bottom of the cone where the greater percentages were allocated, the model allows the learner to get involved with the subject under consideration.

"I am more interested in arousing enthusiasm in kids than in teaching the facts. The facts may change, but that enthusiasm for exploring the world will remain with them the rest of their lives" *Seymour Simon*. This saying is just appropriate and it brings both Dale's cone of experience which encourages involving the learner in the learning process and effective teaching which want the teacher to do the facilitation while the learner expresses themselves in line. *Albert Einstein* said this many years ago "I never teach my pupils, I only attempt to provide the conditions in which they can learn". For effective teaching to be realized, the learner must understand by getting involved while the teacher provides the condition. In line with effective teaching that encourages self expression, *Galileo* said "You cannot teach a man anything, you can only help him find it within himself" and *Dave Cullen* continues by saying "You can't really teach a kid anything; you can only show him the way and motivate him to learn it himself."

The sensory organs must be awakening in other for retention and understanding to take place. Dale's cone of Experience provides teaching and learning models that allows teachers to understand how to increase the retention rate of learners by involving the learner. This means that while the learner participate and get involved in the learning process by expression, they awaken the sensory organs. This cone of Experience goes hand in hand with Gardner's theory of multiple intelligences which says that you can't reach learners with a style of learning but several. The several styles therefore helps awaken the sensory organs of each learner and helps him or her achieve self education.

This further explains the necessity of education through art. When children are taught by the use of art, they are allowed to express themselves and awaken the sensory organs. With art, most complex theories can be understood by learners since they are involved with the process. Teachers must therefore understand Dale's cone of experience in order to increase retention and understanding since this means effective teaching.

The Importance of Evaluation

Many people think of *evaluation* as taking a snapshot of outcomes at the end of a program to prove to a funder that it worked or failed. These same people don't hold evaluation in much regard because they feel they are getting too little information too late in the day, especially if their program fell short of expectations or made no difference at all. Evaluation can, and should, however, be used as an ongoing management and learning tool to improve an organization's effectiveness.

Well-run organizations and effective programs are those that can demonstrate the achievement of results. Results are derived from good management. Good management is based on good decision making. Good decision making depends on good information. Good information requires good data and careful analysis of the data. These are all critical elements of evaluation.

Evaluation refers to a periodic process of gathering data and then analyzing or ordering it in such a way that the resulting information can be used to determine whether your organization or program is effectively carrying out planned activities, and the extent to which it is achieving its stated objectives and anticipated results.

Managers can and should conduct internal evaluations to get information about their programs so that they can make sound decisions about the implementation of those programs. Internal evaluation should be conducted on an ongoing basis and applied conscientiously by managers at every level of an organization in all program areas. In addition, all of the program's participants (managers, staff, and beneficiaries) should be involved in the evaluation process in appropriate ways. This collaboration helps ensure that the evaluation is fully participatory and builds commitment on the part of all involved to use the results to make critical program improvements.

Although most evaluations are done internally, conducted by and for program managers and staff, there is still a need for larger-scale, external evaluations conducted periodically by individuals from outside the program or organization. Most often these external evaluations are required for funding purposes or to answer questions about the program's long-term impact by looking at changes in demographic indicators such as graduation rate or poverty level. In addition, occasionally a manager may request an external evaluation to assess programmatic or operating problems that have been identified but that cannot be fully diagnosed or resolved through the findings of internal evaluation.

Program evaluation, conducted on a regular basis, can greatly improve the management and effectiveness of your organization and its programs. To do so requires understanding the differences between monitoring and evaluation, making evaluation an integral part of regular program planning and implementation, and collecting the different types of information needed by managers at different levels of the organization.

s-on or field experience.

In order to evaluate concepts effectively, some sort of criteria are needed against which concepts can be evaluated in a semi-quantitative manner.

It is important to *never* compare concepts to one another, but only to the (unchanging) criteria for evaluation. The criteria provide a constant "yardstick" against which comparisons can be made meaningfully. Comparing one concept to another is a comparison of two *variables*; as soon as the concept you are comparing *to* changes, the results of the comparison are meaningless.

Concept evaluation is a form of *analysis*, but it rarely takes on the highly quantitative aspects in, say, stress analysis. Again, the key is thinking operationally. For example, consider the first project in this course. You were given a product and told to discover the problems with it, then address those problems. Without knowing all the physical characteristics of the product (sizes, materials, weights, etc.), you probably found it difficult to think through what the problems were. A tool you can use is to consider the implications of simple physics with respect to the operation. Which way do the forces act? Where (roughly) do they act, and in what direction? What are the consequences of forces being exerted at those locations? Given those forces, what effects would they have on the operation of the product? Inversely, given typical actions that occur during operation, what kinds of forces act on the product?

The decision matrix

| A decision matrix for a construction ladder | | | | | | | |
|---|--------|-----------------------|----------------|------------------|----------------|-----------------|----------------|
| | | Concepts | | | | | |
| | | A Reference Ladder | | DF Swing Lock | | E Multi-pose | |
| Criteria | Weight | Rating | Weighted Score | Rating | Weighted Score | Rating | Weighted Score |
| Functionality | 10% | 0 | 0 | 0 | 0 | 1 | 0.1 |
| Durability | 10% | 0 | 0 | 1 | 0.1 | 1 | 0.1 |
| Quality | 13% | 0 | 0 | 0 | 0 | 2 | 0.26 |
| Affordability | 15% | 0 | 0 | 0 | 0 | -1 | -0.15 |
| Fabricability | 5% | 0 | 0 | 2 | 0.1 | 1 | 0.05 |
| Usability | 15% | 0 | 0 | 0 | 0 | -1 | -0.15 |
| Maintainability | 1% | 0 | 0 | 0 | 0 | 0 | 0 |
| Safety | 18% | 0 | 0 | 1 | 0.18 | 0 | 0 |
| Marketability | 13% | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Score | | 0.00 | | 0.38 | | 0.21 | |
| Rank | | 3 | | 1 | | 2 | |
| Continue? | | No | | Yes | | No | |

A very popular tool for evaluating concepts is a *decision matrix*. A sample is shown above.

