Indira Gandhi
National Open University
School of Education

BES-124
Language Across the Curriculum

Block

2

TEACHING AND ASSESSING LANGUAGE ACROSS THE CURRICULUM

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BLOCK 2 TEACHING AND ASSESSING LANGUAGE ACROSS THE CURRICULUM

In the Second Block,we focus on all four skills ofi.e.,listening,speaking,reading or writing.In real life however,it is not easy to separate the four skill,as most language are preceded or followed by a different skill.Listening may be followed by speaking or reading or writing.This integration is constant and confusing for the teachers and learners to understand and practice.

However,teaching of these skills separates the skills in the way which is easy to understand and practice,therefore,in the Block these have been presented as separate Units.This order of presentation will help the teachers to organise their activities in some order and will enable them to decide what exactly the aim of their teaching is so that they can make choices accordingly. idea is to organise learning activities in some order.

The perspective in the Second Block is on understanding how students develop listening and reading competencies by constructing meanings with the help of prior understandings. The discussion is on construction and 'comprehension' of meanings through *listening comprehension, reading comprehension*) which is not a passive skill but a cognitive process and can be facilitated by using strategies like brainstorming, concept maps, discussions, prediction, diagrams and pictures, and so on. There are 'hands-on" activities for teachers in every Unit which the teacher can use subsequently for his/her own teaching, the classroom. Apart from these ,there is a repertoire of activities given which the teacher can decide to choose .

UNIT 5 TEACHING LISTENING ACROSS THE CURRICULUM

Structure

5.0 OBJECTIVES

After completing the unit you will be able to:

- state the need for listening and explain what the listening process comprises;
- recognise and identify features and techniques and concepts within a listening text;
- understand and explain how these features and concepts make the meaning of the text;
- identify the main idea and supporting details of spoken reports or points of view and summarize them;
- identify and develop subject-specific activities to develop the requisite listening skills;

* This section have been adapted from http:/orelt.col/org/module5

- select listening activities suitable to different subjects at the secondary level and transact listening activities with the different stages of a listening lesson in view;
- create or use listening activities with the aim to develop or consolidate subject specific vocabulary and forms of expression; and
- organise listening lessons to ensure motivated listening.

5.1 INTRODUCTION

Effective listening incorporates the ability to comprehend spoken words and separate relevant from irrelevant information. Listening is basic to learning and language learning. Much of the information we acquire is through listening whether it is during a lecture, through the media, through social interactions in the form of stories and anecdotes, instructions and directions, suggestions and advice or academically through various activities at school. It is a well- established fact, and we have discussed this in the earlier Block, that language use contributes to and is a prerequisite for cognitive development. Listening helps a person to acquire a language. It also helps to develop a person's spoken competence which gets enriched with new grammatical structures when a speaker uses expressions that are new to the listener. Listening exposes a person to the contextual vocabulary of the speakers, helps the listener to acquire new vocabulary, new sound patterns and enables the person to derive meaning using other indicators like stress, tone, expression and body language of the speaker.

In our day to day life, there is a growing change in our communication patterns which has made the skill of listening more important than ever. There are BPO's, Helplines and Customer Care centres, where we have access to recorded information or live problem-solving on issues regarding to sales and services over the telephone. This makes it imperative that we learn to listen well and negotiate the meaning as efficiently as we can. Similarly, we need to listen and respond intelligently during a formal conversation with a professional or during an informal chat with family, friends or acquaintances.

In this Unit, we will discuss the need for focused listening which has made a beginning in our classrooms, and the strategies to listen to a particular text. *There is, however, no planned or focused listening to content or text in other subject areas, apart from teacher talk.* Unfortunately, listening has not been adequately exploited and honed in the language class, much less in the classes of other subjects. Most of the listening is done in an artificial set up, and is hastily concluded as a mandatory activity spelt out in the textbooks as part of skill development. The listening that learners do naturally in the class is to instructions and explanations, description of processes and experiments, simple transacting of information and a little of classroom conversation which includes description of acceptable and non - acceptable classroom behaviours. Many entrance tests in language contain questions on reading, writing and grammar, but none based on the skill of listening. Similarly, entrance tests in other subjects especially in science or social science have short objective type tests that may test recall of information, logical thinking, inference or interpretation but none on listening to the specific language that characterizes the subject.

5.2 WHY IS LISTENING IMPORTANT?

Listening is an important skill, however, as we discussed, it has been neglected in schools. The reasons for neglecting this vital skill are various.

- Language teachers felt that it was more important to present new language items to the class. They used listening only to practise those items. They focused on emphasizing those skills that require more systematic instruction and evaluation like grammar, reading and writing.

- Subject teachers, however, did not focus on the content specific vocabulary much in a conscious way. The students learnt them as and when they occurred during the classroom explanations, discussions or through illustrations in the textbook.

- Listening has been viewed as a passive skill which is difficult to assess and evaluate. The outcome of listening is not tangible like that of writing or speaking.

- Teachers believe that listening activities take up a lot of teaching- learning time.

- Some believe that this skill will be automatically picked up through exposure to the target language, it can be acquired naturally in response to the spoken word as with L1.

- For subject teachers reading and learning of facts is more important than listening to recorded descriptions, talks, interviews or discussions on various aspects of content. And very much like the language teachers, these take up a lot of classroom time with little tangible evidence of the quality of intake.

Listening is an important skill

- Listening is the foundation of literacy during infancy and early childhood (emergent literacy).

- Listening vocabulary is the first vocabulary of any child which she acquires through listening to what the caregivers and other people in the social network speak. Exposure to new words through reading comes much later.

- There would be no language without the aural/oral component. A large part of communication is aural and oral and often non-verbal.

- We need skills in listening for the very business of living, study and work, even to run businesses and governments, educational excursions and interaction with experts, watching videos and listening to professionals make learning active, memorable and retainable.

The aim of teaching a language is to equip a learner to be able to receive and produce it meaningfully in academic, formal or social situations. The skill of listening is a significant part of the business of daily living and needs to be practised extensively. This will help to ensure effective listening beyond the classroom.

5.2.1 Listening and Other Language Skills

Listening is inextricably linked to the exercise and development of the other language skills. Listening is directly linked to speaking. Although listening is an internal encounter yet we can get an idea of the extent of comprehension when the listener encodes his/her response in the spoken form, whether in a conversation or while answering questions in different formal and informal situations.

Though an oral response is a significant way to measure comprehension while listening, it may be borne in mind that many attentive listeners do not express their understanding in the spoken form. Exercises like gap-filling, cloze, selection and sequencing can help the teacher to assess how well these learners understood the spoken/recorded text.

Listening and reading are both decoding skills. Listening depends upon sounds and is an aural experience whereas reading depends upon the written text and is a visual experience (depending upon graphemes). In fact *listening provides the foundation for reading:*

- *Decoding and auditory discrimination is the first step in reading where beginner readers try to sound out the words.*
- *Non-linguistic clues like pauses, voice variation and inflection can at later stage provide clues to meaning while reading.*
- *A child utilises her listening vocabulary as a basis for reading and those with a limited listening vocabulary may have limited reading and writing vocabulary.*

Thus it is necessary that students be provided with an opportunity to exercise all of the above skills through graded tasks.

We all know that writing is nourished by the other skills of the language and that our listening vocabularies and the language we listen to influence the skills of writing in content- based subjects.

5.2.2 Learner Concerns

Most learners when asked of their area of difficulty often cite listening as the area about which they feel most insecure. The reasons may be:

- *They do not have concrete evidence that they are making progress in the skill.*
- *Listening happens in real time, which means that it is supposed to be understood at the moment in order to make a suitable response. One cannot play it back in one's mind to decipher its meaning.*
- *They haven't learnt to separate the grain from the chaff i.e. focus on key words and expressions or discriminate between fact and opinion.*
- *They have little practice in noticing the strong and weak forms of words.*

5.2.3 Need for Modelling Good Listening Behaviour

During different oral encounters with the young, many adults fail to provide a model of active listening which involves making eye contact, showing interest, responding with short comments, asking questions to clarify or summarizing what the child said in order to clarify understanding. In such cases the young too often tend to switch off or are unable to concentrate when asked to listen or when they are exposed to spoken texts.

Activity 1

1. *Why is it important to develop the skills of listening?*
2. *In what way does listening contribute to an individual's linguistic competence?*
3. *What are the difficulties in teaching listening?*
4. *What are the different ways parents and teachers can model good listening behaviour to encourage children to listen?*

5.3 UNDERSTANDING SPOKEN DISCOURSE

In real life listening tends to be a more difficult skill that reading since the listening text is not permanent and there is little possibility of playing it back or referring to the text again. One can however, negotiate meaning by asking the speaker for clarifications or asking the speaker to repeat what he or she said or to say it slowly.

Comprehension of a heard discourse involves two kinds of processes very much like reading.

Top-down processing starts from the reader or listener. It assumes that the learner brings to the text certain knowledge – of the world, of texts (including how certain types of conversation typically unfold), and of language. This knowledge is likely to be useful in understanding a text (whether written or spoken), but it often needs to be activated, and activities such as discussions, questionnaires, quizzes, brainstorms, and vocabulary-anticipation can all be used to do this.

Bottom-up processing starts from the text. It assumes that by working on a combination of different aspects of the written or spoken text, the learner can increase their ability to comprehend it. These might be very "micro-" elements, such as the fact that we tend to insert a "w" sound between certain vowels; or they could be at a more "macro-" level, such as searching for synonyms within a text. The key idea here is decoding.

5.3.1 Bottom up Processing: Decoding

The decoding process is the process of translating the sounds (acoustic input) that the listener receives into standard forms of language (words, phrases or sentences) using clues like pronunciation and inflection. Hence a piece of speech is reshaped into larger units of language. **Bottom - up Processing** involves the use of the micro-skills to:

- Scan the input for familiar lexical items
- Segment the stream of speech into its constituent parts
- Use phonological cues (sounds, stress and intonation) to identify the information focus in an utterance
- Use grammatical cues to organize the input into constituents (sense groups).

The listener's ears receive the phonemes of the language which are clustered into syllables and the syllables into words. The words fall into familiar clusters as in phrases and clauses or that are frequently encountered like formulaic language.

The decoding happens at the phoneme level, syllable level, word form level and chunk level. Then it happens at syntax level and intonation level and lastly at the meaning level- followed by the response of the listener.

Decoding processes take place at:

- *Phoneme level:* identifying the different consonants and vowels
- *Syllable level:* recognising the syllable structure by paying attention to the variation in stress, recognizing that weaker syllables are normally found in the structure words
- *Word level:* identifying word boundaries (where they begin and end in connected speech, i.e. *Whatdoyousay?= What+do+you+say?*) matching sequences of sounds to words, matching words that are in their standard forms and figuring out new words
- *Syntax level:* isolating phrases and clauses, making predictions using the beginnings of phrases and clauses, and anticipating the syntactic patterns and checking hypothesis (whether what was anticipated is true or not)
- *Intonation level:* making use of sentence stress, using intonation to support syntax, recognizing chunks of language (pauses between sense groups, tone groups)

Thus a listener uses the grammatical structure of the utterance and the pattern of intonation that binds together words in order to understand what is being said. Initially these decoding routines are conscious and require effort but as the listener becomes more efficient these routines become automatic. A competent listener does not have to make a conscious effort to match the group of words in the listening input to her own vocabulary or try to recall a group of words several seconds after they have passed. Automaticity requires minimal mental attention.

Sub-skills exercised in the decoding process are

Perception skills

- Recognizing individual sounds
- Discriminating between sounds
- Identifying reduced forms in connected / fast speech (elision and assimilation)
- Identifying stressed syllables
- Identifying stressed words in utterances
- Recognizing intonation patterns

Language Skills

- Identifying individual words and groups and building up possible meanings for them
- Identifying discourse markers which organize what is being said, for example, *then, I was saying, as a matter of fact, to start with etc.*

5.3.2 Top-down Processing

In order to understand the import of an utterance a listener does not need the decoding processes alone, although these seem to dominate in the early stages. To arrive at a full meaning of the speaker's message, the listener uses various non-linguistic clues and a range of contextual information that may be **independent** of the actual words used. The following comes into play for arriving at the real meaning of what a speaker is saying:

- *Listener's knowledge of the world*
- *Knowledge of the speaker*
- *Knowledge of what has been said so far*

According to Goodith White, using *knowledge of the world* includes the processes below:

- *Connecting groups of words to non-linguistic features such as expressions, gestures, or objects, in order to get clues for meaning*
- *Using knowledge of a topic to guess what the speaker might be saying about it*
- *Using knowledge about the patterns that certain oral interactions typically take in order to predict what is being said- ordering in a restaurant, making a telephone call etc.*

It is important for the listener to decide whether the piece of information he or she is receiving is important or not and how it relates to the previous piece of information or the context. It is also important to see how it relates to the interests of the listener.

When we use *Top-down Processing*, we use the macro-skills and:

- Use background knowledge to comprehend the message
- Identify an interaction as belonging to a particular event i.e. storytelling, joking, praying, complaining, arguing etc.
- Assign places, persons or things to categories
- Infer cause and effect relationships
- Anticipate outcomes
- Infer the topic of discourse
- Infer the sequence between events
- Infer the missing details

Top down processing is

- Using the knowledge of the context (topic, social situation, cultural knowledge and comparing with earlier similar encounters etc.)

- Deriving meaning: storing the literal meaning of an utterance and accepting an approximate meaning and checking understanding
- Adding to the meaning by making inferences, conjecturing where things not clearly stated and dealing with pronouns to make connections
- Selecting information and recognizing redundant information
- Integrating information by connecting ideas, carrying information obtained so far and noticing the connecting words used by the speaker.

Activity 2

1. *Explain bottom up processing or the decoding process in a few sentences.*
2. *What are the different ways a listener negotiates the meaning of what is being said?*

'Knowledge of the World' and 'Schema'

Listening comprehension is strongly believed to be a process of interaction between the listener's background knowledge and the expected knowledge in the spoken text. In other words it means that, listeners employ all relevant previously stored knowledge to comprehend the incoming input. The role the background knowledge plays in comprehension has been formalised as 'schema theory' (Rumelhart, 1980). In the light of the notion of schema theory, it becomes essential to trigger the learners' background knowledge and utilise this knowledge to fully comprehend the listening text.

Most people would agree that we use a combination of the two approaches when we are processing a text. We tend to switch from one to another as is needed. But whereas it used to be thought that we revert to bottom-up processing when we are unable to use top-down (for example, if we are unable to predict the content, we have to listen to the actual words!), research suggests that in fact the reverse is true. If you are in a noisy café, and can't "decode" what your friend is saying (bottom-up), you tend to fill in the gaps with your knowledge of the world, or your friend's usual speech habits.

Within this framework, the idea of *"comprehending a text"* is important which needs to employ both approaches discussed above. Although practice in decoding is essential, top down processing must not be ignored even in the early stages of language learning, for these are cognitive processes and help to develop thinking amongst the learners. The teacher needs to decide which process she wishes to practice but these processes can be clubbed so that they feed into one another. Efficient listening also requires discourse skills which can be developed through conversation and extended talk. In conversation, social interaction is more obvious as each short turn responds to previous turns and contributes to the development of the talk.

5.4 LISTENING ACROSS THE CURRICULUM

Goals of listening across the curriculum :comprehending the aural text

- *To listen sensitively and critically to the ideas of others.*
- *To listen for comprehension and appreciation at varying levels through: · recall of facts · interpretation · application · analysis · evaluation*
- *. To listen with an increasing span of concentration to others, and comment on what has been said*
- *To listen and respond to materials read aloud, expressing opinion on what has been heard*
- *To demonstrate a grasp of sequence, cause and effect, reasoning, clarity of argument, appreciation of relevance and irrelevance.*
- *Segmenting the stream of speech into meaningful units (words and phrases)*
- *Recognizing word classes (grammatical units)*
- *Relating the incoming message to one's own background knowledge*
- *Extracting gist encoded information from the remaining aural text*
- *Using our background knowledge and knowledge of the world to get the drift of the utterance or the handling of a topic.*
- *Predicting what the speaker might say next.*

Developing fluency and accuracy in speaking is an important goal of listening across the curriculum. Just as speaking, listening too has its own fluency and accuracy without which communication may break down.

- ***Fluency:*** acquiring the patterns of listening like paying attention to the keywords, using non-linguistic clues by attending to visual signs ('viewing' H.J. Vollmer) and attending to physical movements ('watching' H.J. Vollmer) to arrive at the meaning, not having to listen word for word (meaning-making skills)
- ***Accuracy:*** ability to decode pieces of connected speech, word by word, noticing word boundaries and an understanding of prefixes and suffixes (decoding skills)

Hence teachers in the classroom need to provide practice with particular goals and processes in mind. It is important to note that certain skills cannot be devoted exclusively to certain levels. Everything can be practised at every level of language learning or acquisition. We shall read more about them as we proceed.

5.5 DIFFERENT KINDS OF LISTENING

During the course of daily living we listen to a variety of things in various formal and informal situations. The things we listen to range from polite exchanges and

enquiries to listening to talks, news and lectures. We may have discussions on serious or non-serious issues or seek consultation and guidance from different kinds of professionals. Some of these require a response from the listener for communication to continue while some do not offer any scope for the listener to respond in real time.

Listening may be reciprocal or non reciprocal or it may be academic or conversational. Each situation requires different skills of listening.

A brief discussion on kinds of listening follows. It is necessary to understand the different kinds of listening that occur in communication. This will help the teacher to organise activities so that different kinds of listening skills are practiced and developed.

5.5.1 Passive or Marginal Listening

This kind of listening happens when our attention is partially divided like when children are doing their homework with the television turned on in the background, or when students are discussing in groups within the classroom and are able to hear what the students in the next group are saying. There is a momentary 'tuning out' but there is enough consciousness to return to the activity on hand. In the classroom the teacher's voice alerts students to attention. This happens on many occasions in real life.

5.5.2 Attentive Listening

There are situations in life when accuracy of comprehension is involved for the information received is vital as in directions, instructions, announcements and introductions. Failure to understand or remember any portion of the information might lead to problems. The ***listener has to pay close attention*** to what is being said and stop to ask questions, sum up what the speaker said in order to confirm if he/she has understood correctly or even ask the speaker to repeat what he or she said.

A teacher can develop activities based on directions and instructions to practice this kind of listening wherein the students carry out an experiment, or a task following the instructions step by step.

5.5.3 Responsive Listening

Responsive listening falls under the category of ***reciprocal listening*** for it requires a response from the listener in order to continue with the communication. Thus it is similar to attentive listening because the listener has to pay attention to the speaker's words in order to make an appropriate response. This requires a different mindset and can be practised by creating situations where the students:

- *participate*
- *have a conversation*
- *discussion*

A teacher may provide a theme or a situation for the students to discuss after they have heard a story, read a passage or a news item. Students may also practise conversation in simulated dialogues based on different situations of life.

5.5.4 Listening for Specific Information

This kind of listening happens when the listener is ***looking for a certain piece of information*** in a part of the listening text. It also happens when the teacher explains parts of a process or material from which the students choose certain sections. The teacher may ask the students to pay attention to certain parts of the listening text, or may give a few questions beforehand so that the students know what to look for in the text and become alert when they think that portion is coming.

Activity: *One of the skills necessary for students to understand concepts in different subject is to identify specific information in an oral or written text. This means that while listening to the teacher or reading from a book, students should be able to look for certain points that will help them comprehend the main points easily.*

In this activity, listening for specific information, you will be able to help your students develop their scanning skills; that is, looking for specific information in an oral or written text. To be able to locate specific information in an oral presentation, one has to be very attentive and quick. This is because in real conversations, we speak fast and rarely repeat what we say, unless we want to emphasise something. The information we want to note is thus available for only a short time, and we have to both comprehend and record it instantly for future use. To prepare students for this activity, have them play this game in the class. In pairs, students have to tell each other three things they saw on the street the previous day. No one is allowed to write down the information; they will all have to report from memory. Give the students not more than three minutes per exchange. Then ask a few students randomly to report what their partners said. This exercise usually generates a lot of laughter, as people tend to forget, reword or even change the information when they report back. After the exercise, have a discussion on the importance of listening intently to look for/hear specific information. Then tell them what they have to do in the activity.

(Source: http://orelt.col.org/module/unit/5-listening-across-curriculum)

5.5.5 Appreciative Listening

Appreciative listening is a pleasurable activity wherein a listener settles down to enjoy a dramatization, a story or a poem. This results in some kind of emotional reaction as when the listener begins to identify with the character or shares the emotions that accompany the situations in the story.

Rendering of poems, stories on CD or told by the teacher or listening to a play can be followed by asking students' response to theme, storyline, situation, character, motives and relationships.

5.5.6 Creative Listening

The process of developing ***new and original solutions to problems presented through the spoken word*** is creative listening. It is also the act of entering imaginatively into the experiences, the setting and the feelings of the characters in a story. (Being narrated, read aloud, over the radio or stage). The listener may listen to a situation and suggest solutions or after listening to a story give the story a different end.

5.6.7 Analytical or Critical Listening

Analytical listening makes a great demand on the listener because the listener needs to be careful, accurate and attentive in order to make inferences and value judgements regarding situation, process, places, persons or things. Critical listening occurs when you still want to understand what the other person is saying, but also have some reason or responsibility to evaluate what is being said to you and how it is being said.