The selection criteria are based on the main product characteristics of a problem. It is clear from the PDS that the PCs drive all other requirements, so it makes sense to use those PCs as labels for groups of requirements.

The weights for each criterion describe quantitatively how important each criterion is with respect to the other criteria. Obviously, in this example, safety is of the greatest importance, so it has the highest weight.

Establishing the weights is a very important part of the decision matrix. We do this using a technique called [pairwise comparison](#).

There are many different scales that can be used for assigning ratings, but very few rules for deciding which scale is best. Generally, one wants as coarse a scale as possible (because, after all, the concepts are only vaguely defined), and as simple a scale as possible (designing is hard enough without have acrane equations to solve just to calculate these ratings). A reasonable weighting scale is given below; this is the scale that was used in the decision matrix. This scale is often used in the automotive industry.

| A linear weighting system | |
|---------------------------|--|
| Rating | Meaning |
| -2 | Greatly inferior compared to the criterion |
| -1 | Somewhat inferior |
| 0 | Satisfactory |
| 1 | Somewhat superior |
| 2 | Greatly Superior |

Another commonly used scale is a five point scale in the range {0-4}. Sometimes, negative numbers are not preferred by engineers, based on personal biases, so a fully positive scale is used. Ratings must be agreed upon by the design team as a whole, either by fiat or by democratic vote or some other mechanism.

Some industries prefer a non-linear or asymmetrical scale. For example, some aerospace firms use a scale containing the values { 0, 1, 3, 9 }. It has been suggested that this scale, which biases strongly to the positive, is common in the aerospace industry because aerospace engineers tend to be too conservative (compared to, say, automotive engineers).

The ladder concepts are labeled using both a generic name (e.g. "A") and a descriptive phrase that uniquely identifies it with respect to other concepts. The concept labeled "DF" arose from a combination of two older concepts that had been labeled "D" and "F." More on this notion of combining concepts [later](#).

Also note that concept A is marked as the reference concept; this is a concept used to denote the existing product on the market that the new concept is supposed to improve upon. The reference concept might also be a product made by a competing firm, and that is to be outperformed by your new product.

The *weighted score* is simply the product of the rating and the weight for a given concept and criterion.

The weighted scores are then summed, and the concept with the highest score is selected.

Evaluation tools

Evaluation can be useful:

- to ensure the project has clear aims and objectives from the outset
- to provide information on the outcomes of an event along with suggestions for improvement
- to find out who attended the event
- to use meaningful results to demonstrate that all efforts have been worthwhile

The method of evaluation you choose will depend on the questions that you would like to answer. Possible questions include:

- Do I want to capture change over time or is this a one-off exercise?
- Do I want to establish a set of targets and then measure whether we've completed them?
- Do I want to compare what we are doing with what others are doing?
- Do I need external verification, or can this be an internal exercise?
- Do we need to measure what the whole institution is doing?
- Do we want to understand what is happening at the individual project level?
- Are we interested in finding out how individual faculty members and their community partners best collaborate for mutual benefit?
- Do we want to measure engagement from a community perspective?

We have put together a number of different evaluation tools that may be of use to you when running your own event, project or activity.

1. Evaluation assessment checklist

Can be used when initially planning an evaluation in order to create an evaluation plan and to help decide which tools or techniques will be most appropriate to generate the most meaningful results depending on the target audience.

WHO Target – know your audience. Who is the evaluation for?

WHAT Area – what are you evaluating? (process, outcome, impact)

WHEN Timing – will the findings have any effect? (cost:benefit analysis)

HOW Tools & techniques – what is most appropriate?

2. Evaluation Matrix

Can help you to choose the most appropriate tool (horizontal side of the matrix) to answer each of the questions identified (vertical side of the matrix) in your project proposal.

| Evaluation Questions | Wordle | Radar diagram | 5 people | Blob tree | Focus group | Questionnaire | Star ratings |
|---|--------|---------------|----------|-----------|-------------|---------------|--------------|
| a) What were the top 5 comments from the audience? | X | | | | X | X | |
| b) Would it be worth running this event again? | X | X | X | X | X | X | X |
| c) What attitudes were formed by the audience? | X | X | | X | X | X | X |
| d) Were the staff/volunteers helpful and knowledgeable? | | | X | | X | X | X |

3. Wordle

A “word cloud” that can be used to illustrate how frequently a word is used within an evaluation to describe an event. The clouds give greater prominence to words that appear more frequently.

For example if you ask the audience to describe the event using only 3 words, you can then put all of the words into the wordle (available at <http://www.wordle.net/>) The larger the word produced, the more often it appeared in the source text. The wordle below shows that most of the audience thought this example event was fun, interesting, exciting, creative and enjoyable, with a very low incidence of negative words.

4. Radar diagram

Draw the outline of a radar diagram representing a range of experiences from the event, and ask the audience to complete this appropriately to reflect their feelings (see example below). The closer the point is to the experience, the higher the audience rated that experience.

5. Five people

After the event, think of 5 very different people and describe how you would explain the event to each of them, e.g.

1. Young child aged 5-7 years
2. Elderly person aged >70 years
3. Youth worker
4. Middle-aged person of low socioeconomic status
5. Young mum

This can not only help you to better understand the purpose of the event, but can also help you to find any errors and/or determine what you might change if you were to re-run the event, even if that person or age group is not within your target age range.

6. Five words

After the event, ask a variety of different people with different levels of involvement in the event to sum it up for you using 5 separate words.

These people could be:

1. The project organiser (i.e. yourself)
2. A senior member of staff from your organisation
3. A member of staff volunteering at the event
4. A non-staff member volunteering at the event

5. One member of the audience/public

7. Design a flyer

Write an advertisement, design a flyer or create a poster for your event after it has occurred. Use appropriate text and images and use an appropriate writing style for the target audience.

– Does this differ from your original advertisement, flyer or poster?

If so, how? E.g. is it more or less scientific, is the later version more colourful, does it use more or less images, have you used a different font, etc?

– This may help you to determine a true target audience for this type of event.