The listener weighs what he/she hears against personal experience and forms an opinion. While listening critically the listener is alert to the attempts of the speaker to sway his/her opinion by the devices of propaganda or through exaggeration as in advertisements.

5.6.8 Listening for Gist

Apart from being able to understand and locate specific information in any text, ***students also need to understand the gist or main idea of a lecture, conversation or report.*** In the History, Social Studies, Political Science or Literature classroom, for example, students listen to the teacher's explanation of a topic, including the chronology of events (i.e. the order in which things happened), the main arguments, the conclusions and the teacher's own opinion or viewpoint about the topic. It is obviously not possible, or even necessary, for students to note down or remember every single sentence spoken. Most often they need to understand only the substance of the teacher's discourse – that is, the gist. The same rules apply when students listen to information on TV and the radio.

Classroom Activity : *In this activity, you will able to familiarise your students with the gist of a topic by helping them listen efficiently, paying attention to only the main points.*

Before they listen to the main topic, they must understand what we mean by the term ***gist****. For this, you can prepare your own set of paragraphs on different topics for students to find the gist. The students' task is to match the passages to their gist. This will familiarise them with the style of a gist. During the feedback session, draw their attention to the main aspects of a gist; it contains the main idea/main point, it leaves out unnecessary details or illustrations and it is written in short and concise form.*

Write a few passages on separate sheets of paper, fold them and keep them on your table. Ask a few students to come up one by one, select one passage and read it aloud for the class. The class will have to listen carefully and note what the topic is about, in just one or, at the most, two sentences. After all the passages have been read, ask the students to read out their summaries/gists. You can have a discussion and pick the best gist. Wind up the activity by reviewing the main features of a gist.

(Source: http://orelt.col.org/module/unit/5-listening-across-curriculum)

5.6.9 Listening for Detail

One of the most important study skills needed by student is ***understanding detail in a lecture or a passage,*** and applying this in a course-related activity. For example, students need to listen carefully to the process of conducting experiments in the Laboratory. Teacher reads out aloud the preparation of oxygen using potassium chlorate.

Classroom Activity: ***Listening for detail***

Preparation of oxygen using potassium chlorate. *omposition of potassium chlorate. You will need: hard glass test tube, gas jar, trough, delivery tube, one-hole rubber stopper, clamp stand, burner, beehive shelf, water, potassium chlorate and manganese dioxide. Potassium chlorate on heating liberates oxygen gas. This being a very slow reaction manganese dioxide or a catalyst is used.*

Arrange the apparatus as shown here.

Take a mixture of potassium chlorate and manganese dioxide in the ratio of 4:1 by weight in a hard glass test tube. Heat the test tube. Oxygen gas is liberated. Oxygen gas is collected in the gas jar by the downward displacement of water. Take care. The experiment should be conducted carefully. It can be dangerous if the heating is not done gently and cautiously. The reaction that takes place is displayed on the screen. Manganese dioxide is a catalyst in the reaction.

For safety:

- *Wear a protective mask.*
- *Wear hand gloves.*
- *Avoid eating while working – you might inhale poisonous fumes or maybe your food could cause a chemical reaction and trigger something unpleasant.*
- *Remember also never to add water to acid: instead, always add acid to water. That's all for today!*

How to make oxygen gas in a laboratory (worksheet)

Fill the sheet below with the details of the experiment your teacher has just told you about.

1. Names of materials needed to prepare oxygen in a laboratory.

   .....

   .....

   .....

2. The procedure of preparing oxygen gas involves the following steps:

   i. .....

   ii. .....

   iii. .....

   iv. .....

3. Conducting experiments in the lab can be very dangerous. So the following precautions must be taken to avoid injury or even death:

   .....

   .....

   .....

   .....

   .....

   .....

5.6 LISTENING STRATEGIES

In this section, we will discuss how teachers can devise activities in different subject areas in order to support their students in developing their listening skills. In all these activities it is important to think about how the activity can be made accessible and meaningful to students. These listening activities should link to other activities in the textbook or to events and experiences in your students' lives. In all the activities the teacher needs to carefully listen to and observe how the students respond so that he/she can intervene to direct and facilitate learning for all students in the class.

Read the Table given below carefully and write your opinion on the suggested activities. Suggest some activities for listening in your subject not given in the Table.

Table: Strategies to activate the 'schema'

Activity	How to do	Purpose
Brainstorming	*Call out related words or phrases to be put on board or OHP*	*These knowledge oriented activities aim to prepare students by encouraging them to activate stored schemata or acquire relevant types of world knowledge which will facilitate top down processing.*
Mind -mapping	*Write down words or draw simple pictures in a web*	
Discussion	*Discuss similar or related issues based on prompt questions or pictures*	
Games	*Simple word or information -gap games*	
Guide -questions	*Guess answers to questions on the text*	
Picture/Diagram	*Complete illustrations with simple drawings or words*	
Predictions	*Predict content, c haracters, settings or sequence of events*	
Elimination	*Identify the odd one out from a group of pictures/phrases*	
Skimming	*Read a related short text for gist*	

Source: Zeng, Ya-jun (2007), "Schema theory and its application in teaching listening for non-English major undergraduates", Sino-US English Teaching, 4(6): 35.

Classroom Activity

Follow the steps below and try using this activity in your classroom:

1. *Go through the following text. It is divided into different paragraphs, some small, some big. Look at the first paragraph. Could you ask some interesting questions about it?*
2. *Tell your students that you are going to read a text aloud and they should listen to it to find the answers to the questions.*
3. *Read the first paragraph aloud. Make sure your students do not see the text.*
4. *Write the questions on the board, tell your students to discuss the answers to the questions in pairs.*
5. *Read the subsequent paragraphs .Write two or three questions about each paragraph on the board .*
6. *Students discuss the answers and write them after each paragraph.*

Listening Frame

Similarities and Differences in Mohenjo-daro and Harappa Civilizations

Mohenjo-daro and Harappa, of the Bronze Age, depict an era that boasts of human development in architecture and city planning. A civilization that was hidden underground for many years was accidentally found, and excavations started. Both the cities are a part of the Indus Valley Civilization.

The Mohenjo-daro and Harappan civilization is testimony to a rich cultural history that was found by the Britishers when they ruled India, during an excavation for laying down of a railway line. These two cities of the Indus Valley Civilization were traced and later preserved as ancient heritage.

It all started with the efforts of Archaeologist and Director-General of the Archaeological Survey of India, John Marshall, who was majorly responsible for the excavation of Mohenjo-daro and Harappa. Both these cities were found at different locations. However, their resemblance concluded that both were part of the Indus Civilization.

Similarities Between Mohenjo-daro and Harappa

A comparison of the artifacts of Harappa and Mohenjo-daro by Marshall proved that they both belonged to the same culture and were of the same age. They are both known as a part of the Indus Valley Civilization. Both the sites are enlisted in the UNESCO World Heritage, as of today.

Architecture and Layout

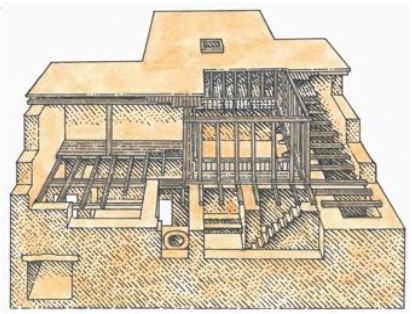

Illustration of a House in the Indus Valley Civilization

This is the major point of similarity that has led to the conclusion that both the cities belonged to a similar civilization, which is now referred to as the Indus Valley Civilization. Both cities had extremely planned structures that was well-equipped with a good drainage and sanitation system. They boasted of architecture that is progressive with well-defined and meticulously planned towns with streets. Archaeologists were in awe of this awesomely planned structure and detailing.

The houses were built of burnt bricks, and had drainage pipes connected to them. There are also evidences of public swimming pools built along with changing rooms.

What is important to note about this civilization is that there appears to be very less instances of class differences. It seems to be a society which survived on the basis of equality and provision of good facilities to its citizens.

Excavation Site at Harappa Depicting a Well and Sewage System

The Great Bath of Mohenjo-daro is one of the most famous sites in the Mohenjo-daro civilization. There are many wells found in the Harappan city too, thus proving that both had a sophisticated hygiene and sewage system.

Language

Archaeologists and scientists are yet trying to decipher the language of the Indus valley. Many seals and artifacts excavated contain symbolic language, and efforts are still going on to decode them.

Sculpture

Though there are some differences in the sculptures, many artifacts have been found that are similar, such as the zebu bull, the unicorn, pottery, etc.

Occupation

Both proved to be agricultural economies. There is evidence of a granary at the Harappan excavation site in Mound F. Archaeologists have found structures which look similar to the granary at Mohenjo-daro too.

Achievements

Surveying and measurement instruments were found at the sites, that were probably used for measuring sections of the horizon and the tidal dock. Bricks used in construction were evidence that the Indus Valley civilians were adept in the science of measurements. The sophisticated building structures indicate their expertise in architecture.

Religion

There is no evidence of any temples or idols of deities found at both the excavation sites. Swastika symbols were found on some seals.

Economies

Both the economies seemed to be rich and flourishing, with evidences of trade activities with other civilizations. It seems to be a civilization wherein there was economic equality, and it was a rich, flourishing economy. Pottery pieces have been found at both the excavation sites. It was an agricultural economy, with rice, wheat, etc., being the major trading products. Other than that, cotton was a major trade item. Thanks to abundant water supply from the river, the economy was rich.

There has been evidence that suggest trade activities with Mesopotamia. In fact, artifacts found at Harappa and Mohenjo-daro have been found at sites at Mesopotamia, suggesting trade activities between them.

Differences Between Mohenjo-daro and Harappa

Discovery Dates

- Mohenjo-daro was first discovered by D.R. Bhandarkar in 1911-12, and later R.D Banerjee carried out the excavations during 1921-22.

- In 1826, Charles Mason made the first discovery of the Harappan city. It was first excavated by Sir Alexander Cunningham in 1872-73, and later on by many other British officers with pre-independence Indian officers.

Behind the Name

- Mohenjo-daro is a city of mounds. In Sindhi, it means 'Mound of the Dead'.
- Named after a modern village around the excavation site with a similar name.

Geographical Position

- Located on the banks of the Indus River, in the Larkana district of Pakistan.

- This site extends from the portion of Punjab province in Pakistan. It is located to the southwest of Sahiwal, and is around 150 miles away from Lahore, and 250 miles from Karachi.

Note: Today, the entire site of Mohenjo-daro is located in Pakistan, whereas, there are few parts of the Harappan site which are still located in India. Other sites like Dholavira, Lothal, etc., are located in India.

Sculptures Found

- Sculptures found: 2 statues of 'The Dancing Girl' and eleven other pieces that include sculptures of seated men, and an infamous sculpture of a man who has been referred to as 'The Priest King'. However, there are no indications to prove that he is either a priest or a king. There are no inscriptions on these sculptures, though the dancing figurines indicate that they were inclined towards art.

- There are some stark differences in the artifacts found. For example, the red jasper stone and gray stone torso found at the Harappan site are quite different from the sculptures found at Mohenjo-daro.

Thanks to the efforts of many archaeologists, these ancient cities were discovered, and it proves that architecture and art was well advanced during ancient times. The reason for the decline of the civilizations in both the cities are yet to be known, though there are theories that they were either invaded by the Aryans, or the Indus river changed its course. Sadly, these excavation sites are facing a threat today, due to environmental hazards and inadequate restoration. This rich history still has many secrets, and also a language which is yet to be deciphered. While efforts of archaeologists continue, we marvel at this wonderful history which exhibited such sophisticated and modern amenities. With time, more and more interesting facts of this civilization will be revealed.

At the end of the activity, ask the students to fill the details in the following box:

General description

Discovery

Geographical position

Evidences

Architecture and planning

Concept of health and hygiene

Art and sculpture

Artifacts

Economy (agriculture)

Knowledge of science

Religion (Evidence/No evidence)

Classroom Activity: Unstructured Tasks

Ask the students to

- listen to a radio or TV discussion on a topic of their choice and summarize it in their own words;
- listen to lectures in your subject on you-tube and write the gist;
- listen to a riddle or a joke related to a subject being taught at school.
- listen to news in the class and discuss the main points with student.

Activity 3

- *What are the different kinds of listening you would like to practise in your classroom and why?*
- *Write a script for*

  Listening for detail

  Listening for gist

  Specify the differences between the two.
- *Which approach to teaching listening would you like to use in your classroom?*

5.7 LET US SUM UP

Listening is the foundation of literacy and aids acquisition of the child's language. Listening vocabulary is the first vocabulary of any child. A child acquires the vocabulary she listens around her. Listening is basic to language learning as a large part of communication is oral and aural. In daily life too we need the skills of listening for living, study, travel and work. Though the most basic and essential skill in language learning, listening has been neglected due to various reasons in the classroom, the most important being the teacher's belief that it need not be taught formally but can be picked up. The time consumed in conducting listening tasks and the difficulty in assessing the extent of the learner's progress has been an inhibiting factor. The teacher today, is aware of the need for listening and makes a conscious effort to practise the skill in the classroom.

Since listening is one of the basic skills in language acquisition and learning, a teacher needs to be familiar with the processes and kinds of listening. The Unit emphasizes on the need of the teacher to be apprised of the different approaches to teaching listening so that she may develop focused tasks for listening. It is of utmost importance to remember that the language teacher alone does not teach language. Language is in fact taught by different subject teachers as well as they teach their subject specific vocabulary and the word formation and discourse markers. A skill that runs through all subject classes is the ability to handle information and process it.

5.8 REFERENCES AND SUGGESTED READINGS

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UNIT 6 DEVELOPING THE SPEAKING ABILITIES

Structure

6.0 OBJECTIVES

By the end of this Unit, you will

- be able to differentiate between the language of everyday use and the language of oral discourse;
- understand the link between oral language, reading and writing;
- be able to differentiate between spoken and written discourse;
- be able to appreciate the functions of speaking in different contexts for different purposes and identify and use the different styles of speaking;
- be aware of the features of spoken discourse –e.g. debates, arguments, class discussions and panel discussions;
- engage your students in academic tasks that improve their speaking skills in different subject areas; and
- give your students opportunities to integrate their reading skills with their speaking and listening skills.

6.1 INTRODUCTION

Since a long time, educational psychologists and theorists have noted the increased learning that takes place when students interact with one another in cooperative or collaborative learning groups before, during and after learning new information and skills. According to John Dewey, schools are social institutions created to foster education as a social process (1929). As Lev Vygotsky pointed out in his landmark text, *Mind and Society,* "the development of higher mental processes (1978), children's cultural development occurs first on a social level between people and later on an individual level, or inside the child.'' (Vygotsky, 1978).

Oral language acquisition occurs as a natural process and without much effort. The ability to speak grows with age but speaking in more effective ways in the language of school, requires particular attention and practice. As Holbrook suggests, language competence depends on fluency, clarity and sensitivity, which gets honed over time.

There is a difference in the demands that speaking and listening skills make upon the learners. Listening calls for learners to access meaning contained in other people's utterances, whereas speaking is all about expressing your thoughts and sentiments in order to communicate these to others. During interaction, words act as a means of communication by expressing and comprehending meaning.

6.2 FUNCTIONS OF SPEAKING

Functions of speaking can be distinguished as ***interactional*** and ***transactional*** functions. Interactional functions serve to establish and maintain social relations whereas the ***transactional*** functions focus on exchange of information.

Focusing on learners' interaction skills usually enhances their fluency. Interaction in class can usually be transferred to situations outside the classrooms, where the learners are able to use the language learnt in the classroom. Interaction skills focus on what to say, how to say and how to establish and maintain contact with the other person. Examples of interaction skill include the ability to greet and say goodbye, make queries, seek answers/ advice / solution, describe things, people, places, communicate on phone, seek and give information, etc.

Speaking activities in subject classrooms can focus on dynamic, context based and meaningful interactions. ***Transactional skills focus on using language to communicate specific information.*** The message is the most important aspect of the transactional speech act. Learners need to comprehend news broadcasts, lectures, debates; description and instructions, speaking tasks centered around such aspects would enable the learners to gradually communicate/express various types of messages.

These distinctions are useful because they enable teachers to identify which major kinds of interactions are important for their students. However, in practice most spoken interaction is a mixture of both interactional and transactional types. In spoken language, the nature of the relationships between speakers has an impact on how the speakers select the language. Language of the speaker is influenced by social power, status or expertise, emotional distance or closeness, and the extent of contact they maintain .

6.3 SPEAKING TO LEARN AND LEARNING TO SPEAK

Oral exercises used by the teacher in the classroom help in retaining and understanding of information in different subject areas, helping students to formulate their thoughts clearly. Students present them and evaluate themselves for what they know and do not know by testing their ideas against those of their peers. In the process, students get an opportunity to develop and display skills of organizing, analysis, argument and critical thinking. By getting engaged with oral exercises and assignments of different varieties, students move towards a deeper understanding in different disciplines.

Speaking to learn is an important teaching goal but learning to speak is an equally important teaching objective. It is through speaking that opinions are expressed, arguments made, explanations offered and information transmitted. Being able to speak well is a skill set which equips students well for the rest of their lives :personal lives, workplaces, and social interactions.

Teachers need to incorporate both speaking to learn and learning to speak activities/ assignments in alignment with subject specific goals by reflecting and discussing on language the use of for a range of purposes in their lessons in the context of teaching of their disciplines.

6.4 RELATIONSHIP BETWEEN ORAL LANGUAGE, READING AND WRITING

Reading and writing are built on the foundation of oral language. The organisation of sounds and their used is developed in the preschool years and this working knowledge, with instruction, develops into a conscious awareness of the phonemic composition of spoken words (or phonemic awareness), which is essential to learning to read. In this sense, oral language is the foundation for learning to identify or pronounce written words.

Oral language is also related to reading comprehension or (reading for meaning) as there are many factors common in oral language and reading comprehension. The way/order in which words are put together to form sentences (syntax) of oral and written language is similar. The semantics (word meaning) for words *heard* and *read* are the same—the words tree, bird, whether read or heard, will evoke similar though varying meanings for any given person. *The prior or background knowledge that a learner brings to the class contributes significantly to understanding and using oral language and to reading comprehension.*

6.5 DIFFERENCE BETWEEN SPEAKING AND WRITING

Differences between the nature of spoken and written discourses are based on the different purposes for which spoken and written language are used.

A major difference in the speech and writing is that speakers do not usually speak complete sentences. For instance, speech consists of units of ideas which are

phrases and clauses with pauses, unlike written forms where users write complete sentences by joining phrases with conjunctions. The difference occurs because speakers are speaking in real time and focus on communicating ideas to the listeners.

6.5.1 Features of Spoken Discourse

Some features of spoken discourse can be stated as following (Luoma, 2004):

- *It is composed of short phrases and clauses;*
- *May be planned (e.g., a lecture) or unplanned (e.g., a conversation)*
- *Has more generic words as compared to written language*
- *It involves reciprocity;*
- *Shows variation (formal, casual)*

Table: Levels of Formality in Speech

The levels of formality in speech can be characterised as : frozen, formal, consultative, casual and intimate or informal.		
Explanation	**Definition**	**Style**
Wedding vows, sermons, prayers, pledges, religious verses, national anthem	'Frozen' languages that never changes, it is fixed and static	Frozen
Business meetings, court-room.	Standard language and fixed vocabulary, more of complex, longer sentences - avoidance of contractions and abbreviations - use of passive voice	Formal
doctor/patient, lawyer/ client, employee to employer,	Language to 'consult', seek assistance, less formal standard English	Consultative
Loose sentences structure, slangs, vernacular speech	Informal language between friends	Casual
Pet names, terms of endearment, private jokes	Language between people close to each other parents, siblings spouse, and friends, Short words and sentences	Intimate/ informal

Activity 1

1. *In what ways is a particular kind of talk likely to change as we change the roles of the participants?*

2. *How is a casual conversation between strangers different from one between friends?*

3. *Does a doctor talk to a patient as a host would talk to a guest?*
4. *What topics occur in conversations between waiter and guests in a hotel? Store owner and customers? Fruit sellers and buyers?*
5. *What connection is there between the kind of talk and the setting in which it occurs?*
6. *How does a lecture differ from a seminar?*
7. *Would you tell the same kinds of jokes in a church and at a cocktail party?*

6.6 DEVELOPING SPEAKING ABILITIES IN ACROSS THE CURRICULUM

Development of oral language across the curriculum is not focussed on teaching children to speak but improving their ability to communicate more effectively.

We have discussed earlier that the use of language differs in different contexts in school, students use the language of problem solving in Mathematics, the language of inquiry in Science, and the language of narratives in History, and so on. The language of a discipline does not only mean a list of vocabulary or specialised words with specific meanings but the competence (oral and written) to communicate participate in the discourse practices of the discipline.