8. Round robin evaluation

- Each person in the audience/group writes 2 positive and 2 negative comments on one side of card, and on the other side they write 2 things they liked and 2 things they didn't like.
 - Cards are then all passed round and everyone rates each comment on a scale of 1 to 5 (1 being strongly disagree and 5 being strongly agree).
 - Statements and total average scores are collated and then acted upon to improve future events.
 - This method determines how representative each individual's opinions are.
-

9. Confidence log

Teachers, staff and/or volunteers could complete a confidence log to see if their confidence in teaching a subject has changed since attending the event.

e.g. How confident are you in teaching this subject area/running this event yourself?
(Please tick the appropriate option)

| | | | |
|---|---|------|------------|
| [|] | Very | confident |
| [|] | | Confident |
| [|] | Some | confidence |

[] Little confidence
[] No confidence

Results could then be transferred into a table for collation.

| | Very confident | Confident | Some confidence | Little confidence | No confidence |
|------------|----------------|-----------|-----------------|-------------------|---------------|
| Pre-event | 11 | 9 | 28 | 14 | 8 |
| Post-event | 20 | 17 | 22 | 9 | 2 |

10. Blob tree

Developed by Pip Wilson to show how people feel about taking part in a certain task or event.

These may be handed out at the beginning and end of a session/event to see if the audience's feelings/confidence about the topic have changed.

e.g. before the event takes place an individual may know very little about the topic and feel that they are at the bottom of the tree or swinging uncontrollably from the tree. However, after the event (if successful!) that individual may feel as though they are standing at the top of the tree or they are in the middle helping others to understand.

11. Observation framework

Allows the observer to record any situations that may arise during an event and its specific time of occurrence such as relevant incidents, questions, interruptions to the event, which may help to improve later events.

This should be completed during the event and any comments should be passed to the project organiser/speaker as soon as possible after the event for them to consider.

The observer should try to capture the moods and feelings of the audience and write down as much as possible to include in the evaluation, including:

- Event name and date
- Observer's name
- Activity/session
- Level of interaction

- Head count
- Male:female ratio
- Average age
- Enthusiasm
- Relevance to aims
- Other comments

12. Focus group

- The group should meet for ~90 minutes no more than 2 weeks after the event has taken place.
- The group should contain no more than 15 and no fewer than 10 members.
- Group members should be selected randomly from the audience, trying to select individuals across a broad age range (if the event is open to the general public).
- Before the session the group should be made to understand that any personal information or data that they provide will remain confidential, and the purpose for collecting their comments and where/how they will be recorded should be explained.
- Unique questions should be asked of the group in order to find out how much the group learnt from the event.
- Two evaluators should be present during the group session, one to ask the questions and start the discussions, and a second to record the conversations and observations relating to the group's behaviour.

13. Interview

- Audience members could be interviewed on a 1:1 basis no longer than 2 weeks after the event.
- Interview questions will be specific for each project or event.

- Individuals to take part should be selected randomly from the audience
 - Before the session the individual should be made to understand that any personal information or data that they provide will remain confidential, and the purpose for collecting their comments and where/how they will be recorded should be explained.
 - The interview should last no longer than 30 minutes and should be kept informal so as to keep the interviewee relaxed.
 - The interviewer should record any comments and any visible signs from body language during the interview.
 - A dictaphone could also be used to record the interview so that all dialogue is captured effectively and used within the evaluation report to improve future events.
-

14. Project notebook

- Keep a project notebook or diary.
 - This should be kept from the very beginning of the thought process that is undertaken before a project is started and continuously updated throughout the whole phase of the project, finally coming to an end when the project has been signed off and the full evaluation report has been completed.
 - All of the project organiser's thoughts, queries and questions should be recorded.
 - It is important to record all dates and times that entries are made so that specific issues/errors/problems can be avoided in future, and if similar problems arise in future projects it can be clear how they were resolved and the timescale needed to get the project back on track.
 - All of the audience reactions, questions and feedback could also be recorded here.
 - The outcome or result that was carried out as a consequence of the feedback provided by the audience should also be noted.
-

15. Implementation log

- Useful to record any changes that were made during each stage of the project.

- Can help to see who was responsible for the change, if the project improved as a result of the change, and if that change would help the project to be more successful in the future.

| Session | Original plan | Actual delivery |
|---------|---|---|
| 1 | Completion of first questionnaire and hand out 3-day food diaries | Questionnaires were taken home to complete and handed in at the next session as time was limited |
| 2 | LGC staff asked us not to attend so that they could see how the cooking schedule would work within the time allowed | No HNR attendance |
| 3 | Salt and sugar | Salt and sugar worksheets |
| 4 | Snack swaps | Snack swaps |
| 5 | Vitamins and minerals | Staff from the main LGC programme attended for filming purposes and requested no HNR attendance |
| 6 | Final evaluation, 3-day food diary and overview of the LGC programme | No food diaries were given out as these were meant to be used as a comparison to see if the pupils' diets had changed at all over the 6-week period but this was unrealistic and the children found the diaries difficult to complete with a very small amount actually handed back in from the first session |

16. Questionnaire

- Questionnaires can take many forms including checklists, multiple choice questions, open and closed questions, etc.
 - Successful questionnaires tend to include a combination of formats, with the opportunity to answer questions in a variety of styles.
 - Should be simple to understand and not too long (2 sides of A4 maximum).
 - The questionnaire should be collated so that it answers the information required without requiring the completer to write too much or for too long.
 - Pictures, visuals, tick boxes and multiple choice questions can be useful to save time and get the required information.
-

17. Star ratings

- A list of different areas of the project/event with the opportunity to give a rating for each.
 - Ratings can be provided on a scale of 1 to 5, where 1 is strongly disagree and 5 is strongly agree.
 - Enables the project reviewer to see which aspects were of most interest to the target audience, and to see where any improvements could be made.
-

18. Reactionnaire

- Used for the first 2-3 times that a new project is run to enable fine tuning and identify any problem areas.
 - Allows you to gain reactions from the audience immediately after the event.
-

19. Multivoting

- Narrows a large list of possibilities down to a smaller list of the top priorities or to a final selection.
- Preferable to normal voting as it allows an item that is favoured by all, but not necessarily the top choice of any, to rise to the top.

HOW TO:

1. Display a numbered list of options;
 2. Decide how many items must be on the final reduced list, and also how many choices each person can vote for (usually 5);
 3. Each person chooses their top 5 items that they think are most important, and then they rank these choices in order of priority (1st choice ranks highest);
 4. Tally votes;
 5. For each item, the rankings are totalled next to the individual rankings to show a clear picture of the top priorities or most popular choices.
-

20. Affinity diagram

- Organises a large number of ideas into their natural relationships
- Can be used when you are confronted with many disordered facts/ideas, when issues seem too complex to understand or when group consensus is necessary

HOW TO:

1. Each person should write down each idea on a separate piece of card;
2. Related ideas should be placed next to each other;
3. Repeat until all ideas are grouped (if an idea seems to fit into 2 groups, make a second note of it);
4. Everyone should now discuss the shape of the chart, any surprising patterns, and any reasons that people found to move an idea from one group to another (a few more changes may be made after these discussions if appropriate);
5. When final groups have been selected, choose a heading for each group;
6. Combine groups into supergroups if appropriate.

21. SWOT analysis

- SWOT stands for strengths, weaknesses, opportunities and threats
- Strengths and weaknesses are internal factors
- Opportunities and threats are external factors
- Can be used in the first stage of planning to focus on the key issues of the project/event and what it needs to achieve in order to be novel and unique
- Can be very subjective
- TOWS analysis can also be used which simply looks at the negative factors first in order to turn them into positive factors
- Keep your SWOT short, simple and specific

22. Decision matrix

Evaluates and prioritises a list of options

HOW TO:

1. Brainstorm the determining factors for evaluation that are appropriate to the project or event;
2. Discuss and refine the list of factors to those that are most important;
3. Draw a matrix. Write the factors as labels along one edge and the list of options along the other edge. Evaluate each choice against the determining factors using a rating scale;
4. The winner is the highest number in the totals column.

| | Safety | Cost:benefit analysis | FunEducational | Fits with objectives | dept. | Total |
|------------------------|--------|--------------------------|----------------|----------------------------|-------|-------|
| Exhibition | | | | | | |
| Stand | | | | | | |
| Interactive display | | | | | | |
| Workshop | | | | | | |
| Talk/seminar | | | | | | |

In conclusion...

- Each method of evaluation will have its own combination of costs and benefits
- Plan effective evaluation at the outset of the project;
- Evaluation is a way to evaluate if a project is running well, if not, you can make changes as you go along;
- Match your methods to what you need to find out;

Peer Assessment

WHAT IS PEER ASSESSMENT?

Peer assessment is a process through which students and instructors share in the evaluation of student work. It can have many different forms. Researchers find that peer assessment deepens students' understanding of their own learning and empowers students to become more actively engaged and self-directed in their learning processes (Falchikov, 2005; Sivan, 2000).

HOW CAN PEER ASSESSMENT BE IMPLEMENTED?

Identify learning activities for which peer feedback would be helpful to students.

Consider the degree to which you want students to be involved. The advantage of having students actively involved in developing scoring guidelines is increased accuracy when students implement the guidelines during peer assessment. The disadvantage is that students are not yet experts in the content area.

In the lowest level of student involvement:

- An instructor prepares model answers and guidelines for feedback, which students use to assess the work of peers.
- Peer assessment grades are recommendations only, and the instructor makes final grading decisions.
- Students are required to participate and any student unhappy with a peer assessment grade could seek an independent assessment by the instructor.

In the highest level of student involvement:

- Students and instructors work together to prepare model answers and scoring guidelines.
- Students then use the negotiated guidelines to assess the work of peers.
- Students are then responsible for providing feedback to the other students.

Open Book System Strength and limitations

CBSE is going to introduce [Open Book System](#) for the students of class 9th and 11th from the year 2014. Both the classes are excluded from the main board examinations as students are required to pass the 10th Board and 12th Board to get a formal qualification. Even in the job market or higher education class 9th or 11th has little role as a milestone. If a candidate has passed 9th class it is very unlikely to get any advantage as most of the higher courses or formal jobs require qualification of 10th board. Even in case of 11th class there is no real advantage as students are required to pass out the 12th board before they go for any higher studies or formal job. Student who has passed the 11th class is normally considered as student studying in 12th class who has completed the 10th board.

- However, the big deal is that the same open book system would be introduced in 10th and 12th board after some time. So its time to do the assessment of advantages and disadvantages of open book system. I am not going deep but summarize my views in the following two paragraphs:

- Advantages: Students are not required to engage in parroting of concepts, if they understand the concept they would answer correctly. This will remove tension of examination which has become integral part of normal education system. Those students who are intelligent but don't like to put in extra hard work in memorizing the concepts, facts and other data would enjoy this system. It is highly likely that more and more students would continue their education as the passing percentage would go up.
- Disadvantage: The students would stop studying and simply copy from the open book provided at the examination hall. It would be really tough to control the secret discussions between students who would cheat their way to success. The number of pass outs would increase and the students who pass out the exam of 12th board through open book would demand similar type of arrangement in higher studies and later on even in jobs they would demand the provision of open book. Simply imagine a surgeon who turns the pages of the book while performing surgery on his patients. Board examinations would lose their importance and no one would like to assess the ability and competence of an individual on the basis of marks or grade of the CBSE board.

Unit 4

Globalization on Indian Economy

It means to open the Trade and Economy for the international players. In other words, every manufacturer or producer of goods can compete for sale of their products without restrictions or without any imposed control.

For example, think of a small village market or meal where all are free to come and sell their products at their desired price, irrespective of places from where they come. There are no restrictions on control on their products or the prices. This is the globalised trade. Any country can participate to set up, acquire, merge industries, invest in equity and shares, sell their products and services in India.

Therefore, globalisation should not be considered in isolation, but should be considered in totality with liberalisation of the industrial policy towards lifting of trade control and restrictions, influence of trade block and simultaneous privatisation.

Global market treats the world as a single market. With the advent of information technology and its strategic application, the world is focussed as a global village and all traders are therefore globalised.

The Earlier (pre 1990s) concept:

Before 1990s India followed a patch of restricted trade. Such restrictions were that certain products would not be allowed to be imported as they were manufactured in India. For example, General Engineering goods, Food items, toiletries, Agricultural products etc. were in the banned list of import.