Goals of Speaking Across the Curriculum

- Students use (conventions, style, vocabulary) to communicate effectively spoken, written, and visual languagewith a variety of audiences and for different purposes.
- Students use language structure, language conventions (e.g., spelling and punctuation) to create, critique, and discuss different texts.
- Students gather, evaluate, and synthesize data from a variety of sources to generate ideas and questions, and by posing problems to communicate their work teacher purpose and audience.
- Students develop an understanding of and respect for diversity in language across cultures and geographic regions.

Speaking activities in the classroom can be organised with the following considerations:

- Use a wide range of core speaking skills
- Develop fluency in expression of meaning
- Use grammar flexibly to produce a wide range of utterances that can express meaning precisely

- Use appropriate vocabulary and accurate language forms relevant to their speaking needs
- Understand and use social and linguistic conventions of speech for various contexts
- Employ appropriate oral communication and discourse strategies
- Manage and self-regulate their own speaking development

(Goh & Burns 2012:151–152)

Using appropriate vocubulary in science

Learning science terms through conceptual networks draws on the interrelatedness of word knowledge to facilitate student learning (Nagy & Scott, 2000). Some researchers indicate morphology and word origins, especially Latin and Greek, are keys to understanding Science vocabulary (Baumann & Graves, 2010; Shanahan, 2009). Shanahan (2009) reports that subfields of Science differ from one another in how knowledge is presented. Specialized vocabulary can cause difficulties for novice readers. For example, biology texts focus more on classification systems indicated through Latin and Greek roots for terminology, while Physics and Chemistry texts include more Mathematical notations.

Unlike Science vocabulary, unfamiliar Social Studies terms may only be encountered once or twice in a text (Hynd, Holschuh, & Hubard, 2004). This makes it harder for students to pick up the meaning of vocabulary incidentally through repeated exposures and multiple sets of context clues.

Source: *Ann Marie Hillman. Disciplinary Literacy: a Case Study on How Secondary Teachers Engage Students in Disciplinary Discourses University of Wisconsin-Milwaukee*

Activity 2

1. *What are the functions of speaking? Give examples from everyday life to illustrate your answer.*
2. *Give examples of situations which combine the different functions of speech.*

6.7 ACTIVITIES FOR DEVELOPING SPEAKING

In the light of the problems faced by learners mentioned above, what can be done by the teacher to ensure that the learners are able to express themselves?

6.7.1 Selecting a Text

Teacher can select different types of texts; picture books, poetry, non-fiction texts, magazine/newspaper articles, advertisements, graphic novels, photo essays,

film clips, zines, blogs and so on. The criteria for selecting a text should be that the text is rich enough to stimulate a discussion or a conversation . The text needs to be sufficiently challenging so that students can struggle to negotiate meanings and wrestle with the concepts presented. It should allow a variety of interpretations and opinions. Books with detailed descriptions and interesting plots are good choices.

Visual texts such as realm, videos, along with key visuals, tables or diagrams can be selected for independent use and/or to help to make the structure of the text explicit. In developing speaking skills, tasks might include sequencing, predicting, information transfer and various types of information gap activities; written outputs might be supported by such speaking and reading activities.

6.7.2 'Information-gap" Tasks

To help students become more articulate — that is, to help them to express themselves appropriately , we have to give them opportunities in the class to share their thoughts and ideas with their peers. The peer speaking activities, however, have to have a real purpose, because, as teachers, our aim is to teach our students to speak spontaneously, and not simply read out passages . In the class, therefore, we can give them academic tasks that involve sharing ideas to list points, giving reasons for their viewpoint on something, describing something, etc. — tasks that will make them focus on the information to be shared rather than on their (inappropriate) language skills. Such tasks are called **information–gap** tasks, and their purpose is to develop fluency and confidence. These strategies help develop students' academic skills across the curriculum, as they learn to use subject–specific language and express themselves grammatically.

6.7.3 Discussion

Initially, by taking a "hands-on" approach, teachers can model appropriate discussion skills to enable students to consider the ideas presented in a text, share and defend their own ideas and opinions and build on and question ideas and opinions contributed by others. 'Context-embedded' teacher talk, questioning and typical classroom exchanges also play a significant role in student learning. Teacher can link new learning to background knowledge and provide 'Scaffolding' by speaking more slowly, emphasizing key words and phrases, using simple vocabulary or grammar, building in redundancy through repeating, restating, paraphrasing the use of synonyms, antonyms, defining through exemplification, body language and so on.

Explicit discussion on language -content connections as students encounter vocabulary and grammar patterns in subject specific disciplines is important. The teachers must decide how far to simplify the language without oversimplifying the concepts or content.

> ***'Science talk'*** *or oral discourse in Science conveys meaning for particular purposes. This includes definition, explanation, recount/ procedure, and argument, and each serves a particular purpose in conveying scientific information:*
>
> - *Description: To define something or tell what it is like*
> - *Explanation: To tell how or why something works or is as it is*

- *Recount/procedure: To tell about what happened or what someone did*
- *Argument: To persuade that something should be done*

The pattern of word choice in each of the above, that is, describing something, explaining, etc., is identifiable and helps in deciphering its intent and meaning. Science teachers can construct oral tasks with the purpose of involving learners to 'describe,' 'explain, "argue' their thinking and ideas and enabling them to identify the difference between each of these.

6.7.4 'Gentle Inquisition'*

One talk pattern, which is used by many teachers, is the "gentle inquisition" – an interaction between teacher and student(s) which is built on a series of questions and answers (Eeds & Wells, 1989). The teacher starts a topic and poses question, asks one or more students to respond, and provides evaluative or responsive feedback ("Yes"; "Good idea, but may be you could focus on X a bit"; "Would you agree with that, Suman?") and then introducing his/her own ideas, interpretations and opinions. In this talk pattern, exchanges are frequently paced between teacher and student(s) as the teacher moves from child to child and question to question. The teacher is in charge of directing the discussion, and determines who will talk and what will be talked about and bringing the group to the understanding of the text (or problem) that he or she has in mind. In this pattern, the teacher retains authority for determining meaning, leaving little "interpretive space" for students (Serafini, 2008)

6.7.5 'Grand Conversation'*

For a higher-level comprehension of text and improve students' attitudes to reading and speaking, a different technique called "grand conversation" (Eeds & Wells, 1989) can be used.. The grand conversation refers to authentic, lively talk about text. The teacher starts the discussion by asking "big" question or interpretive prompt. The class enters into a conversation – the teacher asks fewer questions, mostly in response to what students are saying. Students engage in the conversation by taking turns for speaking and gradually students ta shape the content and direction of the discussion. Decisions regarding who will talk, when and for how long, come about naturally . The teacher participates in the discussion and facilitates the conversation only when required.

The teacher concludes the conversation by summarizing, drawing conclusions, or establishing goals for the next conversation or by assisting students to do this.

6.7.6 Structured Argument and Debate

Entails discussing contested issues in order to form opinions about them. Discussions, role playing exercises to formal debate are examples of different deliberative

** Eeds & Wells, (1980)*

practices. The teacher can organise debates around facts, values, definitions, policies, interpretations, theories, etc. in any subject area.

Rubric for Debate

Grade:	1	2	3	4	Criteria
	Few or no real arguments given, or all arguments given had significant problems	Some decent arguments, but some significant problems	Many good arguments given, with only minor problems	Very strong and persuasive arguments given throughout	1. Use of Argument: Reasons are given to support the resolution
	Poor cross-exam or rebuttals, failure to point out problems in position or failure to defend itself against attack.	Decent cross-exam and/or rebuttals, but with some significant problems	Good cross-exam and rebuttals, with only minor slip-ups	Excellent cross-exam and defense against objections	2. Use of cross-examination and rebuttal: Identification of weakness in arguments and ability to defend itself against attack.
	Very few style features were used, none of them convincingly	Few style features were used convincingly	Most style features were used convincingly	All style features were used convincingly	3. Presentation Style: Tone of voice, clarity of expression, precision of arguments all contribute to keeping audience's attention and persuading them of the team's case.
TOTAL SCORE:					

Source: *http: www.csun.edu*

6.7.7 Say It Right!

Class discussion offers opportunities to students to test their opinions and ideas in the larger group of their peers. As a teacher, it is important to ensure a cordial and pleasant environment in the classroom so that all students feel comfortable and confident to participate. It is also important to generate as many viewpoints or opinions as possible around issues so that students are able to form a perspective with regard to the topics under discussion.

Procedure

1. Choose a passage (six to ten lines) from a text or selected reading for the oral presentation and prepare copies of the material for the class.
2. Announce that the class will be giving oral presentations of the selected text and distribute the copies.
3. Review the text.
4. Distribute the Say It Right! Evaluation Form and go over the criteria for assessment.
5. Give students 10 minutes to prepare their readings. Students may want to: consult you or a dictionary for proper pronunciation
   - mark the passage with a pencil to indicate pauses or words to emphasize
   - practice with another student
   - practice some more!
6. Have students read aloud their passages and discuss the presentations.

What?	Almost	Got it!	
1	2	3	Pronunciation (Saying the words right)
1	2	3	Enunciation (Saying the words clearly)
1	2	3	Inflection (Emphasizing the right words)
1	2	3	Rate (Pausing in the right places)

Source: http://www.csun.edu/~ds56723/phil338/hout338rubric.html

'Saying it right' in Science classroom!

- *Oral tasks focusing on certain type of sentence constructions can be used in the classroom. One type is the* ***"Comparatives."*** *These types of sentences can include overt comparatives such as* ***"smaller than"*** *or* ***"fewer than,"*** .
- *A second family of grammatical constructions is the* ***"Conditionals."*** *These are sentences that indicate situations or conditions necessary for a second part of the statement to be true; for example,* ***"Had the plant survived the lack of sunlight and nutrition,*** *it would have been 6 feet long." According to O'Connor, " These type of constructions signal logic and purpose, and the relationships between concepts and ideas.*
- *Similarly, Lee explains that in a classroom centered on scientific investigations, language should be precise, explicit, and complex. Just as with text, science talk involves using particular words with particular meanings beyond those used in everyday speech.*
- *Science talk involves detailed reporting and/or explaining one's thinking about ideas and actions in clear terms. This oral discourse is important to the sense-making process in science*

Activity 3

1. *What considerations would you keep in mind while developing the speaking abilities of your learners in different subjects?*
2. *How would you make your learners more confident about participating in speaking tasks?*
3. *Design some oral tasks for developing the vocabulary of learners in Social Science and Science.*

6.7.8 Some More Activities*

Practising narrative skills: from storytelling in literature to historical events

An important academic activity that students are regularly made to do in class is retelling a passage from a lesson in their own words, or relating an event described in the textbook to their own experience. We expect students to be able to explain some part of the lesson because we want to check how much they have understood. To be able to retell a story or an event is part of the ability to *narrate*; that is, to talk about something logically, in chronological order and in an interesting manner.

This activity should help you familiarise your students with the skills required to present a narrative in an interesting manner. These skills include the ability to rephrase words and ideas and present them in chronological order, and to use discourse markers of listing, introducing and summarising. This activity is meant to improve students' spoken English for academic purposes, so it will also involve the ability to read and understand a passage.

Students could be put in pairs and the discussion should include the following:

- The information is clearly presented.
- The text is rephrased; that is, the narrative is not simply a repetition of the author's words.
- The appropriate vocabulary is used to retell the story as well as comment on it (e.g., *short and touching story…, inspired by her uncle… there was a big hurdle…*, etc.).
- There is a clear beginning, middle and end.
- The information is presented chronologically.
- The information is compressed so that only the important parts are narrated.
- Discourse markers are used to make the listener easily understand the passage (e.g., *but, also, even, however, interestingly*).

Once the students are familiar with the features of a good narrative, separate them into pairs and give them another passage. Have each pair prepare a narrative on it. This could be immensely useful in a history class.

Defining with illustrations

While studying subjects other than English, such as Science, Environmental Studies or Geography, students regularly need to learn and define concepts using subject specific vocabulary and illustrations. This academic exercise is relevant not just at the school level, but also at higher levels. Giving a definition requires conceptual knowledge; that is, knowledge of the topic, familiarity with the words and phrases related to the topic and grammatical accuracy. Students frequently complain of understanding concepts but being unable to explain or express themselves in an

**This section has been adapted from http://orelt.col.org/modules/unit5speaking.*

articulate manner, especially in front of their teacher and classmates. This might be because they do not have practice in organising the information in their mind before speaking, or are unable to connect ideas logically.

This activity will give your students opportunities to practise giving appropriate definitions. It should make them aware of the importance of understanding how to present an idea logically and to illustrate it with examples.

To prepare them for the activity, show them some definitions for a discussion on what constitutes a good definition. You could choose some concepts from their course books, in which the students have to match a set of concepts in Column 1 with the definitions given in Column 2. After they have completed the exercise, discuss how good definitions contain the following information:

1. the category to which the object/concept belongs.
2. the use made of it.
3. other relevant information.
4. examples and illustrations of the object/concept.

Selecting any one of the given definitions, illustrate each point above. For example, in the definition of **tissue**, the **category** mentioned is *A group of similar or dissimilar cells*; the **use** is *to perform a particular function*; related information is *which are held together by some intercellular substance produced by the cells themselves*; and the **examples** given are *parenchyma*, *collenchyma* and *chlorenchyma*. Now ask the students to categorise the other definitions in a similar manner. This will familiarise them with the language of definitions.

For practice in giving a definition, put up one or two terms on the board and ask the class to define them appropriately. Prompt them to remember the points mentioned above. After some practice, put the students in small groups and ask them to define the terms given in the worksheet.

Allow them to refer to a dictionary or their textbooks, but tell them to remember that their definitions should contain the points mentioned above. For more practice, select a few students randomly and give them a few object/concept names to define with illustrations. Ask the class to grade each definition, and later have a discussion on which definitions were good and why. Conclude the activity by telling the students to practise using the skill of appropriate definition when they learn other subjects.

Matching definitions (worksheet)

In the table below, Column 1 contains the names of some concepts that you study in various subjects, and Column 2 lists their definitions. Discuss these with a partner and match the concepts to their definitions.

Column 1: Definitions	Column 2: Terms
A process in which original constituents undergo change to form a new substance or compound with entirely changed properties. For example, when coal is burnt, carbon combines with oxygen to produce carbon dioxide.	Fixed capital
An instrument used in the laboratory to observe living or dead things that cannot otherwise be seen by the naked eye or a hand-held lens.	Military coup

A group of similar or dissimilar cells that are held together by some intercellular substance produced by the cells themselves, and that perform a particular function. For example, parenchyma, collenchymas, chlorenchyma.	Microscope
Tools, machines and buildings that can be used in the production of goods over a period of years. For example, generators, warehouses, computers, shredding machines.	Pastoralism
Income below 1 (one) dollar a day; and showing the proportion of people living under poverty in different countries.	Shifting cultivation
A form of government in which the rulers consist of elected representatives of citizens; that is, they are elected by the citizens themselves.	Tissue
A situation in which the armed forces of a country (especially the Army) forcibly take over the administration of a country, usually by arresting the leaders of government.	Chemical change
A system of farming in which parts of a forest are cut and burnt in rotation to plant crops, so that seeds can be in the ashes after the first monsoon rain. For example, *chitemene* or *tavy.*	International poverty line
A way of life in which communities rear cattle, camels, goats, sheep and other animals for a living, and sell milk, meat, animal skin, meat and other products obtained from animals for their livelihood.	Democracy

Source : *http://orelt.col.org/modules/unit5speaking.*

Suggestions for Teachers

- Provide maximum opportunity to students to speak by engaging students in collaborative work, authentic materials and tasks, and sharing knowledge.
- Each student should be involved in every speaking activity.
- Reduce your speaking time in class while increasing student speaking time.
- Ask questions to prompt students to speak more such as "What do you mean? How did you reach that conclusion?"
- Do not correct students' pronunciation mistakes very often while they are speaking.
- Provide the discipline specific vocabulary beforehand that students need in speaking activities.

6.8 LET US SUM UP

As language pervades all areas of learning, it is essential for teachers to encourage language skills like reading, writing and speaking in all areas of the curriculum. Development of oral language across the curriculum is not focussed on teaching children to speak but improving their ability to communicate more effectively.

Speech is not merely about speaking-simple and basic communication, but it involves thinking, knowledge and skills. Oral language is an interactive process of speaking and listening for a variety of purposes: to communicate, to learn and to socialize.

The unit explored the different ways in which students can communicate effectively for academic purposes, and how they can use such skills across the curriculum. The unit familiarises the teachers with the appropriate language of narratives, descriptions, reports and definitions. The activities described here are relevant to other subjects and could be used by the subject-teachers.

These skills include the ability to use subject-specific words and sentences, narrate points and ideas logically and interestingly, use discourse markers effectively to help the listener navigate through the discourse (for example, story, definition, explanation, argument). We have also discussed the different types of learners and learning contexts. Teachers, who are aware of the language demands of their subjects, take care of ***'content-obligatory'*** and ***'content-compatible'*** teaching of vocabulary and grammar. A variety of language tasks across the curriculum help learners to become better language learners. Small group work to exchange ideas or to bring out some very pertinent points is as important a tool of learning as teacher-led discussions.

6.9 REFERENCES AND SUGGESTED READINGS

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http://www.csun.edu/

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UNIT 7 READING COMPREHENSION

Structure

7.0 OBJECTIVES

After you read this unit you should be able to:

- comprehend the process of Reading Comprehension (RC) and understand how reading is critical to learning and academic success of students across different disciplines,

- understand the importance of using texts across the curriculum to develop reading skills and incorporate appropriate reading instruction into every class,
- learn and use a range of strategies to develop reading comprehension skills of learners in the classroom and challenge them with complex texts,
- learn and use strategies for previewing texts, monitor their understanding, determine the most important ideas and the relationships among them, remember what has been read, and make connections and inferences.
- enable students to become independent readers in any context.

7.2 INTRODUCTION

Let us understand what do we mean by the term. A simple definition of reading is that it is a process whereby one looks at and understands what has been written. The key word is *'understands'* — merely reading aloud does not count as reading. This definition does not mean that the learner needs to understand everything in a text. Understanding is not an `all or nothing' process, and therefore reading too is not an 'all or nothing process either'. It means that every reader will comprehend something and perhaps some readers may not understand every word and nor is this necessary.

Again, although reading has been defined as a process whereby one looks at and understands what has been written, the reader does not necessarily need to look at everything in a given piece of writing. The reader actively works on the text and is able to arrive at understanding it without looking at every letter and word.

"Why should I bother about reading? I am not an English Teacher?"

"You don't read in Math…"

"Science is not taught by reading."

Many teachers respond in this manner when it is mentioned that they need to teach reading skills while teaching subject specific content. As teachers we must understand that when we talk about reading, we are talking about the ability to construct meaning from the text. In school students access information primarily through reading in all subjects, Mathematics, Science and Social Studies. Research studies show that reading across the curriculum is essential to learning; there is a strong correlation between reading and academic performance. Students who have problems reading texts are likely to experience difficulty obtaining information from texts and consequently encounter difficulties in learning. Reading in Science is not the same as reading in Social Studies topic or in Mathematics.. Thus, to maximize learning by students, teachers need to focus on helping their students develop strategies for reading and writing within their respective content areas. It is important for teachers to blend and scaffold content and literacy learning in different subjects so that students begin to view texts as interesting, informative and engaging.

The reading process

As a first step, it might be useful to find out what you think about reading. Here are some statements about reading. Which of these statements do you think are true? Which of them are false? Can you explain why you think so?

Activity 1: ***True or False***

- *Reading involves looking at a text and saying the words to yourself*
- *Reading involves putting the words in print on the page into sentences and making sense of them*
- *To understand a word, you have to read all the letters in it, to understand a sentence you have to read all the words in it*
- *To understand a text, you need to know the meaning of all the words in the text*
- *When we read for meaning, we do not need to read every letter of every word, nor every word in each sentence*
- *There are no major differences in how one reads in one's mother tongue and how one reads in a second or foreign language*

What is actually involved in the process of reading? It is important to learn this if we want to help our students to acquire reading skills .

7.2 READING COMPREHENSION

As teachers you may sometimes have come across students who, when asked to 'read aloud' a text, could do so fairly fluently, but when asked the meaning of what they had read, would be totally at a loss. In considering the reading process, we have to distinguish between two quite separate activities: ***reading for meaning*** *and* ***reading aloud***. It is important to clarify the difference between the ability to read a text as in being able to enunciate its syllables, and the ability to comprehend the text. It goes without saying, that Reading Comprehension (RC) should be our aim, for what use is it to 'read' a string of words/ sentences if one does not comprehend their meaning?

This table below shows the differences between the traditional view and the new understanding of reading with regard to the goals of reading, the process of reading and the role of the learner/reader.

Difference between Traditional and New Definition of Reading

Research Base	**Traditional Views Behaviorism**	**New Definition of Reading Cognitive Sciences**
Goals of Reading	Mastery of isolated facts and skills	Constructing meaning and self-regulated learning
Reading as Process	Mechanically decoding words; memorizing by rote	An interaction among the \reader, the text, and the context
Learner Role	Passive; vessel receiving knowledge from external sources	Active; strategic reader, effective strategy user, cognitive apprentice

Activity 2: ***What do you think?***

What are the differences between the traditional and new understandings of reading? Which approach is likely to promote reading comprehension and why?

Reading to Comprehension involves interaction between 1) the reader's existing knowledge, 2) the information suggested by the text, and 3) the context. RC is not simply the passive receiving of information; rather, it is an ongoing activity that engages the reader in the act of interpretation. Further, the meaning is not something given or inherent in the text only— the reader also constructs it.

7.2.1 The Reader

Good readers interact with the texts that they read. They have personal expectations about what they want to get out of a text, and they bring those expectations to bear on what they read. They actually create meaning by constructing ,or generating relationships between what they read and what they already know In generating these meanings, they draw on their prior knowledge of and beliefs about the subject-their *'World Knowledge',* so to speak that relates to the subject.

Readers have a network of prior understanding about a topic, what theorists call **schemata.** Every reader organizes his /her world knowledge into categories and a network of connections or ***schema*** that function as information-retrieval systems. This schema is activated when a related concept or key-word is encountered in a text, for example, in the title, or in the passage, paving the way for comprehension by enabling further connections to be built. Researchers have pointed out that the reader's comprehension of a particular text is directly proportional to the background knowledge that the reader has about the subject content of the text (Schallert and Martin, 2003). It follows therefore, that for developing the skill of reading, the learner would benefit from exposure to a range of texts in various content areas, thus broadening his/ her schema and providing practice in meaning-making.

Readers also differ from each other in their general cognitive development as well as higher level thinking skills, their purpose for reading and socio-cultural background. These factors also contribute to the readers engaging with and evaluating texts in different ways; for example, in identifying with situations or characters, or in making moral judgements.

7.2.2 The Text

Like readers, every text, every piece of writing, is unique in terms of its genre, vocabulary, language, style, difficulty level, and thematic content. The author's intent is also a key feature of a text, and the manner and extent to which it is made explicit also affects meaning-making. Some researchers opine that even 'surface features' of a text such as its font type and length can influence the process of RC (Tracey and Morrow, 2002). The text is also located in a particular time and space; thus its socio-cultural moorings impinge upon the reading transaction.

7.2.3 The Socio-cultural Context

Reading does not occur in a vacuum; rather, as stated above, every reading activity involves an interaction between the reader and text, both of which belong to specific cultural contexts. Thus, sociocultural influence permeates any reading

activity (Kucer, 2001; Schallert & Martin, 2003). Contexts are also created by the specific nature of the activity associated with the reading task, for example, the purpose assigned to the reading, by the reader himself/ herself or by the teacher. Research has shown that environments that place a premium on reading and writing a wide range of texts, with the opportunities to draw inferences, predict outcomes, possibilities, etc., help to enhance the RC skills of learners.

Activity 3

1. *Out of the following text types, which do you find easy to comprehend, and why?*

   General news report, newspaper editorial, blog, research paper, an article in a science magazine, a recipe, knitting pattern instructions (consider some of the features mentioned in the paragraph above)

2. *Think and write about some articles, stories, with which you encountered difficulties in understanding because their socio-cultural context was very different from yours.*

7.2.4 Reading as an Interactive Process

The terms *'top down'* and *'bottom up'* are used in this context to explain the interactive process of reading. 'Top *down'* processing refers to the use of predictions based on one's prior knowledge ,while *'bottom-up'* processing refers to the role of the text in providing input through decoding, or letter and word recognition. Reading is thus an interactive process; there is a simultaneous interaction of the reader's prior knowledge and his/her sampling of the text; to put it in more technical language, the meaning of a text is reconstructed through a constant interaction between the information obtained through *bottom-up* decoding and that obtained through *top down* analysis, engagement with the text. Strategies such as summarizing, organizing, clarifying, questioning, visualizing, predicting and evaluating are employed by the reader to build up a complete picture of the meaning that emerges.

From this discussion we can conclude that

When we read for meaning, we do not need to read every letter of every word, nor every word in each sentence because we can guess much of what is said as we read it, provided the text makes sense.

Reading is an active process. when we read, we do not merely sit as passive receivers of the text. We also draw on our own knowledge of the world and of the language to help us guess what the text will say next.

Characteristics of reading

- Reading is purposeful
- Reading is selective
- Reading speed varies

- Reading is silent
- Reading is text-based
- Reading involves complex cognitive skills
- Effective reading involves *chunking of information* that the well developed schema makes possible
- Reading is based on comprehension

7.3 FEATURES THAT MAKE TEXTS COMPLEX

The complexity of a text depends on its inclusion of quantitative, qualitative features and the connections that can be made between the text material and the reader of the text.

7.3.1 Quantitative Features

These are features such as unfamiliar words, number of syllables and length of sentences. If lexical content is largely unfamiliar to the learner, the text will be difficult to understand and too much mental energy will be expended in trying to figure out the meanings of the unknown words, resulting in frustration and lack of interest. Depending on the 'lexile score' we can determine what text is suitable for a level or class.

7.3.2 Quantitative Features

Qualitative features refer to the levels of meaning and purpose of the text, organising framework or structures that provide content such as chronological order, cause-effect, compare and contrast, description and problem -solution, language, visual supports such as ,graphs, pictures and maps and finally, the readership or the audience for whom the text is written and how the author addresses the knowledge demands with their expectations of reader's knowledge.

7.3.3 The Reader and the Text

The connection between the reader and the text is important in determining the complexity of a text. The reader's motivation to read, her prior learning and the knowledge about the subject, aptitude and readiness to learn must be considered.

Activity 4: *What are the difficulties you encounter/have encountered in the context of reading a book? Write your experiences in the light of the discussion above.*

BEYOND TEXTBOOKS: SELECTING A TEXT FOR READING

While content and topic are important criteria for selecting a text, as teachers, it is important to select texts, other than textbooks, that can be used for specific reading strategies or building academic skills. How will you select a text?

Questions to consider while choosing a text:	*Questions to consider about how you will use a text:*
• *Does the text allow students to develop or extend their knowledge of course concepts?*	• *Which critical reading strategy might I teach with this text that will support students in acquiring course content?*
• *Does the text allow students to use a variety of critical reading components?*	• *What will I have students do before, during, and after reading the text?*
• *Does the text present varied evidence and support for its overall message?*	• *How will students demonstrate their use of reading the text?*
• *Does the text provide students with cognitive challenges?*	• *How will students demonstrate their use of critical reading strategies and content acquisition?*

Activity 5: *On the basis of the criteria listed for choosing and using a text, make a list of a few texts you might use for teaching reading in your subject. Give the reasons for selecting these texts.*

7.4 TEACHING STUDENTS TO READ ACROSS THE CURRICULUM

1. Go through the Table given below and reflect on your own reading style.
2. Identify your style of reading. What type of a reader are you?
3. What strategies will you use for making your students active readers.

Comparison of the Traits of Active and Passive Readers

An active reader (self-monitors, adjusts, and reflects)	**A passive reader** (simply receives information without understanding)
Pre-Reading • Builds up background knowledge before beginning to read. • Knows the purpose for reading • Asks what the text will be about • Previews the pictures, title, heading, boldface quotes, etc. • Makes predictions. 6. Breaks text into manageable chunks.	**Pre-Reading** • Starts reading without thinking about the subject. • Does not know why he/she is reading • Is not curious about the text. • Does not preview text materials • Does not make predictions. • Is overwhelmed by amount of text to be read.

During Reading	During Reading
• Gives complete attention to the reading task. • Keeps the purpose in mind. • Self-monitors comprehension. • Stops to use a fix-up strategy when comprehension is low. • Rereads for understanding. • Connects with text-compares learning with what he/she already knows. Has opinions about the reading. • Asks what author is trying to say. • Continues predicting. • Generates questions and seeks answers.	• Is easily distracted. • Does not know why he/she is reading • Does not monitor comprehension. • Does not reread the material. • Does not, or cannot, make connections and does not have an opinion about what was read. • Doesn't care what author is saying. • Does not make predictions. • Does not ask questions.

Source: Croner, Patrick, E. Strategies for Reading Science Content Reading, The Science Education Review, 2(4), 2003, p 106

7.7.1 Understanding Text Features

Text features and reading comprehension are closely linked. Text features enable the readers to determine what is in the text and what is important to them. Imagine a textbook without title page, table of content, a caption, graphics, pictures, glossary or labels.. Text features contain the title, page, table of content, index, glossary, heading, sub-heading, keywords, illustrations. diagrams, etc. Infact, everything except the main body of the text.

Activity 6: *Fill the purpose of the text features (listed in the left column) in the right column*

Text Feature	***Purpose of Feature***
Title	***A good title gives us a clue about***
Table of contents	***the main topic of the text***
Chapters	***able of contents tells us where to***
Glossary	***find specific information***
Graphics	.....
Illustrations	.....
Labels	

Activity 7

Identify a text for discussion in the class. Ask students to preview the text by reading the title, the abstract, the headings and subheading, and skim-reading the introduction and conclusion. While they are doing this, encourage them to make notes in the margins or in a notebook about what they think the reading is about. Get them to share their impressions in a group and then ask the whole class for feedback.

7.4.2 Functions of a Text

Being aware of the function of a passage is important to comprehend it. Students need to be trained to find out whether the text aims at ***convincing*** the reader, ***giving information*** or ***asking for something.*** The reason or goal for writing or speaking could be to

- *persuade:* by using arguments to influence the reader to accept his/her point of view on an issue.
- *inform:* to give instructions, compare/contrast, share cause and effects, give new information
- *entertain:* using narrative, anecdotes, description, or humour, to amuse, delight, and appeal to imagination

Using Graphic Organisers to find out the author's purpose in a text

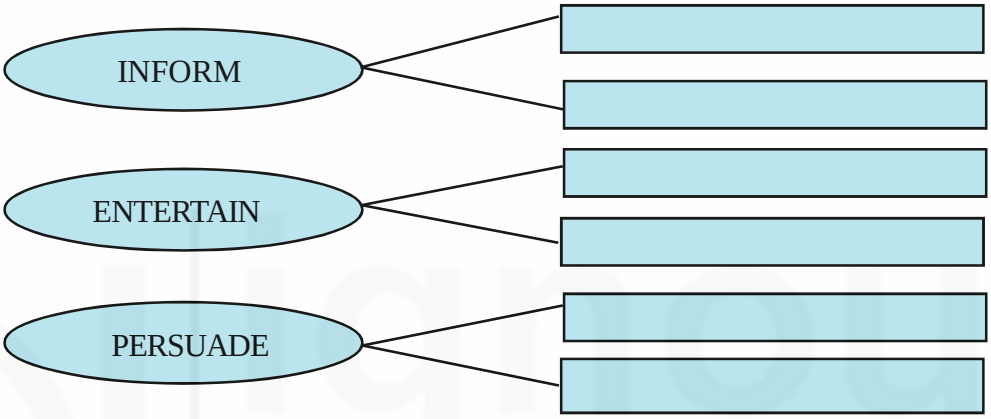


Figure . Author's purpose

The teacher can invite the students to read and think what the author expects or wants as a result of others reading the text, or why the author might be sharing this information.

Activity 8: Collect five or six different types of text (Weather bulletin, recipe, Newspaper article on an angry mob setting fire to a bus, Police notification regarding curbs on Holi, etc). Match the texts with their function. There could be more than one text for a function.

Function	Text
Giving information Warning Giving advice Giving instructions Entertaining	

7.4.3 Scanning and Skimming

Scanning and skimming are two types of reading techniques used to assimilate information from different sources quickly. **Scanning** enables a person to look up specific information from a text from any source (documents, maps, books, poems, newspaper, pamphlets, posters, etc.) while **skimming** allows the person to quickly read through something to get the basic idea.

Activity 9: Consider the following types of texts and write for each of them the reason for reading it and the style of reading used.

Text	*Reason for reading*	*Style of reading used*
1. *Railway time-table* 2. *Instruction for using a machine* 3. *Newspaper article* 4. *An extract from a novel* 5. *Telephone directory* 6. *A letter to the editor* 7. *A poem* 8. *Rules for playing a game*	*Looking for a particular piece information*	*Scanning*

7.7.4 Organisation of the Text

This refers to the method of presentation of information in any passage, which is mostly in the form of

- Main idea and supporting details
- Sequence
- Comparisons
- Logical sequence

Keene and Zimmerman point out that such decision –making during reading is done at three levels: *whole-text level, sentence-level* and *word –level.* That is, readers form a clear idea about the key themes of a text, are able to pick out, underline and even paraphrase sentences that contain the core ideas, and at the word-level are able to identify the key words /phrases that are essential to the core themes/ideas. Teachers can guide students to look for clues to the key themes from the title and subheadings (if any) in a text. Key words pertaining to the main theme are often repeated in a text, teachers can ask students to look for content words /phrases that are repeated, and get them to ask questions pertaining to these.

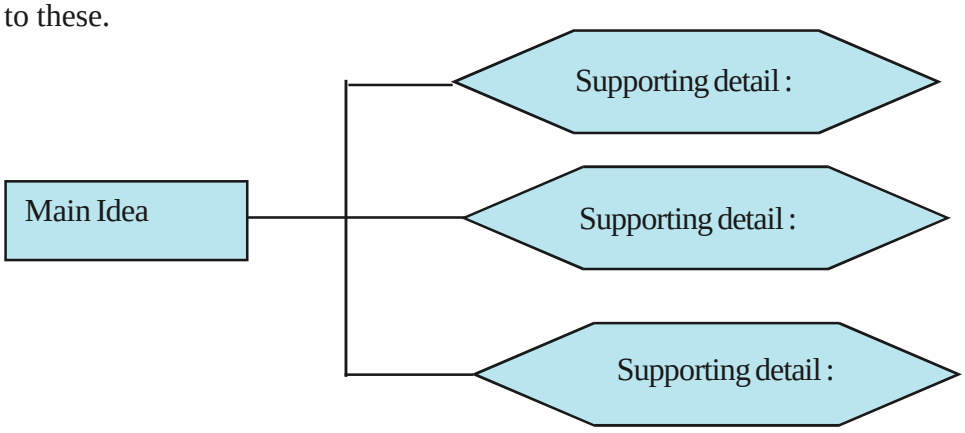


Figure : Main Idea & Supporting Details

Activity 10: *Read the following passage and answer the following questions:*

French physicist Charles Fabry found ozone gas in the atmosphere in 1913. At room temperature, ozone is a colorless gas; it condenses to a dark blue liquid at -170 F. At temperatures above the boiling point of water, 212 F, it decomposes. Ozone is all around us. After a thunderstorm, or around electrical equipment, ozone is often detected as a sharp odor. Ozone is used as a strong oxidizing agent, a bleaching agent, and to sterilize drinking water. This gas is also highly reactive. For example, rubber insulation around a cars spark plug wires will need to be replaced eventually, due to the small amounts of ozone produced when electricity flows from the engine to the plug.

What is the main idea of the text?

A) Ozone is the result of pollution.

B) High ozone levels in the atmosphere will cause large numbers of people to buy new car batteries.

C) Ozone has no practical uses.

D) Ozone is a natural part of the Earths atmosphere.

Write down the supporting ideas with the following main ideas

1. Ozone is all around us

   .....

   .....

2. Properties of Ozone

   .....

   .....

3. Uses of Ozone

   .....

   .....

Write

- the key ideas and the supporting ideas in the text
- the sequence and ordering of sequence of sections
- how each section is connected to the others
- how knowing this information will help readers understand the text better.

Source: http://www.massbay.edu/uploadedFiles

In these sections, we will forms on some more strategies which can be used for teaching comprehension.

7.4.4 Prediction

'Prediction', also referred to as 'hypothesis testing' or informally as 'guessing', is an activity that is essential for reading, at all stages of the reading process. Making predictions is a strategy used by readers to anticipate what they are about to read. This strategy works for all types of texts and subject areas. Prediction is also a process-skill used in Science. Teachers can help students develop proficiency in this skill by encouraging students to make predictions while reading the textbook and predicting in Science. For example, in Biology, students might predict that a seed will sprout and become a sapling under certain conditions.

Think Aloud Strategies

Teachers can use "Think -aloud "strategies to model prediction so that students can learn the skill of prediction. This strategy can be used till students become independent readers.

1. **Pre-reading** "think-aloud": "By the cover of the book, I can predict that the story is about….."
2. **While-reading** "think-aloud": "My prediction that the war was fought between the peasants and the army was wrong…. but I do think that the colonisers had a major role to play in creating the divide."
3. **After -reading "think-**aloud": My first prediction was incorrect...and now that we have come to the end, my predictions were correct/incorrect".

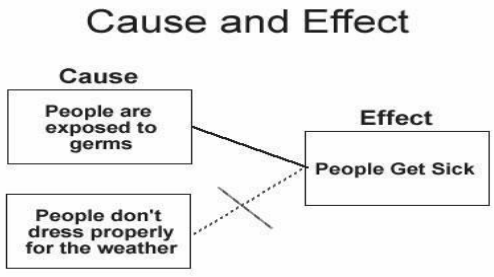
7.4.5 Teaching Text Structures

The term "text structure" refers to how information is organized in a passage. Within different disciplines, texts mostly conform to certain set structure types. For example, in fictional Literature, there are a range of narrative genres and expository texts. Scientific texts have expository structures, often containing description, comparison, cause and effect. A recognition of text structure types aids learners in forming text-to-text connections for a particular story genre, which will help them make meaning more easily. Some common types of text structures are explained below:

i) ***Cause and Effect:***

When a text gives reasons (cause) why something happened (effect), or when the results (effects) of an action are explained (cause). Here is an example from the website, www.ereadingworksheets.com

Many people think that they can get sick by going into cold weather improperly dressed; however, illnesses are not caused by temperature-they are caused by germs. So while shivering outside in the cold probably won't strengthen your immune system, you're more likely to contract an illness indoors because you will have a greater exposure to germs.



ii) ***Chronological*:**

In some texts, the information in the passage is organized in order of time. Simple fables and stories for young readers are often organized chronologically, where a sequence of events is described in a linear manner. More complex narratives, especially novels, move forwards and backwards in time, but even if an author uses flashbacks or flash-forwards, the events still occur along a timeline. Non-fiction texts, especially in subjects such as History, present information chronologically, along with dates.

iii) ***Compare and Contrast*:**

In this pattern of organization, the similarities (compare) and differences (contrast) between two or more objects, characters, ideas, etc. are explored. Graphic organisers are useful in graphically depicting the information in such texts.

iv) ***Order of Importance:***

Here the information is expressed as a hierarchy or in priority. For example:

Example: The most important mantra of success is to be persistent and focused on one's goal. Next comes maintaining a high level of self-confidence and refusing to be bogged down by negativity or failure.

v) ***Problem and Solution*:**

In such texts, a problem is described and a response or solution is proposed or explained.

Example: Every day, and practically every hour in our country, hundreds of people die in traffic accidents. Many lives could be saved if more stringent policing and challaning of traffic violations were to be done, especially of over speeding and drunken driving.

vi) ***Sequence / Process Writing*:**

In such text types, the information is organized in steps or a process is explained in the order in which it occurs. Most scientific experiments, descriptions of phenomena, recipes, and do-it-yourself articles fall in this category.

7.4.6 Developing Critical Reading Skills

What is Critical Reading?

Reading critically does not, necessarily, mean being critical of what you read. Critical reading means engaging in what you read by asking yourself questions such as, '*what is the author trying to say?*' or '*what is the main argument being presented?*'

Difference between non-critical and critical reading

What is the difference between critical reading and non-critical reading. The difference between critical reading and non-critical reading can be understood with the help of the following table.

Non-Critical Reading	Critical Reading
Passive reading of text.	Active, analytic reading of text.
Recognizing what a text says about a topic.	Re-reading to identify patterns and analyze *how* the text is written.
Goal is to make sense out of text, understand information, ideas and opinions.	Goal is to interpret information, assumptions, and language; dig into the underlying meaning of the text.

Source: WSSU Critical Reading Manual

7.4.7 Questioning and Challenging your Beliefs and Values

It is likely that the text you are reading might challenge your attitudes, your unconsciously held beliefs, or your positions on current issues. Thinking critically, in the academic sense, involves being open-minded - using judgement and discipline to process what you are learning about without letting your personal bias or opinion detract from the arguments. Critical thinking involves being rational and aware of your own feelings on the subject – being able to reorganise your thoughts, prior knowledge and understanding to accommodate new ideas or viewpoints.

7.4.8 Detecting the Author's Possible Bias and Prejudices

is an important skill of critical reading. While reading the text the reader can ask the following questions:

1. Is the author making claims to elevate (or demean) one social, ethnic, national, religious, or gender group as compared to another, or all others?
2. Does the author consciously present evidence that serves to tell only one side of an issue withholding shedding light on the opposing view ?

7.4.9 Outlining What is Important and Summarizing

Outlining and summarizing are especially helpful strategies for understanding the content and structure of a reading selection, whereas outlining reveals the basic structure of the text, summarizing synopsizes a selection's main argument in brief. Outlining may be part of the annotating making notes process, or it may be done separately. The key to both outlining and summarizing is being able to distinguish between the main ideas and the supporting ideas and examples. The main ideas form the backbone, the strand that holds the various parts and pieces of the text together

7.4.10 Evaluating an Argument

All writers make assertions that they want the reader to accept as true. As a critical reader, you should not accept anything on face value but to recognize

every assertion as an argument that must be carefully evaluated. An argument has two essential parts: a claim and support. The claim asserts a conclusion — an idea, an opinion, a judgment, or a point of view — that the writer wants you to accept. The support includes reasons (shared beliefs, assumptions, and values) and evidence (facts, examples, statistics, and authorities) that give readers the basis for accepting the conclusion. When you assess an argument, you are concerned with the process of reasoning as well as its truthfulness. At the most basic level, in order for an argument to be acceptable, the support must be appropriate to the claim and the statements must be consistent with one another.