Some other kinds of products which were produced in restricted quantity in the country or are expensive and categorised as luxuries were subjected to heavy import duty to make them costlier in order to dissuade flow of foreign exchange and give protection to local producers. For example, VCR, Music sets, Air-conditioners, Computers etc., these items were subject to 150% import duty.

Globalisation in India:

In the 1990s due to change in world economic order and due to heavy pressures from rich countries like USA, Japan, European countries dominating the WTO (World Trade Organisation having 135 members, established in 1995) and IMF (International Monetary Fund) and World Bank engaged in development financing activities, the developing and the poor countries all over the world were forced to open their trade and market and allow foreigners to share their major chunk of a business. Thus, India first started the process of globalisation and liberalisation in 1991 under the Union Finance Minister, Shri Manmohan Singh.

The first 5 years in globalisation did not yield appreciable results. The coming of Multinational cold drinks manufacturers like Coke, Pepsi, and others like Mc. Donald, KFC, Boomer Chewing gums, Uncle Chips, Cornflakes only dominated the show. Due to further liberalization of trade and the privatization, the late 1990s showed the effect to globalisation by the coming of giant car manufacturers like Daewoo Motors, Ford,

Honda, Hyundai which resulted in availability of varieties of cars and reduction of domestic car prices.

Electronic giants like IBM and world leaders in the telecommunication sector like Ericsson, Nokia, Aiwa etc., delivered wide range of quality products at affordable prices and brought a major revolution in Indian electronic industries. In the power sector Enron, AES-CESCO are dominating the show. The resultant effects were tremendous boost to industrial sector economy. The price level came down due to cut throat competition and Indian consumers are so far happy.

Recently in May 2001, the Indian Government also opened the defence sector towards globalisation and privatisation.

Globalisation, but for whose benefit?

Due to globalisation and liberalisation, the Indian market is flooded with quality foreign products, affecting the Indian industries adversely. This has also resulted in the loss of jobs to many poor workers. Toys, bicycles and motor bikes from China, soaps and toiletries from Indonesia and Malaysia, cheese and fruits from Australia and many more await the Indian consumers with the lifting of trade restrictions.

Globalisation has turned out to be a bonanza for consumers but a grave for Indian producers, especially small-scale sectors, because of their age-old technology and financial bottlenecks to update their machines and technology. The import of edible oils, grains at lower prices have affected the Indian farmers heavily.

Now farming is no more profitable because of marginal remuneration. Indian manufacturers are no longer able to compete with their global counterparts. The closing of industries and manpower lay off have become very common.

Let us study the sector wise effects:

(1) Effect of Globalisation on Students and Education Sectors:

Due to globalisation, the availability of study books and information on the internet or the World Wide Web (www) have increased tremendously. However, the exorbitant cost factors have made higher and specialised education beyond the reach of poor and middle class students.

Hundreds of foreign universities have started collaborating with Indian universities and study institutions. This has affected the course fees. For Engineering, Medical and Management studies, the course fees are hovering around Rs.20 to Rs.50 lakhs. Intelligent students from middle and poor class may have to settle for daily wages earning in future as they cannot afford for the same.

(2) Effect on Health Sectors:

It is unbelievable that in India, poor people have to spend a minimum of Rs.200 for a mere seasonal cold or minor stomach ailments, thanks to the multinationals pharmaceutical companies engaged in sky rocketing cost of common medicines under their brand names.

The private sector hospitals like Apollo, Medicare will be only too happy to prepare a bill of Rs.5 lakh to Rs.10 lakh for heart or Kidney operation. The monitoring of health electronically through the internet will worsen the situation further in the years to come. Death will be the easiest option for poor following the effect of globalisation in health sector.

(3) Effect on Agricultural sector:

The globalisation of trade in the agricultural sector is perhaps proving to be a big blunder. The farmers will have to pay a very heavy price, for better variety of imported seeds having resistance to diseases, because of the patent rights imposed by WTO.

Over and above, the Indian farmer cannot export their products to rich countries because of inferior technology and stringent quality parameters imposed by foreign

consumers. The large scale suicide by Indian farmers in Karnataka, Punjab and Haryana under the burden of heavy loans is directly attributed to this.

The Indian agriculture is almost on its deathbed. The minimum cost of eatable rice is Rs.12 per kg and apples from Australia at Rs. 100 to Rs.150 per kg cannot be afforded by poor.

(4) Effect on Employment sector:

The employment scenario in India is probably the worst in recent years due to globalisation. The restrictions of use of child labour and fair pay to workers have badly affected the traditional industries like cottage, handloom, artisans and carving, carpet, jewellery, ceramic, and glassware etc., where the specialised skills inherited for generations were passed on to the next generation from the early age of 6 to 7 years. The globalisation and trade restrictions under the influence of WTO have virtually killed business in these sectors.

Conclusion: (Positive aspects):

Though globalisation and liberalisation of trade have resulted in the availability of large number of quality products at reasonable price, the overall economic benefits are negated due to the slow death of small scale and traditional goods producing sectors employing a large population.

The rising cost of basic sustenance products like garments, footwear, cereals, edible oils, petrol and kerosene, medicines and health care items, decrease in farm output, decrease in purchasing power of poor are some of the alarming issues that have given rise to serious doubts about the benefits of globalisation.

The increasing wide gap between the poor and the rich is a major cause of concern as " will attribute to the increase in crime rates, lawlessness, anti-national activities, terrorism, abduction, black mailing etc. The globalisation process, that enables

investment of foreign money, may turn out to be a serious 'debt rap' in future as was experienced in Indonesia, Brazil, Korea and some other countries.

Moreover, for a common man, the globalisation is of no meaning. He wants a secured source in terms of earning money, maintains his livelihood, has reasonable savings and appreciates a trouble free life. Therefore, globalisation may only add to the India's woes.

Conclusion: (Positive aspects):

The biggest contribution of globalisation is in the field of quality and development of products with various features to suit the Indians. There are varieties of semi-processed food products to suit every taste in the market which has helped us to save time. Globalisation has contributed tremendously to have access to important information towards quality education. Due to globalisation; the communication sector has got a tremendous boost.