Activity 11: *Read the passage below and choose the best answer to the question.*

The Earths past climate—including temperature and elements in the atmosphere—has recently been studied by analyzing ice samples from Greenland and Antarctica. The air bubbles in the ice have shown that, over the past 160,000 years, there has been a close correlation between temperature changes and level of natural greenhouse gases carbon dioxide and methane. One recent analysis from Greenland showed that at the end of the last glacial period (when the great ice sheets began to retreat to their present position), temperatures in southern Greenland rose from 5 to 7 degrees in about 100 years. Air bubbles are not the only method of determining characteristics of the Earth?s ancient climate history. Analysis of dust layers from ancient volcanic activity is another such method; as is the study of ice cores, which interpret past solar activity that may have affected our climate.

Answer the following questions while reading the text and answer

- *What is the issue the writer is focusing on?*
- *Is the writer taking a clear stand on the issue?*
- *Why is the writer writing the text?'(purpose for writing)?*
- *Who are the readers or the audience for this writing?*
- *Does the writer use enough evidence to support the central argument?*
- *Do you agree with the points the writer makes? Why/why not?*

http://www.massbay.edu/uploadedFiles/

7.4.11 Drawing Inferences

Being able to draw inferences is an important sub-skill of reading comprehension and crucial to higher-order thinking. Learners need to be able to combine their background knowledge and the information culled from the text, to form conclusions and interpret facts accordingly. As with predictions, interpretations and inferences need to be dynamic, i.e. change as the reading continues and new information is added. In inferencing, learners are required to do two things: a) answer questions where the solutions can only be provided by making logical inferences, and b) give the rationale /reasoning for their answers. Making students explain their answers causes them to slow down, to review the given facts carefully, and to collate these with the background information they have.

Activity 12

Take up a text that you would be required to teach in class, and formulate questions that would require

- *prediction,*
- *locating specific information from the text,*
- *inferring*
- *evaluating*
- *opinion -forming.*

7.5 TEACHING VOCABULARY*
(FOR DETAIL DISCUSSION, CONSULT BES-144 BLOCK 3)

Though guessing from contextual clues is a key strategy in reading comprehension, yet if the lexical content is largely unfamiliar to the learner, the text will be difficult to understand and too much mental energy will be expended in trying to figure out the meanings of the unknown words, resulting in frustration and lack of interest. So it is a good idea for teachers to familiarize learners with key vocabulary – that which is necessary for meaning making in the text—prior to reading difficult or unfamiliar texts.

Teachers can pre-select a small list of words and get students to actively engage with them and form connections with what they already know, through tasks such as creating graphic organisers that illustrate relationships (synonymy, antonym, similar / contrasting semantic fields, etc.) among new and known words, and maximizing opportunities to use the new words in speech and writing. Asking students to look up long lists of unknown, unrelated words is counter-productive.

Consider the following example.

Science learning involves lots of new vocabulary words.

Let us use morpheme as an example to build vocabulary. A morpheme is a meaningful part or unit of a word that can't be divided into smaller parts.

Common Science words and morphemes

Science word	**Morpheme (meaning)**	**Related words**
Photosynthesis	*Photo (light)*	Photography, photograph
Thermometer	*Therm (heat)*	Thermos
Microscope	*Micro (small), scope (see)*	Microwave, Stethoscope
Geology	*Geo (earth)*	Geode, Geometry
Graph	*Graph (write)*	Autograph, bar graph

How do I use this information?

Using morphemes helps you teach your students more about word meanings and families of related words. If they learn for example, that micro means small and scope means see, they can figure out that a microscope is an instrument scientists use that helps individuals to see small objects. Once a learner recognizes the meaning of a morpheme, she can use that information to learn other new words.

**(Fora detailed discussion, consult bes-144 Block 3)*

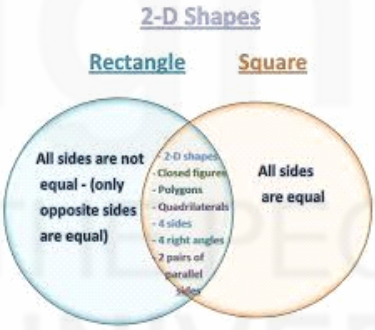
Word Wall is a collection of words which are displayed in large visible letters on any display surface like a board wall etc.

All courses have subject-specific terminology which can be used for a word-wall such as:

- Geography - terms and concepts associated with geographical regions.
- Science - terminology to describe major concepts.
- Mathematics - vocabulary for math concepts and terms e.g. integer, polynomials, equations, analytic, geometry, measurement, coefficient.
- English Literary terms, graphic text features, prefixes, suffixes, roots, easily confused words accept, except etc.

Venn Diagram

A Venn diagram consists of interlocking circles or ellipses. The area common to both circles shows similarity between two items, while the differences between the items are indicated visually by those parts of the circles that are not common to each other. This is especially useful when showing comparison/contrast, for e.g. between two species of animal creatures in a Science lesson, or characters in a story. Teachers can model the use of Venn Diagram and after students have read the contrasting ideas in the text or have read two or more texts, ask students to complete the Venn Diagram.



7.6 KWL CHART

The KWL chart is a staple in most reading-focused classrooms, from Kindergarten through high school, especially for content-based subjects such as Science, History, Geography, etc. This simple, three-column chart is a way to (1) bring students' prior knowledge about a topic to the forefront of their minds, (2) identify questions that they will look to answer while reading the text, thereby establishing a purpose for reading and building motivation to read, and (3) organize the information learned while reading.

K: What the student knows about the topic.

W: What the student wants to know

L: What the student has learned after reading the lesson/ topic

The strategy requires students to build on past knowledge and is useful in making connections, setting a purpose for reading, and evaluating one's own learning.

Consider the following examples of a KWL Plus chart from a Geography, History and Biology class in which the topic of study was Minerals, World War II and Evolution respectively.

Topic: Minerals

Know	Want to know	Learned
• Metallic and non-metallic minerals • Names of some metals: gold, silver, copper • Some are found in ore form • Some minerals are expensive	How to identify differences between metallic and non-metallic minerals Properties of metallic minerals Properties of Non-metallic minerals How many minerals are there? Where are they found? Uses of both	• Metallic minerals contain metal in raw form and Non-metallic minerals do not contain metals • Metallic minerals are generally associated with igneous rocks and non metallic minerals are generally associated with sedimentary rocks • Metallic minerals are usually hard and have shine of their own,non metallic minerals do not have a shine of their own; • Examples of metallic minerals are iron,copper,bauxite and tin; • Examples of non-metallic minerals are salt,coal and mica • Mining activity is called a 'killer industry' because of the health risks involved esp. in coal mines

Topic : World War II

K What we already know	W What we want to find out	W What we want to find out
What we have learnt • Adolph Hitler Commanded the German Army • The British fought in the World War II • Adolph Hitler designed the Nuclear Bomb • World War II started in 1939 • World War II ended in 1945	• Which country started World War II and why? • What was the Nazi's Motivation? • Why did the British fight in World war II? • Which countries did they fight in? • Which country was the peacemaker in World War II? • What made Britain a big threat?	• Germany was the reason why World War II started .Germany invaded Poland in an unprovoked attack. • German nationalism that began to develop before WW 11 was the main reason for the War.Nationalism rose in the wake of severe economic recession and the Jews were made the scapegoat. • Britain and France declared war on Germany after Germany invaded Poland. • World War II was not fought in a country it was more of a war of the continent.

Source: http:/2.bp.blogspot.com/-sjR_WmNO5LE.UYLqJKLyoXI

Activity 9: *Consider any topic that you are interested in, for example, Classical Music. Read an article about it, draw up a KWL chart and complete the chart.*

READING VISUALS (Pictures, Maps, Cartons, etc.)

Today, there is so much information being spread visually that the need for visual literacy is being felt in all disciplines. It is more important than ever that our students learn what it means to be visually literate. Visual literacy is about analyzing and creating messages. Images can be used to influence and persuade, so it is incumbent upon educators to learn how to teach with and about images and to help our students understand the language of visuals.

Picture: After the defeat of Tipu Sultan, most of South India was now either under the company's direct rule, or under its indirect political control.

Source: https://en.wikipedia.org/wiki/Indian_independence_movement

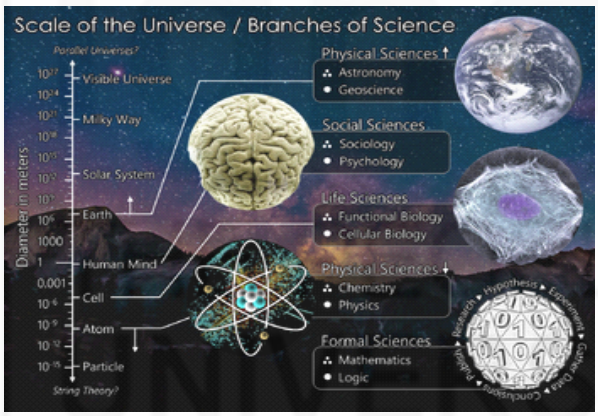
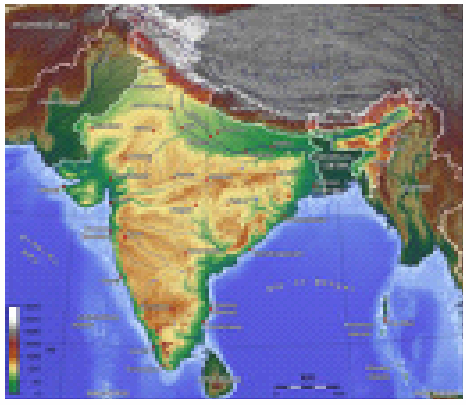


Diagram: The scale of the universe mapped to the branches of science, with formal sciences as the foundation.

Source: https://en.wikipedia.org/wiki/Science



Map : topography map-India
Source: https://en.wikipedia.org/wiki/Geography_of_India

Rainwater Harvesting, RK Laxman
https://www.google.co.in/

Students should be asked to scan the picture/map/diagram/graph/cartoon. The teacher can ask them to answer these questions :What do you notice first? What is the title or caption? Observe its parts. Are there labels, descriptions, thoughts, or dialogue? List the people, objects, and places in the cartoon. List the actions or activities. Which words or phrases are the most significant? Which of the visuals are symbols? What do they stand for? When is it from? What was happening at the time in history it was created? What is the message? Students need to learn to read the visuals in conjunction with the printed text.

7.7 READING DISCIPLINE-BASED TEXTS

From our discussion in the previous section, we know that meanings of written texts are pieced together by reading and that readers also draw on their prior knowledge to form these meanings. Such prior sources of knowledge include, words; sentence structure or syntax; text structures or genres and topics. But prior knowledge is not restricted to these.

Reading in content areas requires an understanding of academic language, knowledge of the protocols and style of discipline-based writing. It also requires development of critical thinking skills for examining ideas and evidence, making connections, problem solving and synthesizing complex idea in a logical manner.

Think and Reflect

- *What should be the overall aim of a reading programme? Give examples in the context of the discipline you teach.*
- *What factors will you keep in mind while constructing exercises for teaching reading comprehension?*
- *Why should the reading materials be interesting to students?*
- *From the discussion above choice any topic and the appropriate reading strategy from the subject you teach.*

7.7.1 Reading in Science

Teaching Science involve engaging students with texts and supporting them with understandings of the textual information. Encouraging students to become independent learners and engaging them in discussions with their peers on text

content, language, organisation and structure of the text can promote scientific reading comprehension.

Comprehension of scientific texts has been found to be challenging to inexperienced readers as scientific texts are unique. Science texts normally include figures, drawings, maps, tables, etc. Scientific registers use technical vocabulary and syntax. The technical vocabulary in science has Latin or Greek root*s poly, plasm, phyt, therm, troph, logy. Taxonomic* or categorical terminology in science requires an understanding of multiple relationships embedded in the terms.

> *Reading science texts requires the critical thinking and analysis which is similar to performing hands-on science activities. Process skills involved in doing Science and reading are common.. "The same skills that make good scientists also make good readers: engaging prior knowledge, forming hypotheses, establishing plans, evaluating understanding, determining the relative importance of information, describing patterns, comparing and contrasting, making inferences, drawing conclusions, generalizing, evaluating sources, and so on" (Armbruster (1993)p. 347).*

Science readers need to focus on understanding vocabulary and technical phrases specific to science, interpreting scientific symbols and diagrams, making sense of the organizational patterns commonly used in science texts, (exposition, description, instruction and argumentation) and inferring main ideas using inductive and deductive reasoning skills.

Difficulties in reading Science Textbooks

- Most science textbooks are written in an impersonal, objective tone, offering no scope to the reader to access her prior knowledge about a topic.
- Difficulty of making connections between ideas within the text. Use of technical words and absence of linking words like "because," or "therefore," adds to the problem of making connections between key ideas in the text.

> **Teacher's role:** *Shahnaaz, a school teacher, has come across this phrase in the text," If there are seven electrons in the outer level of the atom, then the atom could bond with another atom that has one electron in its outer energy level." She notices that situation is commonly signalled by the text structure* ***if-then****. Shahnaaz explains that ,in Science ,one event is often dependent on another. Here students observe how Shahnaaz is thinking critically about the text and negotiating meaning in a reflective and explicit manner (Grant, et. al.2015,p.75).*
>
> *The teacher can use signal words to clue the students into the text. If a chronology or sequence of information is being shared, the teacher can use signal words such as first, next, then and finally.*
>
> *Textbooks in Science have diagrams, charts, graphs and tables. An efficient science reader will first read the text that relates with the diagram and then study the diagram for key labels, data values, etc. She/he will then go back to the text to continue reading. This back and forth, science-style reading can be demonstrated by the teacher to the students for deeper engagement with the text.*

Excerpt from a Biology textbook

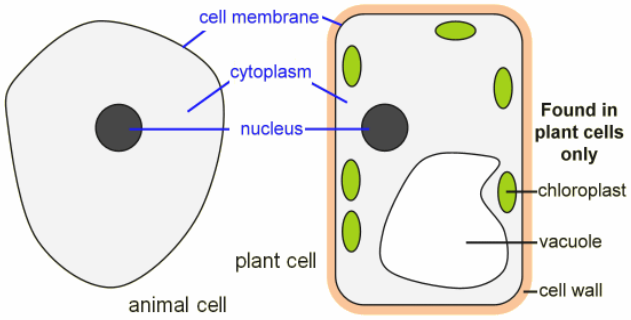


Figure: Generalised animal and plant cell

All living things are made up of cells. The structures of different types of cells are related to their functions.

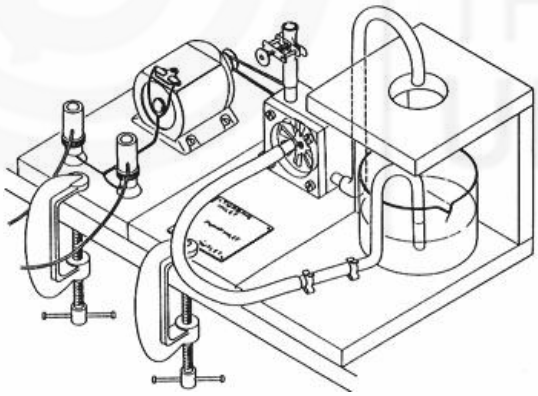
Animal cells and plant cells have features in common, such as a ***nucleus****,* ***cytoplasm,*** *cell membrane,* ***mitochondria*** *and* ***ribosomes****. Plant and algal cells also have a cell wall, and often have* ***chloroplasts*** *and a* ***permanent vacuole****. Bacterial and yeast cells have different structures to animal and plant cells.*

Dissolved substances pass into and out of cells by ***diffusion.***

Source : http://www.bbc.co.uk/schools/gcsebitesize/science/add_aqa/cells/cellsrev1.html

Excerpt from a Physics textbook

Using a pump to raise water



Clamp the motor/dynamo unit next to the turbine/pump unit, which in turn is clamped next to the head of water unit. Connect the pulleys on the motor and pump units with a rubber band or driving belt. Apply 4-6 volts d.c. to the motor. This will drive the pump unit which takes water from the lower level to the higher one. (It is necessary to prime the pump by filling with water before use: this is achieved by sucking on the third connection to the pump unit with a finger over the output and the input underwater.)

Source: http://practicalphysics.org/moving-energy-one-thing-another-1.html

In this text, the author is giving instructions for conducting an experiment and describing the outcome with the help of a diagram. It is important to assess how purpose shapes the content and style of a text. The teacher can discuss in the class why texts tend to be similar or different, depending on the purpose of the author.

Excerpt from a Chemistry textbook

Experiment	*Observation*	*Inference*
Warmed with acetic acid and a few drops of concentrated sulphuric	*Fruity smell is formed.*	*Alcohol confirmed.*

Chemical Equations:-

$R_3C\text{-}CR_3 + Br_2 \longrightarrow$ *No Effect*

OR

$R_2C{=}CR_2 + Br_2 \longrightarrow BrR_2C\text{-}CR_2Br$

$CH_3COOH + ROH \longrightarrow CH_3COOR + H_2O$

In this text from Chemistry, we find that the reader is expected to conduct the experiment, observe and draw inferences. The text draws on the use of symbols in the chemical equation, the sentences are arranged logically, the reader is expected to make inferences.

7.7.2 Reading in History

Unlike Science, History is constructed mainly through texts and cannot be experienced 'hands-on' as in case of conducting experiments in Science .Reading a history book is like having a conversation with the author who wants to tell the reader something that he or she thinks is important and true. The author is not only conveying information, but also trying to *convince* you of his or her interpretation of the past. In other words, the author tries to *persuade* the reader that *these* facts are important and that they are connected in a particular way. Historical inquiry revolves around a historical question and a set of primary and secondary documents. All works of history contain arguments, a reader has to identify what the argument of the book or article is.

Historians read and examine the documents and in doing so ask questions like What kind of document it is? For whom it was meant? Who is the audience? What are the words and phrases used and what could be the author's bias? What is the overall text structure of the document?

Comprehending the sources in History is difficult, textbooks in history can also make comprehension challenging. As research suggests, readers come across many **difficulties** while reading the texts:

- failure to make cause and effect connections explicit (Black & Bern, 1981)

- use of indirect, ambiguous or irrelevant references (Fredericksen, 1981)
- lack of sufficient detail to understand concepts and inclusion of irrelevant information to the main ideas (Trabasso et al., 1984)
- individual sentences containing very dense ideas.

Excerpt from a History textbook

The Debate on the 'Industrial Revolution'

Until the 1970s, historians used the term 'industrial revolution' for the changes that occurred in Britain from the 1780s to the 1820s. From then, it was challenged, on various grounds. Industrialisation had actually been too gradual to be considered a 'revolution'. It carried processes that already existed towards new levels. Thus, there was a relatively greater concentration of workers in factories, and a wider use of money. Until well into the nineteenth century, large regions of England remained untouched by factories or mines and therefore the term 'industrial revolution' was regarded as inaccurate: England had changed in a regional manner, prominently around the cities of London, Manchester, Birmingham or Newcastle, rather than throughout the country. Could the growth in the cotton or iron industries or in foreign trade from the 1780s to the 1820s be called revolutionary?

Teacher's role: The text is an expository text, presenting a sequence of events with the help of words like 'from then', 'until,' .The central idea, that is, the debate on the nature of 'Industrial Revolution' The author is using persuasion and evidence to support a viewpoint. We also notice the dense language and sentences are long. Gursharan, a History teacher first analysis the text herself and identifies the key ideas and meanings. She engages the students in recalling their prior knowledge and asks them to highlight the key idea. She then asks the class to break the sentences with important information into their meaningful parts to help them navigate the text. Next, she asks the students to identify the cause-effect sentences and persuasive arguments.

Activity 12: *Collect three/four different types of texts in Science and History (Newspaper article, textbook excerpts, articles from popular magazines and academic journals. Read all the texts carefully and underline the parts where one event depends on the other. Identify the signal words that depict the cause-effect relationship, like if-the, because, therefore, hence, etc. Write down how the messages are being communicated in different texts.*

7.7.3 Reading in Literature

Reading complex literary works poses a challenge to learners who need to understand how the author shapes an imaginary world in novel, poetry and drama. Students also need to recognise genres such as fable, allegory, science fiction, sonnet, ballad etc. Readers should understand the rhetorical tools such as analogy, irony, pun, metaphors etc. and be able to fill in the gaps left by the author. The

reader needs to have the ability to make intertextual links, have knowledge about the author, her background, other authors and related texts within the same genres.

Sample of different genres (poetry and prose) in Literature

My Heart Leaps Up *My heart leaps up when I behold* *A rainbow in the sky:* *So was it when my life began;* *So is it now I am a man;* *So be it when I shall grow old,* *Or let me die!* *The Child is father of the Man;* *And I could wish my days to be* *Bound each to each by natural piety.* *– William Wordsworth*	***The Piano Teacher*** *The piano teacher, Erika Kohut, bursts like a whirlwind into the apartment she shares with her mother. Mama likes calling Erika her little whirlwind, for the child can be an absolute speed demon. She is trying to escape her mother. Erika is in her late thirties. Her mother is old enough to be her grandmother. The baby was born after long and difficult years of marriage. Her father promptly left, passing the torch to his daughter. Erika entered, her father exited. Eventually, Erika learned how to move swiftly. She had to. Now she bursts into the apartment like a swarm of autumn leaves, hoping to get to her room without being seen. But her mother looms before her, confronts her. She puts Erika against the wall, under interrogation – inquisitor and executioner in one, unanimously recognized as Mother by the State and by the Family. She investigates: Why has Erika come home so late?* -Elfriede Jelinek,Nobel Prize winner for Literature, 2004

In the texts here, we find the difference in the genres of prose and poetry .The language of prose is straightforward and ideas are arranged into paragraphs which look like big blocks of words. Poetry on the other hand is an expression with rhyme and rhythm. Ideas are expressed in lines and arranged in sentences.

7.7.4 Reading in Mathematics

Even though, on the face of it, Mathematics hardly lends itself to reading, students face reading comprehension difficulties in Mathematics which includes understanding word problems and graphic illustrations. Mathematics language is constructed from everyday uses of language but it is different from other school subjects (Schleppegrell,2007), and this subject-specific nature of language in mathematics has important implications for mathematics learning. Language in Mathematics involves multiple modes of representation which are ways to symbolize, describe and refer to the same entity. For example, fractions can be represented through graphs, symbols, words, diagrams, pictures, models, manipulatives, oral or word problems. O'Halloran (2005,p 80) explains the nature of mathematical discourse as**"multi-semiotic", based** on three semiotic systems performing three different functions, natural language (if you multiply 8 times 8, the answer is 64),symbolism (y-0=2(x-1)-y=2x-2) and visual images (graphs, diagrams, etc.)

Some special features of Mathematical text that can lead to student **difficulties** as indicated by Barton and Heidama (2002) and Shuard and Rothery (1988) include:

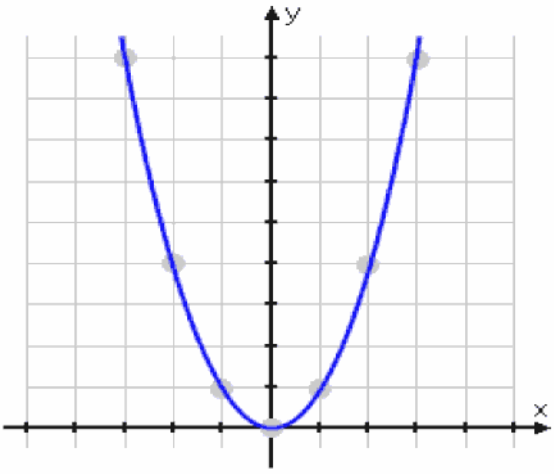
1. Reading mathematics often requires reading from right to left, top to bottom, bottom to top or diagonally.
2. The text in mathematics textbooks has more concepts per sentence per word and per paragraph than ordinary textbooks.
3. Mathematical concepts are often abstract and require effort to visualize.
4. The text in mathematics textbook is terse and compact - that is, there is little redundancy to help readers uncover the meaning.
5. Words have precise meanings which often are not fully understood.
6. Formal logic connects sentences so the ability to understand implications and make inferences across sentences is essential.
7. In addition to words mathematics textbooks contains numeric and non-numeric symbols.
8. Mathematics textbooks often contain complex sentences which can be difficult to understand.

Excerpt from a Mathematics textbook

The most basic quadratic is $y = x^2$. When you graphed straight lines, you only needed two points to graph your line, though you generally plotted three or more points just to be on the safe side. However, three points will almost certainly not be enough points for graphing a quadratic, at least not until you are very experienced. For example, suppose a student computes these three points:

x	$y = x^2$
0	$0^2 = 0$
1	$1^2 = 1$
2	$2^2 = 4$

Then, based only on his experience with linear graphs, he tries to put a straight line through the points.



Source: *http://www.purplemath.com/modules/grphquad.html*

Teacher's role: Mathematics has a reading protocol all its own, and just as we learn to read literature, we should learn to read mathematics. You will notice in the beginning that the paragraph includes lots of information in a short amount of text. Sentences and words have precise meaning and connect logically to surrounding sentences and graphic images (table, graphs, and pictures). Mathematics also requires students to be proficient at decoding not only words but also numeric and nonnumeric symbols. Teaching reading in in a math classroom is more about teaching students how to use reading as a tool for thinking, reasoning, and learning.

Gopa, a school teacher ,uses the Frayer Model, a graphic organiser, to assist her students with vocabulary development. She realises that .Mathematics vocabulary is one feature of mathematics text that can be challenging. This graphic organizer was designed by Dorothy Frayer and her colleagues at the University of Wisconsin to provide for a thorough understanding of new words. Students are asked to provide a Definition of the word, Facts or Characteristics of the word, Examples, and Nonexamples.

FRAYER MODEL

<table>
<tr><td>Definition in your own words

A quadrilateral is a shape with 4 sides</td><td>Facts/Characteristics

• 4 sides,
• May or may not be equal in length
• Sides may or may not be parallel</td></tr>
<tr><td colspan="2">QUADRILATERAL</td></tr>
<tr><td>Examples

• Square
• Rectangle
• Trapezoid
• rhombus</td><td>Non-examples

• Circle
• Triangle
• pentagon</td></tr>
</table>

Activity 13 : *How do the following in facilitate reading of Science and History texts:*

- *Identifying key ideas*
- *Understanding the text features*
- *Underlining difficult words/phrases*

7.8 LET US SUM UP

In this unit, our focus has been on Reading Comprehension, and on developing reading skills across the curriculum. Comprehending a text is a multi-pronged process, involving the text, the reader and the socio-cultural context. From defining reading and understanding the process of reading, we have proceeded to understand the importance of reading across the curriculum. Research has shown that there is a strong correlation between RC and academic performance. Different

reading strategies are required for reading course material in diverse subjects, for example, reading strategies required for Literature are very different from the strategies required for Social Science or Mathematics.

Readers must develop the ability to go beyond main ideas and learn to analyse, synthesize and evaluate information pertaining to different subjects. They must develop the ability to sift, filter out and collate information from the spectrum of content areas. The Unit discusses the importance of reading as a tool for learning in different disciplines. This has been followed by a detailed discussion of the various strategies to develop reading skills, accompanied by clear examples. At every stage, activities have been suggested for the teacher to try and to gain a more application –based understanding of the process of Reading and how to teach it. By modelling, encouraging prediction-making, asking probing questions, and focusing on higher-order cognitive skills across the subjects in their curriculum, learners can be trained to develop their reading skills, which will impact positively on their overall performance and learning.

7.9 REFERENCES

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UNIT 8 WRITING ACROSS THE CURRICULUM

Structure

8.0 OBJECTIVES

At the end of this Unit you will be able:

- understand that learning to write involves learning to accomplish a variety of purposes for a variety of audiences in different settings;
- understand that writing is a meaning making process across the curriculum and is more than just a medium for transmitting one's knowledge of concepts and ideas;
- ascertain how writing, as a process, leads to constant improvement in writing skills, enabling the learner to comprehend, interpret and present the ideas critically in his/her own words;

- make connections between texts and put forward your own understanding;
- enable the learners to recognize and analyze discipline-specific formats and organizational strategies; and
- identify strategies for developing your students' ability to compose a variety of written texts in different subjects.

8.1 INTRODUCTION

Writing is important because it improves communication skills, critical thinking and creativity. Writing is necessary for both school and work situations. Writing helps the writer express ideas and beliefs. Indeed, writing helps us think critically, evaluate, analyse, generate ideas and present them coherently. One sifts through a range of new ideas and is able to present them through various forms of writing – articles, essays, letters, notes etc. Through writing we communicate to a range of readers at the same time, writing is a learning process in itself. Writing is by definition social, it involves the writer and the audience. Learning to write involves learning to accomplish a variety of purposes for a variety of audiences in different settings.

Students learn to write when they are taught to write and not when they are asked to. The teacher has to teach students how to write by using specific writing strategies that develop fluency and skills to organize the content related to the subject area. Many content area teachers, History, Mathematics or Science expect that writing skills taught in English class can be transferred to their discipline as well. Consequently, they do not teach writing in their own discipline. By teaching students to write, teachers can build their ability to communicate and share ideas and knowledge. 'Writing is at the center of instruction because writing is how students connect the dots in their learning.'

Students need to develop to the ability to write essays on academic topics, including scientific reports, analyses of historical/political/social events, summaries of discussions and notes on lectures or texts. Students who acquire better writing skills in their early years of education have better performance records at higher levels. This Unit on "*Writing across the Curriculum*" aims to help you, as teachers, develop your students' skills to write effectively, in different subject areas.

8.3 HOW IS WRITING DIFFERENT FROM SPEECH?

Why is it that to a large number of students in India , writing in English seems to pose great problems?. It is partly to do with the nature of writing itself.

As Rosen (1981) points out,

- Writing is detached from the wide range of expressive possibilities in speech.
- A writer is unable to exploit all the devices available to a speaker: gesture, body movement, facial expression, pitch and tone of voice, stress, and hesitations.

- A speaker can backtrack, or clarify and revise ideas as listeners question or disagree. A writer has to compensate for all of those disadvantages.
- Compared with speech, effective writing requires a number of things:
  - a high degree of organization in the development of ideas and information;
  - a high degree of accuracy so that there is no ambiguity of meaning;
  - the use of complex grammatical devices for focus and emphasis;
  - and a careful choice of vocabulary, grammatical patterns, and sentence structures to create a style which is appropriate to the subject matter and the eventual readers.

It is these demands which present particular problems to foreign writers of English, Even those who are proficient writers in their first language have to acquire a wide language base from which to make these choices. They may also find that confusing differences exist between the conventions of writing in their first language (mother tongue) and English. For example, the level of formality or patterns of presenting information in letters may differ, or the accepted method of setting out arguments in discursive writing may vary. We need to be sensitive to all these factors when our learners attempt their writing tasks.

8.4 RELATIONSHIP BETWEEN WRITING AND THINKING

Writing and thinking are closely connected. Good writing cannot happen without critically thinking about the topic at hand. For writing, one needs to select content (information and ideas) carefully, assess the needs and expectations of the readers, plan presentations and edit accordingly. Often, writers as well as their readers are not consciously aware of these interlinkages. A writer comes across a variety of problems, how to generate and organize ideas for a purpose and audience; formulate sentences that are grammatically correct; use correct vocabulary and spelling; adhere to the 'style' possessed and how to present that information, whether by inference, argument, or description. Solving these problems in order to produce an effective piece of writing involves cognitive processes. Therefore, effective writing is the result of effective problem solving. This process of critical thinking comes only with practice.

Activity 1

1. *How is writing connected with thinking?*
2. *Based on the discussion above, how would you define writing?*

8.5 WRITING AS A TOOL FOR LEARNING CONTENT

Are you wondering how writing aids learning? To understand this pedagogic tool you must not think of writing as a mechanical activity. Instead, it is an engaging and invigorating process that involves thinking, reasoning and analysing. As a learning tool, writing helps students grasp, organize, and integrate their prior

knowledge with new concepts. Writing involves the cognitive processing of ideas and is therefore viewed as a tool for learning. Writing has long been recognized as enhancing the learning process. Writing makes thinking visible, allowing learners to reflect on their ideas. Further, writing facilitates connections between new information and learned information, and among areas of knowledge across multiple domains.

8.6 WRITING AS A PROCESS

Much of the research and academic work in the field of writing has begun to recognize that writers follow a process when they work, just as scientists follow a systematic method. When we begin to understand this process we can help our students invent, use and adapt effective writing strategies (Murray 1982, Graves 1991). Yet in most of our classrooms we tend to only look at the end products of writing. We look at the end product in isolation. We expect the student to produce a perfect piece of writing in one sitting. We do not allow them the process of revising, improving, rethinking about their writing.

Theorists have defined the writing process as different steps or stages that a writer goes through to produce a piece of writing. Broadly speaking these are the stages of ***prewriting, writing*** and ***rewriting, editing*** and then ***producing the final piece of writing***. Murray refers to these as ***rehearsal, drafting, revision*** and ***editing***. Each stage is important. There are different skills required at each stage, and children need to go through each stage under the guidance of the teacher. The stages however do not occur in the linear order given above, there may be overlaps.

Being motivated to write	Getting ideas together	Editing and getting ready for publication	Making notes	Making a first draft	Revising replanning redrafting	Planning and outlining
7	6	1	4	3	2	5

In brief, the process of writing contains a number of stages which can be represented in the following figure:

However, the figure oversimplifies matters because, although writing in general involves these stages, the process is not a linear one, moving from planning to composing to revising and to editing. It would be more accurate to characterize writing as an activity in which the writer moves backwards and forwards between drafting and revising, with stages of replanning in between. As Shaugnessy (1977) describes it, it is *'a messy process that leads to clarity'*.

a. What is the purpose of this piece of writing?

The writer must know the purpose of his/her writing i.e. is s/he writing a report for action? Identification of the purpose of writing would determine the choice of organization and the style of the written piece. Every type of writing has a certain purpose. Writing, unlike speaking, is generally about a topic or a theme. The topic or the theme is then organized in such a manner that the purpose is

served. For example, if the purpose of the writing is to describe then the focus should be on the object of description, its qualities and the writer's own analysis of what is being described..

SOME PURPOSES OF WRITING

- ***To think***
- ***To inform***
- ***To persuade***
- ***To criticize***
- ***To reflect***
- ***To communicate***
- ***To research***
- ***To entertain***
- ***To forge a connection with someone***
- ***To understand***
- ***To remember***
- ***To solve a problem***
- ***To grieve***
- ***To control***
- ***To show concern***
- ***To experience personal enjoyment***
- ***To cause social action***
- ***To wonder***
- ***To thank***
- ***To express an emotion***
- ***To feel***
- ***To know***
- ***To discover***
- ***To show understanding***
- ***To collaborate***
- ***To question.***

b. Who am I writing for?

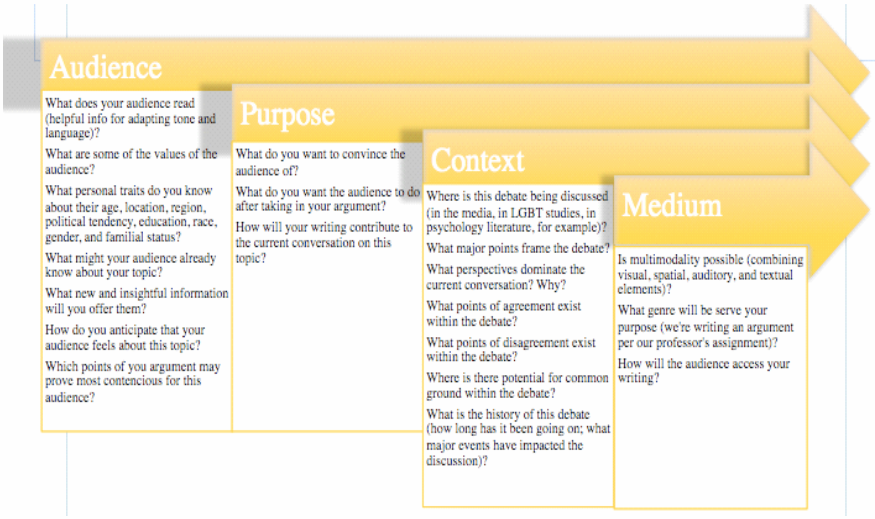
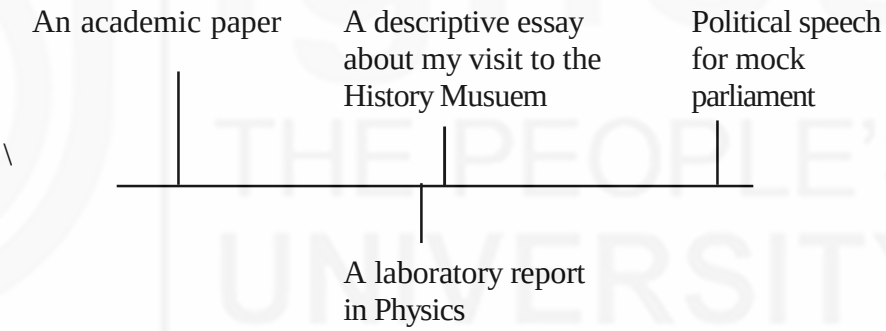


Fig. 1: Audience, purpose ,context and medium are fundamental to writing.

Source:https://writingcommons.org/writing-processes/think-rhetorically/711-what-to-think-about-when-writing-for-a-particular-audience

The information about the audience helps the writer to determine what to say and how to present the writing in the most appropriate style.

The good student generally plans for writing :



(c) Brainstorming/Having a Plan

Before starting, it is essential to have a plan of what is going to be written, what will be included, and how the material will be organized. This helps in drawing up a plan/ organizer or having a guide for organizing the writing in a certain way. The plan can be in the form of questions like 'What is going to be my introduction?', 'In what ways will I describe the person/object/ place?' etc.

(d) Using Reliable Sources of Knowledge

Except in the case of narrative writing (and sometimes even for that), some reliable sources of knowledge should be used to enrich the write-up.

(e) Lexis/ Domain specific vocabulary

Words are the soul of writing. A good writer always pays a lot of attention to words. Here are some tips.

- You need to use words and phrases that are relevant to the discipline or subject matter that you are addressing through your writing.
- Do not repeat the same word again and again; look for a replacement
- Always aim for the exact word that you are looking for
- Explaining something if you do not have a word for it is a good strategy
- Use the words in such a way that it fits the grammatical pattern.

(f) **Coherence and Cohesion**

A piece of writing should be logically sequenced. In written language, different types of words are used to create this. Here is a list of some of them. These words are used to indicate continuity within the text and also to create a link between different parts of the text:

- for example, for instance,
- furthermore
- hence, however
- meanwhile, moreover
- therefore, thus,
- simultaneously
- nevertheless,
- subsequently
- afterwards
- also
- as a result
- conversely
- consequently
- even

(g) **Feedback**

Feedback for writing can be in two stages. One, *before* you start writing you have an organizational plan ready. Sharing the organizational plan with others and making changes according to the feedback that you receive is a good way to start writing. That makes the writing more effective. Secondly, you can also receive feedback after you have finished your piece.

(h) **Negotiation with peers, teachers for feedback and revision**

Negotiation with peers, teachers, and collaborative conversation to construct meaning are inbuilt components of the process approach to writing. Writing becomes a source of shared meanings about subject specific terms/concepts. *Reflection* takes place not only before writing but during and also after the writing has been completed. Reflection may lead to a revised draft; an improved understanding of the task or theme at hand.

8.7 WRITING ACROSS THE CURRICULUM

As discussed, writing is the main vehicle for communication of subject specific and is crucial to learning. However, writing in each subject is different.

Different Types of Writing

Writing does not fall neatly into one category or the other. It is a process of imagining, discovering and creating a narrative or a text. It is about the ability to communicate effectively, to an audience, pulling together all the components.

In the following sections, we will discuss different types of writing.

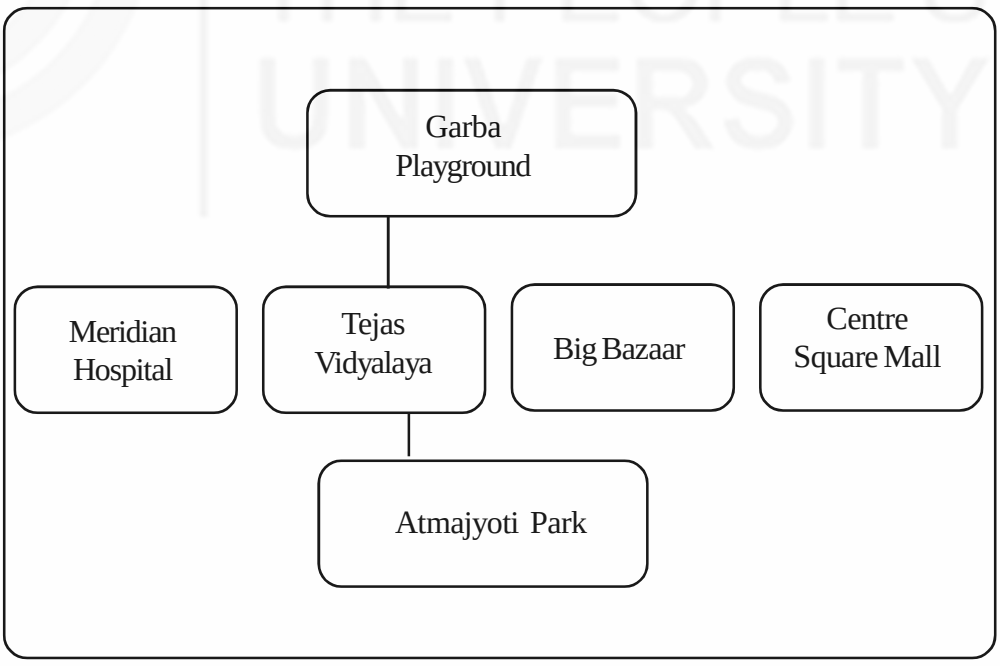
8.7.1 Information Transfer

This is another type of a writing activity in which a learner is required to write a paragraph based on reading and interpreting a graph, a chart, table or giving directions based on a map. This transfer of non-verbal skills to verbal form (writing a paragraph or report) develops composing or writing skills. If the writing activity is the reverse of the activity mentioned earlier, the process also helps learners to develop comprehension skills. This is an important study skill, which helps learners develop analytical faculties and is useful to them in their study of subjects like Mathematics, Science, Commerce, etc.