We have now cell phones; internet and the availability of latest drugs are helping to save valuable lives along with good doctors sitting across the Web to advice. Due to globalisation, the car manufacturer like Maruti is not able to take us as for ride.

Now, wide choices are available to select electronic goods. Life is more comfortable with cheaper air conditioners. Most importantly, the unscrupulous Indian manufacturers are not able to take us for a ride. Thanks to globalisation, we are able to dream to send a man to the moon due to a better economy and technological competence.

Consumer Rights in India

The **definition** of Consumer right is 'the right to have information about the quality, potency, quantity, purity, price and standard of goods or services', as it may be the case, but the consumer is to be protected against any unfair practices of trade. It is very essential for the consumers to know these rights.

However there are strong and clear laws in India to defend consumer rights, the actual plight of consumers of India can be **declared** as completely dismal. Out of the various laws that have been enforced to protect the consumer rights in India, the most important is the Consumer Protection Act, 1986. According to this law, everybody, including individuals, a firm, a Hindu undivided family and a company, have the right to exercise their consumer rights for the purchase of goods and services made by them. It

is significant that, as consumer, one knows the basic rights as well as about the courts and procedures that follow with the infringement of one's rights.

In general, the consumer rights in India are listed below:

- The right to be protected from all kind of **hazardous goods** and services
- The right to be fully informed about the performance and quality of all goods and services
- The right to **free choice** of goods and services
- The right to be heard in all decision-making processes related to consumer interests
- The right to seek redressal, whenever consumer rights have been infringed
- The right to complete **consumer education**

The Consumer Protection Act, 1986 and several other laws like the Weights, Standards & Measures Act can be formulated to make sure that there is fair competition in the market and **free flow** of correct information from goods and services providers to the ones who consume them. In fact, the degree of consumer protection in any country is regarded as the right indicator of the progress of the country. There is high level of sophistication gained by the goods and services providers in their marketing and selling practices and different types of promotional tasks viz. advertising resulted in an increasing requirement for more **consumer awareness** and protection. The government of India has realized the condition of Indian consumers therefore the Ministry of Consumer Affairs, Food and Public Distribution has incorporated the Department of Consumer Affairs as the nodal organization to protect the consumer rights, redress the consumer grievances and promote the standards governing goods and services provided in India.

If there is infringement of rights of consumer then a complaint can be made under the following circumstances and reported to the close by designated consumer court:

- The goods or services purchased by a person or agreed to be purchased by a person has one or more defects or deficiencies in any respect
- A trader or a service provider resort to unfair or **restrictive** practices of trade
- A trader or a service provider if charges a price more than the price displayed on the goods or the price that was agreed upon between the parties or the price that was stipulated under any law that exist

Goods or services that bring a hazard to the safety or life of a person offered for sale, unknowingly or knowingly, that cause injury to health, safety or life.

Food Security

The World Food Summit of 1996 defined food security as existing *"when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life"*. Commonly, the concept of food security is defined as including both physical and economic access to food that meets people's dietary needs as well as their food preferences. Household food security exists when all members, at all times, have access to enough food for an active, healthy life. Food security incorporates a measure of resilience to future disruption or unavailability of critical food supply due to various

risk factors including droughts, shipping disruptions, fuel shortages, economic instability, and wars.

- Food stability: Refers to the ability to obtain food over time.
- Food access: Refers to the affordability and allocation of food, as well as the preferences of individuals and households.
- Food availability: Relates to the supply of food through production, distribution, and exchange.

Main Document

Food security is defined as the availability of food and one's access to it. A household is considered food secure when its occupants do not live in hunger or fear of starvation. Stages of food insecurity range from food secure situations to full-scale famine. The World Food Summit of 1996 defined food security as existing "when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life".

What is Food Security

Two common definitions of food security come from the United States Department of Agriculture (USDA), and the UN's Food and Agriculture Organization (FAO):

- Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. (FAO)
- Food security for a household means access by all members at all times to enough food for an active, healthy life. Food security includes at a minimum, (USDA):

(1) The ready availability of nutritionally adequate and safe foods

(2) An assured ability to acquire acceptable foods in socially acceptable ways (that is, without resorting to emergency food supplies, scavenging, stealing, or other coping strategies).

In 2006 it was reported that globally, the number of people who are overweight has surpassed the number who are undernourished - the world had more than one billion people who were overweight, and an estimated 800 million who were undernourished. Worldwide around 852 million people are chronically hungry due to extreme poverty, while up to 2 billion people lack food security intermittently due to varying degrees of poverty. 17,000 children die of hunger and malnutrition related diseases every day, which equals 6 million children who die of hunger every year.

In the United States of America there are approximately 2,000,000 farmers, less than 1% of the population. A direct relationship exists between food consumption levels and poverty. Families with the financial resources to escape extreme poverty rarely suffer from chronic hunger; while poor families not only suffer the most from chronic hunger, but are also the segment of the population most at risk during food shortages and famines.

Things affecting food security today include:

- *Global Water Crisis* - Water table reserves are falling in many countries (including Northern China, the US, and India) due to widespread over-pumping and irrigation.
- *Climate Change* - Rising global temperatures are beginning to have a ripple effect on crop yields, forest resources, water supplies and altering the balance of nature.
- *Land Degradation* - Intensive farming leads to a vicious cycle of exhaustion of soil fertility and decline of agricultural yields.
- *Greedy Land Deals* - Corporations and Governments buying rights to millions of acres of agricultural land in developing countries to secure their own long-term food supplies.

Genetically Modified (GM) Food and Food Security

Will **genetically modified foods** be the answer to a crisis in food security? At present little is known on the consequences and future safety aspects of GM foods. The movement of genes from GM plants into conventional crops in the wild (out-crossing), as well as the mixing of crops derived from conventional seeds with those grown using GM crops, may have an indirect effect on food safety and food security. This risk is real, as was shown when traces of a maize type which was only approved for feed use appeared in maize products for human consumption in the United States of America.