Example: Read the following description of Richa's school and transfer the information into a graphic form.

I study in Tejas Vidyalaya. In front of my school there is a park named Atmajyoti Park and behind it is a huge playground where the Garba festival is held. To the left of my school there is a huge supermarket, Big Bazaar, and next to it is the Centre Square mall. On the right of the school is a big building which houses the famous Meridian hospital.

The graphic prepared will look something like the picture drawn below.



Another example is given below:

1. You are visiting Baroda for the first time and have visited a number of tourist places. Write a letter to your friend describing the beauty of the places given in the following table.

Description of those places	Place of Interest
Residence of the Maharaja Sayajirao Gaekwad	Laxmi Vilas Palace
Educational Institution	M.S. University
Heritage site	Champaner
Made of metal used for making defense aircrafts	EME Temple
Place of Shri Aurobindo's residence	Aurobindo Ashram
.....	
.....	
.....	

2. Study the following table and write a paragraph on the stages in the growth of a lion.

Growth	Stage	
Blind	At birth1	
eyes open	Six days	2
play like kittens	4-5 weeks	3
learn to hunt	Three months	4
begin to breed	Age of two	5
fully grown	5 years old	6

.....

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.....

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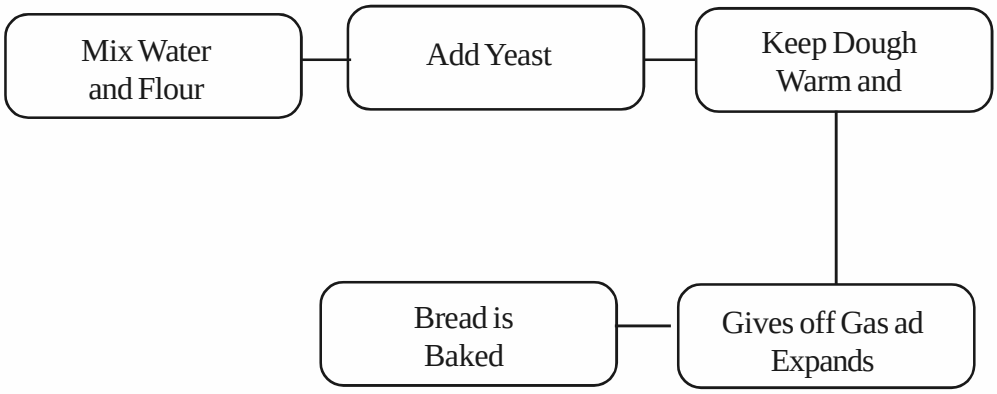
3 The flowchart given below depicts the process of making bread. Write the process in about 100-150 words in the form of a paragraph.



Purpose of Data Visualization

The purposes of tables, graphs, and other types of data visualizations are to

- Clearly indicate how values relate to one another
- Represent quantities accurately
- Make it easy to compare quantities
- Make it easy to see ranked order of values
- Make obvious how people should use the information

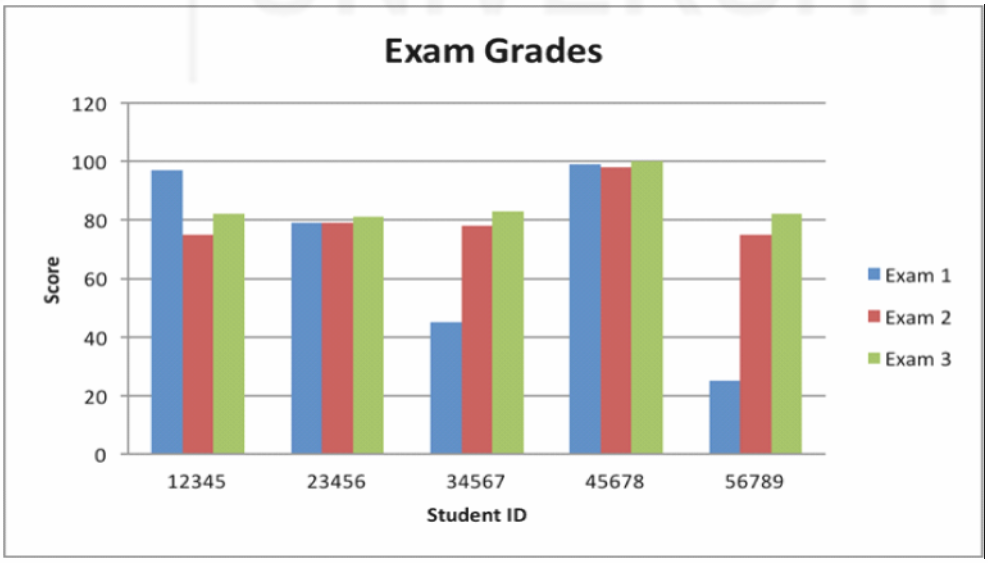
Tables

Tables, "lists of data presented in a system of rows and columns" (Dobrin, et al), are useful in instances where some form of a records such as depicted are to be maitained teacher has to keep record of student as:

Homework	Exam 1	Exam 2	Exam 3	Student Roll No.
12345	97	75	82	95
23456	79	79	81	90
34567	45	78	83	100
45678	99	98	100	100
56789	25	75	82	70

Graphs and Charts

Graphs and charts are useful when the patterns within the data tell a story. [1] By transferring the numbers from the above, for the students' exam scores into Graph 1, it is easy to identify that Student 12345 did better on Exam 1 than he or she did on Exam 2 and so on.



Graph 1 : Exam Grades

Source:https://writingcommons.org/data-visualizations

Activity 2

1. *Refer to the Science/History/Geography/Mathematics textbooks of your pupils. Choose any table/graph/diagrams from them and prepare a transfer exercise based on it .*
2. *Look at the graph and write a paragraph on what it is communicating about the performance of every student and the class as whole. What are the other topics you can think of for using graph?*

8.7.2 Paragraphs/Essays

Paragraphs form a part of any continuous piece of writing in essays, reports, letters etc. **It is necessary to teach our students how to write good paragraphs.**

What are the characteristics of a good paragraph?

A **paragraph** is a well-organized network of sentences having a definite plan. It has a topic sentence, which is supported by other sentences and examples. The most important characteristics of a paragraph are unity, coherence and emphasis.

Unity

A paragraph is usually built around a topic sentence – a sentence, which states the main theme of the paragraph. The topic sentence should be developed in an orderly manner and it usually occurs either at the beginning, middle or at the end of the paragraph.

Coherence

An effective paragraph requires more than a topic sentence and supporting details; it must also be coherent. In a coherent paragraph the writer takes the reader logically and smoothly from one idea to the next. In a paragraph every sentence should logically follow from the one preceding it. Every sentence should be linked to one another (with the one which goes before and the one which is to follow after) in such a way that readers can follow the flow of thought easily from sentence to sentence, paragraph to paragraph. The linking of sentences is known as cohesion and linking of ideas is known as coherence. This provides unity to the paragraph which can be achieved with the use of cohesive devices like, pronouns, repetition, synonyms, connectives, etc.

Emphasis

Emphasis means prominence; it means making important points stand out in the paragraph. This is an important aspect of writing because when a person reads a paragraph, the reader should at once know what the writer is writing about.

Compositions/Essays are written by writing two/three paragraphs on a given topic. These could be **guided,** that is, learners are given support to develop their content or they could be **free**, that is, no support is provided. Whatever they write, they have to write a connected piece of text separated in paragraphs which have to adhere to the basic requirements of unity, coherence and emphasis.

An example of a composition written with support is given below:

Activity: *Write a composition comparing and contrasting the town life with country life using the points given. (not more than 100-150 words). Described similar activity for the students in the discipline you teach.*

Town Life vs Country Life

Town life: Lack of green space that is, parks, gardens, concrete jungles on the rise – plenty of amenities for entertainment – good public transport – difficulty in making contacts – too crowded and claustrophobic and noisy environment – good shopping complexes – good educational facilities

Country life: Open spaces and greenery – few social facilities – travel necessary for entertainment – easy to establish social contacts – too quiet and isolated – calm and quiet atmosphere for those who want it – friendly people – small village market – children have to travel long distances to attend school

2. *Using the points given below, write a story in not more than 150 words. An old woman – eager to become young – goes to the forest – search of magic fountain – long time – doesn't return – husband worried – goes searching - cannot find her – reaches the fountain – finds a baby crying – clothes resemble his wife's – understands the problem – wife drank too much of water – fondly picks up the baby – goes home.*
3. *Write an attractive Introduction and Conclusion for an essay on one of the following topics:*
   - *Secularism*
   - *The Computer Age*
   - *The India of My Dreams*

8.7.3 Reports

A report usually presents information in a logical, orderly and a precise manner. The purpose of the report is to inform the reader about things that they do not know hence all details need to be included. But at the same time unnecessary details need to be avoided. This ensures **completeness** of the report.

The salient features of a report can thus be summarized as under:

A report is:

- *brief, accurate, complete and clear*
- *usually written in third person*
- *includes only relevant details – there are no digressions*
- *avoids emotional overtones*
- *ideas are logically arranged*
- *language is simple, jargon is avoided*

Activity:

1. *Undertake the following tasks:*

   A. Imagine that you are the editor of the school newsletter, "School Times". You have to report on the Independence Day celebrations. Use the following hints and write a report.

2. *15 August 2011, 7.00 a.m. - all students in white - assembled near flagpost – Chief guest – Police Commissioner to hoist at 7.30 a.m. – flag hoisted on time – guard of honour presented by NCC cadets – address by chief guest – topic – Duties of Youngsters towards India – vote of thanks proposed by Principal – Tea for all students and chief guest – dispersed.*

3. *Collect at least 5 reports from newspapers, which you could use in your class. Think of three different ways in which you can use newspaper reports.*

Laboratory Report

General Outline of a Laboratory Report

Scientific writing is just as important as conducting scientific investigation or experiment. Scientific experiments take place in the laboratory but the task of presenting the results in a concise, and clear format is equally important and demanding called laboratory report (similar to research paper). A well structured, precise and a well-organized laboratory report communicate the process and result of the investigation effectively.

Structure of a laboratory report:

- **Title** Since the title reflects the work/experiment undertaken, it is important that it is clearly presented.
- **Introduction** The introduction section provides the learning context by stating what the experiment/investigation is about, what scientific concept (theory, principle, procedure, etc.) is it linked to: the Chapter and the textbook the experiment is linked with; and this section also consists of the **purpose** and **objectives** of conducting the experiment in general terms, such as what is being done in the experiment, such as to 'measure' something or 'observe' or 'test' something and why. The introduction section may also contain a statement of the **hypothesis** for the experiment.
- **Materials and Method or Requirements and Procedure** Materials and Methods section describes (1) the lab apparatus, the materials used and the procedure followed to gather the data and (2) the process used to analyze the data. This section enumerates, step by step, the procedure followed by the one conducting the experiment. It provides detail and clarity regarding the method/procedure so that the experiment can be repeated or replicated using the same method.
- **Use of graphs, tables**
- **Discussions/Conclusions.** This is a very important section since it presents the findings from the experiment. The outcome or the result is presented objectively, taking an unbiased view. In case the outcome is not as per expectation, reasons for the discrepancies are outlined in simple and plain language.

Sample laboratory report

_____ student of _____ is doing project report entitled *"Rusting of Iron"* being submitted to _____is an original piece of work done by me.

(Signature)

Title: Rusting of Iron

INTRODUCTION

Iron is one of the widely distributed elements in the nature. One of its striking characteristics is that it undergoes rusting on combining with water, air & carbon-dioxide due to which its surface gets covered with a red brown flake coating called "RUST". RUST is affected by moisture, oxygen & carbon - dioxide. RUST is soft and porous and it gradually falls off from the surface of iron material. It is a continuous process and it gradually eats up iron due to which an iron object loses its strength. It is very wasteful process and should be prevented. It is very-very slow process.

Theory - Rusting of Iron

When a piece of iron metal is exposed to humid atmosphere, its gets covered with a red brown substance called "Rust". Rusting of iron can be explained on the basis of ELECTRO-CHEMICAL THEORY as follows :

1. *Water vapours on the surface of the metal dissolved carbon-dioxide and oxygen from the air. Thus the surface of metal is covered with the solution of carbon-dioxide with water, i.e. carbonic acid :-*

   $H_2O + CO_2 ======> H_2CO_3$ ———— *(i)*

   This acts as an electrolytic solution of the cell. The carbonic acid and water dissociate to a small extent as follows:

   $H_2CO_3 <=======> 2\ H+ + CO_3^{2}- H_2O <=======> H+ + OH-$ ———— *(ii)*

2. *Iron in contact with the dissolved* CO_2 *and* O_2 *undergoes oxidation as follows:-*

   $Fe ==========> Fe++ + 2e–$ ————*(iii)*

   As a result iron is converted into ferrous (Fe++) ion.

3. *The electrons lost by iron are taken up by the H+ ions present on the surface of metal which were produced by the dissociation of H2CO3 and H2O. Thus H+ ions are converted into H atoms.*

   $H+ + e– ?\ H$ ———— *(iv)*

   Thus H atoms either react with the dissolved oxygen or oxygen from air to from water.

   $4H + O_2 ?\ 2H_2O$ ———— *(v)*

   The complete reaction may be written as :-

   $O_2 + 4H+ + 4e– ?\ 2H_2O$ ——— *(vi)*

   The dissolved oxygen may take up electrons directly to from OH– ions as follows :

   $O2 + 2H_2O + 4e^{-} ?\ 4OH^{-}$ ———*(vii)*

   The overall reaction of the miniature cell will be :-

$2Fe(s) + O_2(g) + 4H+ (aq) \; ? \; 2Fe^{++}(aq)+2H_2O(l)$

4. *The ferrous ions formed react with the dissolved oxygen or oxygen from air to form ferric oxid as follows :*

   $4Fe^{++} + O_2 + 4H_2O \; ? \; 2Fe_2O_3 + 8H+ (aq)$

   Ferric oxide then undergoes hydration to form RUST as follows :-

   $Fe_2O_3 + xH_2O ========> Fe_2O_3\ xH_2O$

   Hydrated ferric oxide (RUST)

   Requirements

Apparatus :

- *i) Boiling tubes*
- *ii) Rubber stopper*
- *iii) Iron nails*
- *iv) Burner*
- *v) Test tube, Holder & Stand*

Chemicals:

- *i) Distilled Water*
- *ii) Dilute HCL*
- *iii) Dilute NaCl Solution*
- *iv) Anhydrous Calcium Chloride*
- *v) Cotton*
- *vi) Mustard Oil*

Procedure - Iron Rusting

i) Take five dry test tubes and mark them A, B, C, D and E. Take 10 pieces of iron nails free from rust.

ii) Moist two iron nails with distilled water and slide it in the test tube marked 'A' close the mouth of the tube.

iii) In the test tube 'B' take 5 ml of water and boil it so as to remove dissolved air. Slide two nails in this test tube and few drops of mustard oil so as to cover the surface of H_2O.

iv) In the test tube 'C' take 5 ml of dilute NaCl solution. Slide two nails and close it.

v) In the test tube 'O' add two pieces of hydrous calcium chloride and cover it with thin layer of cotton. Again slide 3 nails and close it.

vi) leave these test tubes as such for 4-5 days and observe carefully in which of the tubes rust is formed.

Observations

i) It is observed that rusting takes place in the test tube A and C where as not in B, D, and E.

ii) Moisture, oxygen and carbon-dioxide present in air are responsible for rusting.

iii) It appears that during a compound of iron is formed by the combination of iron oxygen, carbon-dioxide and water.

iv) It is observed that when the process was prolonged in the presence of moist air and acids, rusting spreads quickly.

Methods of Prevention

i) Rusting of iron can be prevented by covering its surface with paints, grease and lacquers.

ii) Galvanisation: This is one of widely practical methods used for the prevention of rusting. The layer of Zinc on the surface of iron, when comes in contact with moisture, oxygen and carbon-dioxide in air, ferrous a protective invisible thin layer of basic zinc carbonate ZnCO3. Zn(OH)2 due to which the galvanised iron sheets lose their lustre and also tend to protect it from further corrosion.

iii) Rusting of iron can also be prevented by coating its surface with iron (II, III) oxide Fe_3O_4 or iron (III) phosphate $FePo_4$.

Conclusions

(i) Rust is formed by prolonged action of water oxygen and carbon-dioxide on an iron under other suitable conditions.

(ii) Moisture, Oxygen and carbon-dioxide present in air, all responsible for rusting.

Source : https:pt.periodd.comp.document

Activity 2

Prepare a model report on any topic of your choice. Remember the salient features

1. *Features of a good report, namely, completeness, clarity and accuracy.*
2. *Why do we write an Introduction and Objectives in a Laboratory Report?*
3. *What is the difference between writing an Essay and a Laboratory Report? Why are the two forms of writing different?*
4. *Consult any one of the books and select a task each on paragraph writing, essay writing and report writing.*

8.7.4 Teaching Study Skills

Taking notes

Note taking is a very useful academic exercise because it allows one to keep a concise written record of what one has heard or read. It helps us to recall or review whatever we read or listened to. Most of us take notes when we are reading or listening to something important, and we tend to develop our own methods of note taking. Research shows, however, that if we learn to take notes *systematically*, following a *process*, we will understand and retain more information for later use.

The process of note taking begins even before we actually listen or read. People can take notes faster, and with better understanding, if they simply spend a minute thinking about the topic they are going to hear or read *before* the actual note taking begins. The process ends with the reconstructing of the text or speech from the notes.

Summarizing (summarizing/concluding/synthesizing)

Consolidation or summarizing requires the writer to combine information from various sources including prior knowledge. The reader determines what is redundant, trivial and repetitive and eliminates it. Then s/he creates a synthesis of the most important information.

Summarizing Texts

A summary includes the most important points of the text. It should be brief (short). Furthermore, the summary is written in one's own words and contains only main ideas. It does not include explanations or examples. It requires students to paraphrase (use their own words) to explain the concepts, ideas or narrative around which the lesson was built. The main idea is written in their own language to enhance understanding and highlights the misunderstandings and misconceptions.

Activity 5

1. *What is difference between note-taking and note making? Give an example.*
2. *Prepare a task each on 'Note-making', and 'Summarizing'.*

8.8 FORMS OF WRITING

The earlier section deals with different types of writing that we are required to undertake in our daily life. The author can choose from different forms to express his/her intent. The selection would depend upon what he/she wants to convey.

*This **purpose** is informed if certain questions are answered like:*

- *Why is the writing task being undertaken?*
- *Is it for **entertaining?***
- *Is it for **informing** readers?*
- *Is it for **presenting one's point of view**?*
- *Is it for **persuading** the readers to accept one's points of view?*

Answers to the above questions influences the type of choices the writer makes of the form he/she wants to adopt. It means that the writer has ***to choose the right manner*** to express his/her intent. For example, the writer may have used the narrative form when expository perhaps would have been more effective on a given topic, in History or, the writer may have in a casual manner expressed his/her feelings when perhaps a lyrical or a poetic way would have given a lot of pleasure to the readers

Each form has a unique structure and it is important to know the distinctions between them. Let us look at some of them, which could be useful for our students.

8.8.1 Descriptive Writing

Descriptive writing involves description of people, places, objects, or events using appropriate details. An effective description usually contains sufficient and varied

elaboration of details which are usually sensory and selected to describe what the writer sees, hears, smells, touches, and tastes. These paint a picture in the minds of the readers so that they become an integral part of the visual process. Word pictures created, makes writing more interesting, easier to understand and contributes and supports the topic the writer is describing. Use of these details also paint pictures of feelings and emotions.

Example of descriptive writing

In the following paragraph, observe how the writer moves clearly from a description of the head of the clown (in sentences two, three, and four), to the body (sentences five, six, seven, and eight), to the unicycle underneath (sentence nine). Notice also how the concluding sentence helps to tie the paragraph together by emphasizing the personal value of this gift.