Far from focusing on the needs of the poor in developing countries, GM crop development is driven by the commercial interests of US and European companies. The major GM crops currently grown - soya, oilseed rape, cotton and maize - are designed to support the food and textile industries of the developed world. There is currently little GM research and development by private companies on staple food crops vital to developing countries.

"Terminator" seeds are modified to produce sterile seeds. This prevents farmers from saving seeds to plant the following season. 1.4 billion people, mainly poor farmers in developing countries, depend on saved seed. Farmers are then forced to buy new seeds every year from the biotech companies. Despite universal condemnation from farmers' movements all over the world, the technology is still being developed today.

Food security is not just a poverty issue; it is a much larger issue that involves the whole food system and affects every one of us in some way. Issues such as whether households get enough food, how it is distributed within the household and whether that food fulfills the nutrition needs of all members of the household show that food security is clearly linked to health.

Global Food Security must exist to meet the challenge of providing the world's growing population with a sustainable, secure supply of good quality food.

Facts: Food Security

- Food insecurity is measured in the United States by questions in the Census Bureau's Current Population Survey.

- Diseases affecting livestock or crops can have devastating effects on food availability especially if there are no contingency plans in place.
- The approach known as food sovereignty views the business practices of multinational corporations as a form of neocolonialism.
- FAO reported that almost 870 million people were chronically undernourished in the years 2010-2012.
- The United States Department of Agriculture defines food insecurity as "limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways."
- The 1996 World Summit on Food Security declared that "food should not be used as an instrument for political and economic pressure

CONSTRUCTION OF AN ACHIEVEMENT TEST

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Achievement Test

- Any test designed to assess the achievement in any subject with regard to a set of predetermined objectives

Major steps involved in the construction of achievement test

- Planning of test
- Preparation of a design for the test
- Preparation of the blue print
- Writing of items
- Preparation of the scoring key and marking scheme
- Preparation of question-wise analysis

1. Planning of test

- Objective of the Test
- Determine the maximum time and maximum marks

2. Preparation of a design for the test

- Important factors to be considered in design for the test are:
 - Weightage to objectives
 - Weightage to content
 - Weightage to form of questions
 - Weightage to difficulty level.

Weightage to objectives

- This indicates what objectives are to be tested and what weightage has to be given to each objectives.

| Sl.No | Objectives | Marks | Percentage |
|-------|---------------|-------|------------|
| 1 | Knowledge | 3 | 12 |
| 2 | Understanding | 2 | 8 |
| 3 | Application | 6 | 24 |
| 4 | Analysis | 8 | 32 |
| 5 | Synthesis | 4 | 16 |
| 6 | Evaluation | 2 | 8 |
| Total | | 25 | 100 |

Weightage to content

- This indicates the various aspects of the content to be tested and the weightage to be given to these different aspects.

| Sl.No | Content | Marks | Percentage |
|-------|---------------|-------|------------|
| 1 | Sub topic - 1 | 15 | 60 |
| 2 | Sub topic - 2 | 10 | 40 |
| Total | | 25 | 100 |

Weightage to form of questions

- This indicates the form of the questions to be included in the test and the weightage to be given for each form of questions.

| Sl.No | Form of questions | No. of Questions | Marks | Percentage |
|-------|-------------------|------------------|-------|------------|
| 1 | Objective type | 14 | 7 | 28 |
| 2 | Short answer type | 7 | 14 | 56 |
| 3 | Essay type | 1 | 4 | 16 |
| Total | | 22 | 25 | 100 |

Weightage to difficulty level

- This indicates the total mark and weightage to be given to different level of questions.

| Sl.No | Form of questions | Marks | Percentage |
|-------|-------------------|-------|------------|
| 1 | Easy | 5 | 20 |
| 2 | Average | 15 | 60 |
| 3 | Difficult | 5 | 20 |
| Total | | 25 | 100 |

3. Preparation of the blue print

- Blue print is a *three-dimensional chart* giving the placement of the *objectives, content and form of questions*.

| Objectives Form of Qtn Content | Knowledge | | | Under- standing | | | Application | | | Analysis | | | Synthesis | | | Evaluation | | | Grant Total |
|--------------------------------------|-----------|----|---|--------------------|----|---|-------------|----------|---|----------|----------|----------|-----------|----|---|------------|----|---|----------------|
| | O | SA | E | O | SA | E | O | SE | E | O | SA | E | O | SA | E | O | SA | E | |
| Sub Topic- 1 | 2 (4) | | | 1 (2) | | | 2 (4) | 2 (1) | | | | 4 (1) | 2 (1) | | | 2 (1) | | | 15 |
| Sub Topic - 2 | 1 (2) | | | 1 (2) | | | | 2 (1) | | | 4 (2) | | 2 (1) | | | | | | 10 |
| Total Marks | 3 | 0 | 0 | 2 | 0 | 0 | 2 | 4 | 0 | 0 | 4 | 4 | 0 | 4 | 0 | 0 | 2 | 0 | 25 |
| Grand Total | 3 | | | 2 | | | 6 | | | 8 | | | 4 | | | 2 | | | |

Note: O – Objective Type, SA – Short Answer Type, E – Essay Type

The number outside the bracket indicates the marks and those inside indicates the number of questions.

4. Writing of items

- The paper setter write items according to the blue print.
- The difficulty level has to be considered while writing the items.
- It should also checked whether all the questions included can be answered within the time allotted.
- It is advisable to arrange the questions in the order of their difficulty level.

GOVT. GIRL'S HIGHER SECONDARY SCHOOL, MALAPPURAM

ACHIEVEMENT TEST

Std: IX Time : 45 Mts.

Div. : D MATHEMATICS
Max. Marks: 25

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Instruction

Q. 1.

Q. 2.

Q. 3.

Q. 4.

5. Preparation of the scoring key and marking scheme

- In the case of objective type items where the answers are in the form of some letters or other symbol a scoring key is prepared.

-

Scoring Key

| Q.No | Answer | Marks |
|------|--------|-------|
|------|--------|-------|

| | | |
|---|---|---------------|
| 1 | A | $\frac{1}{2}$ |
| 2 | C | $\frac{1}{2}$ |
| 3 | A | $\frac{1}{2}$ |
| 4 | D | $\frac{1}{2}$ |
| 5 | B | $\frac{1}{2}$ |

- In the case of short answer and essay type questions, the marking scheme is prepared.
- In preparing marking scheme the examiner has to list out the value points to be credited and fix up the mark to be given to each value point.

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Marking Scheme

| Q.No | Value points | Marks | Total Marks |
|------|-----------------|---------------|-------------|
| 1 | Value Point - 1 | $\frac{1}{2}$ | 2 |
| | Value point - 2 | $\frac{1}{2}$ | |
| | Value point - 3 | $\frac{1}{2}$ | |
| | Value point - 4 | $\frac{1}{2}$ | |
| 2 | Value Point - 1 | $\frac{1}{2}$ | 2 |
| | Value point - 2 | $\frac{1}{2}$ | |
| | Value point - 3 | $\frac{1}{2}$ | |
| | Value point - 4 | $\frac{1}{2}$ | |

6. Preparation of Question-wise Analysis

Question-wise Analysis

| Q.No | Content | Objectives | Form of Questions | Difficulty Level | Marks | Estimated Time |
|------|---------|------------|-------------------|------------------|-------|----------------|
|------|---------|------------|-------------------|------------------|-------|----------------|

| | | | | | | (In Mts.) |
|---|---------------|---------------|----------------|-----------|---|------------|
| 1 | Sub topic - 1 | Knowledge | Objective Type | Easy | ½ | 1 |
| 2 | Sub Topic - 2 | Understanding | Objective Type | Average | ½ | 1 |
| 3 | Sub Topic - 2 | Application | Objective Type | Easy | ½ | 1 |
| 4 | Sub Topic - 1 | Knowledge | Objective Type | Easy | ½ | 1 |
| 5 | Sub Topic - 2 | Understanding | Objective type | Average | ½ | 1 |
| 5 | Sub Topic - 1 | Analysis | Short answer | Average | 2 | 3 |
| 6 | Sub Topic - 1 | Synthesis | Short Answer | Difficult | 2 | 3 |
| 7 | Sub topic - 2 | Application | Short answer | Easy | 2 | 3 |
| 8 | Subtopic - 1 | Analysis | Essay | Average | 4 | 10 |

TYPE OF TEST ITEMS

- Objective type
- Short answer type
- Essay Type

1. OBJECTIVE TYPE

- An objective type of test item is one which the response will be objective.
- Objective type test item broadly classified into two:
 - *Supply type (Recall Type)*
 - The respondent have to supply the responses.
 - *Selection type (Recognition Type)*
 - The respondent have to select the responses from among the given responses.

Objective Type – 4 Type

1. True – False Items (Alternate Response Type)

1. Multiple Choice Items
2. Matching Type Items
3. Completion Type Test Items

Advantages of Objective Type Items

- A large amount of study material can be tested in a very short period time
- Economy of time.
- Objectivity of scoring.
- No bluffing
- It reduces the subjective element of the examiner to the minimum.
- If carefully planned, it can measure the higher mental process of understanding, application, analysis, prediction and interpretation.

Limitations of Objective type items

- Difficulty in preparing good items.
- Problem of guessing.
- Problem of cheating.
- Inefficiency in testing complicated skills
- High printing cost.
- Emphasis on testing superficial knowledge.

2. Short answer type

- A question requiring three value points at most may be defined as a short answer question.
- Value points diminish the subjectivity.
- Help in ensuring wide coverage of content.

Advantages of Short answer Type Items

- Large portion of the content can be covered in a test.
- No opportunity for guessing.
- Easy to construct, because it measures a relatively simple outcomes.
- It can be made quit objective by carefully fixing the value points.
- Useful in evaluating the ability to interpret diagrams, charts, graphs, etc.

- If carefully prepared, deep level objectives understanding, application and problem solving skill can be evaluated.

Limitations of Short answer Type Items

- It is more subjective than the objective type of items.
- It may encourage student to memories fact and develop poor study habits.
- Mechanical scoring is not possible

3. Essay type

- It is free response test item.
- Help in ensuring a wide coverage of content and variety of objectives.
- Help in evaluating complex skills.

Advantages Essay Type Items

- Easy to prepare.
- Useful in measuring certain abilities and skills.
- Permit the examinee to write down comprehensively what he knows about something.
- Promote originality and creative thinking.
- Possibility of guess work can be eliminated.
- Reduce chance on the spot copying.
- Low printing cost.

Limitations of Essay Type Items

- Minimum validity.
- Lack of reliability.
- No objectivity.
- Rote memory is encouraged.
- It is a time consuming test item.

Open Book System Strength and limitations

CBSE is going to introduce **Open Book System** for the students of class 9th and 11th from the year 2014. Both the classes are excluded from the main board examinations as students are required to pass the 10th Board and 12th Board to get a formal qualification. Even in the job market or higher education class 9th or 11th has little role as a milestone. If a candidate has passed 9th class it is very unlikely to get any

advantage as most of the higher courses or formal jobs require qualification of 10th board. Even in case of 11th class there is no real advantage as students are required to pass out the 12th board before they go for any higher studies or formal job. Student who has passed the 11th class is normally considered as student studying in 12th class who has completed the 10th board.

However, the big deal is that the same open book system would be introduced in 10th and 12th board after some time. So its time to do the assessment of advantages and disadvantages of open book system. I am not going deep but summarize my views in the following two paragraphs:

Advantages: Students are not required to engage in parroting of concepts, if they understand the concept they would answer correctly. This will remove tension of examination which has become integral part of normal education system. Those students who are intelligent but don't like to put in extra hard work in memorizing the concepts, facts and other data would enjoy this system. It is highly likely that more and more students would continue their education as the passing percentage would go up.

Disadvantage: The students would stop studying and simply copy from the open book provided at the examination hall. It would be really tough to control the secret discussions between students who would cheat their way to success. The number of pass outs would increase and the students who pass out the exam of 12th board through open book would demand similar type of arrangement in higher studies and later on even in jobs they would demand the provision of open book. Simply imagine a surgeon who turns the pages of the book while performing surgery on his patients. Board examinations would lose their importance and no one would like to assess the ability and competence of an individual on the basis of marks or grade of the CBSE board.