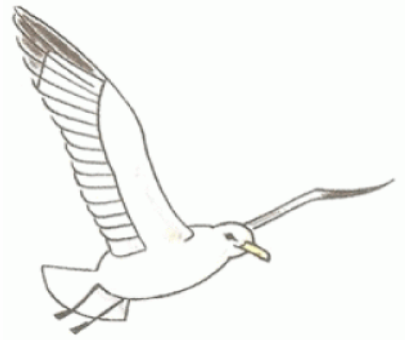
A Friendly Clown

On one corner of my dresser sits a smiling toy clown on a tiny unicycle—a gift I received last Christmas from a close friend. The clown's short yellow hair, made of yarn, covers its ears but is parted above the eyes. The blue eyes are outlined in black with thin, dark lashes flowing from the brows. It has cherry-red cheeks, nose, and lips, and its broad grin disappears into the wide, white ruffle around its neck. The clown wears a fluffy, two-tone nylon costume. The left side of the outfit is light blue, and the right side is red. The two colors merge in a dark line that runs down the center of the small outfit. Surrounding its ankles and disguising its long black shoes are big pink bows. The white spokes on the wheels of the unicycle gather in the center and expand to the black tire so that the wheel somewhat resembles the inner half of a grapefruit. The clown and unicycle together stand about a foot high. As a cherished gift from my good friend Tran, this colorful figure greets me with a smile every time I enter my room.

Source: grammar.about.com/od/developingparagraphs/a/samdescpors.htm

His First Flight

THE young seagull was alone on his ledge. His two brothers and his sister had already flown away the day before. He had been afraid to fly with them. Somehow when he had taken a little run forward to the brink of the ledge and attempted to flap his wings he became afraid. The great expanse of sea stretched down beneath, and it was such a long way down – miles down. He felt certain that his wings would never support him; so he bent his head and ran away back to the little hole under the ledge where he slept at night. Even when each of his brothers and his little sister, whose wings were far shorter than his own, ran to the brink, flapped their wings, and flew away, he failed to muster up courage to take that plunge which appeared to him so desperate.



Source: First Flight, Textbook for English, NCERT, Class 10, Chapter 3

8.8.2 Expository Writing

Exposition refers to an act of explaining something or making clear. The aim of the writer in expository writing is not primarily to narrate or describe; it is mainly to explain – facts ideas or beliefs. The writer has to assume that the reader has no prior knowledge of the topic being described. Hence, every little detail has to be written. This type of writing is distinct in terms of purpose, design and function of language.

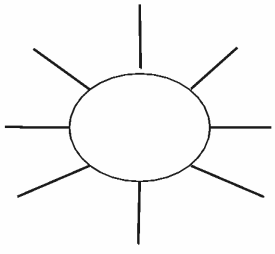
Techniques which can be used in the writing expository text are:

- *explanation of a process*
- *use of examples*
- *reasons in support of a statement*
- *comparison and contrast*
- *classification*
- *restatement*
- *definition*
- *analogy*
- *cause and effect*
- *analysis*

Expository writing involves different organizational patterns, some of which are graphically presented below. Look at an example of the text is presented, followed by the graphic, which would help you to retain the form of the different patterns of writing.

Description

The Olympic symbol consists of five interlocking rings. The rings represent the five continents – Africa, Asia, Europe, North America and South America from where athletes compete in the various events. The rings are coloured, red, black, yellow, blue and green. At least one of these colours is found in the flag of the countries whose athletes come to participate in the games.



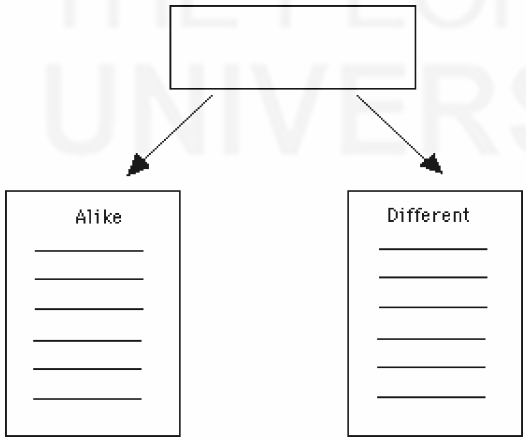
Sequence

The Olympic games began as athletic festivals to honour the Greek Gods. The most important festival was held in the valley of Olympia, to honour Zeus, the kings of God. It was this festival that became the Olympic games in 776 B.C. These games were ended in 394 A.D. by the Roman emperor who ruled Greece. After that no Olympic games were held for 1500 years. Then the modern Olympics began in 1896. Almost 300 athletes competed in the first modern Olympics. In 1900, female athletes were allowed to compete. The games have continued every four years since 1896, except during World War II; and they will most likely continue for many years to come.

1. .....
2. .....
3. .....
4. .....
5. .....

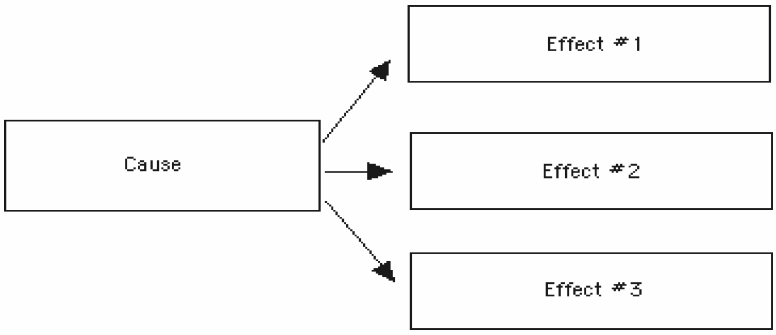
Comparison

The modern Olympics is unlike the ancient Olympic games. Individual events are different. While there were no swimming races in the ancient games, there were chariot races. No female athletes competed in the games while all athletes were males. Of course, the ancient and the modern Olympics are also alike in many ways. Some events like the javelin and discus throw are the same. Today, people are of the opinion that cheating, professionalism and nationalism in modern games are a disgrace to the Olympic tradition. However, in the times of the ancient Greeks cheating, professionalism and nationalism was also rampant. Human beings evidently haven't changed.



Cause and Effect

There are several reasons why so many people attend the Olympic games. Or watch them on television. One reason is tradition. The name Olympics and the torch and flame remind people of the ancient games. People can escape the ordinariness of daily life by attending or watching the Olympics. They like to identify with someone else's individual sacrifice and accomplishment. National pride is another reason an athlete's or a team's hard earned victory becomes the nation's victory. There are national medal counts and people keep track of how many medals their country's athletes have won.



Problem and Solution

One problem with the modern Olympics is that it has become very big and expensive to operate. The city or country that hosts the games often loses a lot of money. Stadiums, pools and playing fields must be built for the athletic events; housing is needed for the athletes who come from all over the world. And all of these facilities are used for only 2 weeks! In 1984, Los Angeles solved these problems by charging a fee for companies who wanted to be the official sponsors of the games. Companies like McDonald's, paid a lot of money to be a part of the Olympics. Many buildings that were already built in the Los Angeles area were also used. The Coliseum, where the 1932 games were held was used again and many colleges and universities in the area became playing and living sites.

One can thus see that expository writing along with its different organizational patterns are being used in our daily life. Usually any article from a book, magazine or newspaper is of an expository nature where the objective of the author is to inform the reader of the topic being written. Even at schools, students have to submit assignments, which usually are of an expository nature. Therefore students need to be taught how to write this form of writing.

Sample of an Expository text

Political Parties

In some countries, power usually changes between two main parties. Several other parties may exist, contest elections and win a few seats in the national legislatures. But only the two main parties have a serious chance of winning majority of seats to form government. Such a party system is called two-party system. The United States of America and the United Kingdom are examples of two-party system. If several parties compete for power, and more than two parties have a reasonable chance of coming to power either on their own strength or in alliance with others, we call it a multi-party system. Thus in India, we have a multi-party system. In this system, the government is formed by various parties coming together in a coalition.

When several parties in a multi-party system join hands for the purpose of contesting elections and winning power, it is called an alliance or a front. For example, in India there were three such major alliances in 2004 parliamentary elections– the National Democratic Alliance, the United Progressive Alliance and the Left Front. The multi-party system often appears very messy and leads to political instability. At the same time, this system allows a variety of interests and opinions to enjoy political representation. So, which of these is better?

Source: Political Parties, Chapter 6, p.77, Democratic Politics: Textbook in Political Science for Class 10, NCERT: New Delhi

Samples of cause and effect writings

Nutrition in Human Beings

The alimentary canal is basically a long tube extending from the mouth to the anus. In the Fig. we can see that the tube has different parts.

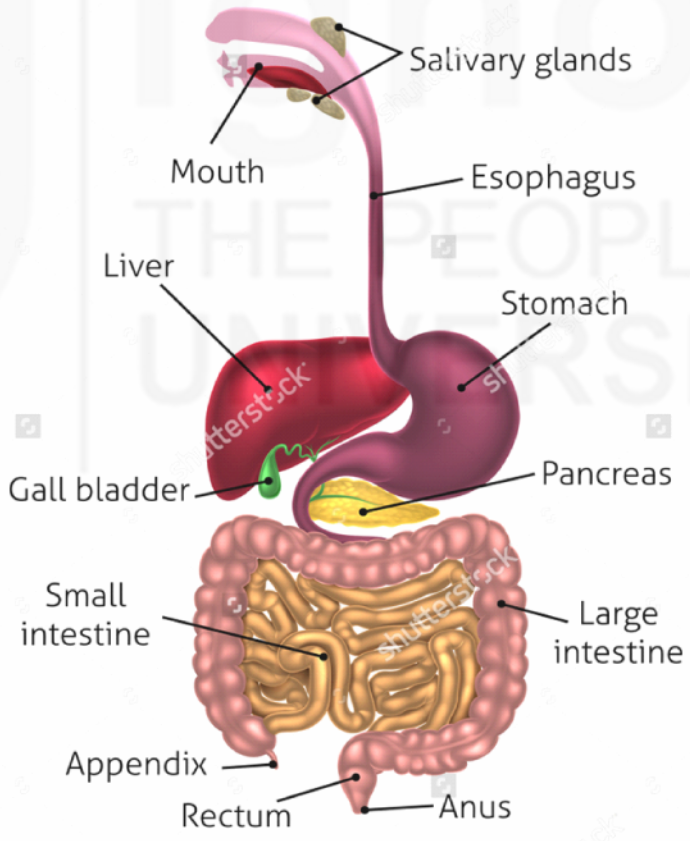


Fig. : The alimentary canal

https://www.google.co.in/

We eat various types of food which has to pass through the same digestive tract. Naturally the food has to be processed to generate particles which are small and of the same texture. This is achieved by crushing the food with our teeth. Since the lining of the canal is soft, the food is also wetted to make its passage smooth. When we eat something we like, our mouth 'waters'. This is actually not only water, but a fluid called saliva secreted by the salivary glands. Another aspect of the food we ingest is its complex nature. If it is to be absorbed from the alimentary canal, it has to be broken into smaller molecules. This is done with the help of biological catalysts called enzymes. The saliva contains an enzyme called salivary amylase that breaks down starch which is a complex molecule to give sugar. The food is mixed thoroughly with saliva and moved around the mouth while chewing by the muscular tongue. It is necessary to move the food in a regulated manner along the digestive tube so that it can be processed properly in each part. The lining of canal has muscles that contract rhythmically in order to push the food forward.

Source: Life Processes, Chapter 6, p. 98, Science for Class 10, NCERT : New Delhi

8.8.3 Narrative

Narrative writing is an account of a sequence of events, usually in a chronological order. It can take various forms including personal essay, biographical sketches and autobiographies in addition to short stories and plays. This type of writing could also be purely objective as in most scientific and technical writing. It can be used by highly imaginative scientists, scholars and historians. Many historians narrate historical events, bringing the past to the present for the benefit of the readers.

Adopting this form of writing, the author needs to bring to life his subject by

- *using 'Wh' questions – who, what, where, when, why and how, which would make the basic story structure realistic and exciting.*
- *using concrete vivid language to show readers what is happening.*
- *using visual elements to involve readers*

8.8.4 Persuasive Writing

This type of writing is all about trying to convince the reader to change their opinions and sway them with logic, moral appeals, and emotional language. The author places an argument and then tries to convince the readers of the writer's point of view. It also involves convincing the readers to perform an action. The elements that can build an effective persuasive paragraph are the following:

- establishing facts – to support an argument
- clarifying relevant values for the readers
- sequencing the facts and values
- forming and stating conclusions
- persuading readers that conclusions are based upon facts and shared values
- having the confidence to persuade

8.8.5 Argumentative Writing

bears similarity to persuasive writing. But there are distinct differences between the two, which are tabulated below:

Persuasive	Argumentative	
• Objective – • present a valid argument and allow the reader to adopt a position either to agree or disagree with the writer's position • accept it as another point of view which merits further thought and discussion	• Objective – • to 'win' the reader over to the author's side	1
Both side of the issue is presented – one to substantiate one's own position and the other to refute the opposing	Only one side of the issue is presented/debated	2
Statement is made, followed by claims and counterclaims	In organization, basic essay format is followed	3

8.8.6 Argumentative essay

An argument has two parts: a claim (an idea, an opinion or a point of view) and b) support (reasons, assumptions) and evidence (facts, data, examples). For an argument to be acceptable, the claim should be supported with evidence. Argumentative essays seek to discuss issues by providing plausible opinions on a subject. The writer of the argumentative essay includes data/evidence to support his or her views on the subject. This means the writer has to consult reliable sources of information and become knowledgeable about different sides of the issue. He or she also needs to use persuasive language to convince readers that the writer's views are the most plausible.

How can I effectively present my argument?

Use an organizational structure that arranges the argument in a way that will make sense to the reader. The ***Toulmin Method*** *of logic is a common and easy to use formula for organizing an argument.*

The basic format for the Toulmin Method is as follows.

Claim: *The overall thesis the writer will argue for.*

Data: *Evidence gathered to support the claim.*

Warrant (also referred to as a bridge): *Explanation of why or how the data supports the claim, the underlying assumption that connects your data to your claim.*

Backing (also referred to as the foundation): *Additional logic or reasoning that may be necessary to support the warrant.*

Counterclaim: *A claim that negates or disagrees with the thesis/claim.*

Rebuttal: *Evidence that negates or disagrees with the counterclaim.*

Including a well-thought-out warrant or bridge is essential to writing a good argumentative essay or paper. If you present data to your audience without explaining how it supports your thesis your readers may not make a connection between the two or they may draw different conclusions.

Don't avoid the opposing side of an argument. Instead, include the opposing side as a counterclaim. Find out what the other side is saying and respond to it within your own argument. This is important so that the audience is not swayed by weak, but unrefuted, arguments. You may want to include several counterclaims to show that you have thoroughly researched the topic.

Example:

Claim: *Hybrid cars are an effective strategy to fight pollution.*

Data1: *Driving a private car is a typical citizen's most air polluting activity.*

Warrant 1: *Because cars are the largest source of private, as opposed to industry produced, air pollution switching to hybrid cars should have an impact on fighting pollution.*

Data 2: *Each vehicle produced is going to stay on the road for roughly 12 to 15 years.*

Warrant 2: *Cars generally have a long lifespan, meaning that a decision to switch to a hybrid car will make a long-term impact on pollution levels.*

Data 3: *Hybrid cars combine a gasoline engine with a battery-powered electric motor.*

Warrant 3: *This combination of technologies means that less pollution is produced. According to ineedtoknow.org "the hybrid engine of the Prius, made by Toyota, produces 90 percent fewer harmful emissions than a comparable gasoline engine."*

Counterclaim: *Instead of focusing on cars, which still encourages a culture of driving even if it cuts down on pollution, the nation should focus on building and encouraging use of mass transit systems.*

Rebuttal: *While mass transit is an environmentally sound idea that should be encouraged, it is not feasible in many rural and suburban areas.*

Source: *https://owl.english.purdue.edu/owl/resource/588/3/*

Activity 7

1. Write why the following description is not very effective:

   My favourite city is Madras. I was born and brought up there. I have many friends there. It is a wonderful city. I feel happy whenever I return to Madras after a long trip. Madras is the capital of Tamil Nadu. It lies on the shore of Marina Beach. .

2. Think of at least 5 interesting topics on which you could ask your students to write a narrative:e.g., a historical event, a cyclonic storm, a tennis match, etc.

3. Prepare a lesson plan for teaching your students develop the skill of argument in writing. You could plan around the following topics:

   Capital Punishment, Adult Franchise, etc..

8.8.7 Essays of Definition

This type of essay seeks to clarify a particular term, concept or idea. Essays of definition provide answers to various questions including what, how, why and when, so as to provide a complete understanding of the subject.

8.9 DISCIPLINE-BASED WRITING

Why should teachers from all disciplines encourage writing in their courses? As discussed earliest, the answer is because writing is intimately connected with two fundamental processes – thinking and communicating. Requiring students to write about the content of academic courses is a way of getting them to think about the contents in an active manner, instead of passive memorizing or textbook underlining.

Writing in different disciplines

What does writing in specific disciplines entail? Writings in Physics have a style very different from those in Economics, and both differ from writings in English literature. These differences are much more than the obvious differences in content or subject matter. The differences are in terms of the appropriate structure and organization of the writing, what counts as legitimate evidence for knowledge and appropriate voice, tone and style.

8.9.1 Writing in Mathematics

O'Halloran (2005, p.80) explains the nature of mathematical discourse as **"multi-semiotic"**, based on three semiotic systems performing three different functions, natural *language* contextualises and describes the problem; *symbolism* is used for the solution of the problem, (e.g., $y - 0 = 2(x - 1) - y = 2x - 2$) and *visual images* which describe the problem graphically or visually.

Multiple semiotic systems

- Mathematics symbolic notation
- oral language
- written language
- graphs and visual displays

Grammatical patterns

- *technical vocabulary*
- *dense noun phrases*
- *being and having verbs*
- *conjunctions with technical meanings*
- *implicit logical relationships*

Source:file:///C://Mary%20J%20Schleppegrell.pdf

Writing in math class facilitates learning because through writing tasks, students organize, clarify, and reflect on their ideas.

Reflective Writing in Mathematics helps to

- *build deeper understanding*
- *think through different ways to solve a problem*
- *explain a solution method*
- *justify a solution or explanation*
- *decide what to do next*
- *identify what you wonder about*
- *make connections to prior knowledge*
- *consider how confident you feel about your solution path*

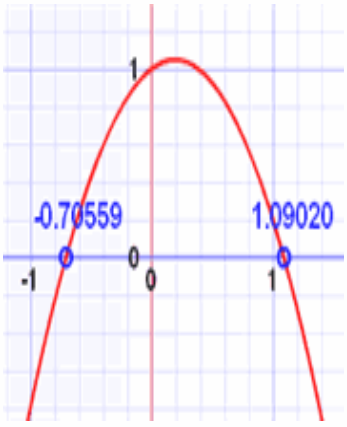
Source: The Critical Thinking Consortium: Tools for Thought

Sample of writing in Mathematics

About the Quadratic Formula

Plus/Minus

First of all what is that plus/minus thing that looks like ± ?



The ± means there are TWO answers:

$$x = (-b + \sqrt{b^2 - 4ac})/2a$$
$$x = (-b - \sqrt{b^2 - 4ac})/2a$$

Here is why we can get two answers:

2. Solve the following word problems:

a) When 9 is subtracted from a number and then divided by 2, the answer is 4. What is the number?

The number is .....

Teacher's role

According to Sipka (1990) ,several strategies can be used for Mathematics writing. *'Free write'* is a strategy in which students simply write without any plan or structure (Sipka, 1990). For this activity, general topics can be given to students such as favourite topic in mathematics and the reasons for it, etc. Another unusual informal writing assignment is the *mathematics autobiography* (Sipka, 1990). In this assignment students describe their experiences with mathematics, about their anxieties, fears or confidence in doing Mathematics. The teacher, in this way, gets an insight into the attitudes and beliefs of students about mathematics.

Use of ***Journals*** is yet another way of promoting writing in mathematics. Keeping a separate journal for mathematics can be motivating for students. Teachers can facilitate student writing in the journal with the help of the following prompts:

- ***Prompts That Assess Attitudes***: Students write about their personal thoughts and feelings about math. Examples: *When it comes to math, I find it difficult to…, I love math because…, People who are good at math…,* and *When I study for a math test, I….*
- ***Prompts That Assess Learning***: Students write about what they've learned and reflect on what they know (and don't know). Examples: *The most important thing I learned today is…, I could use today's skill in my real life when I…, Today I used math when…, At the end of this unit, I want to be able to…,* and *Some good test questions for this skill are….*
- ***Prompts That Assess Process:***Students explain how to solve problems or discuss a particular skill or strategy. Examples: *Two ways to solve this problem are…, I knew my answer was right when…, Another strategy I could have used to solve this problem is…, If I missed a step in this problem, I could have…,* and *The most important part of solving this problem is to remember….*

  Source: http://thecornerstoneforteachers.com/free-resources/math/math-journals

8.9.2 Writing in Science

For scientific writing to permit the close and independent scrutiny required by the scientific community, it must be both clearly written and easily read. Successful scientific writing therefore, is centred on the reader. To this end, it helps to look at scientific writing as both a product and a process – the production of highly structured documents through a systematised process. (Goldbort, 2001: 22)

Science as a discipline is multi-modal. That is, it involves the negotiation and production of meanings in different modes of representation. These modes are descriptive (verbal, graphic, tabular), experimental, mathematical, figurative (pictorial, analogous and metaphoric), and kinaesthetic or embodied gestural representations

of the same concept or process. It is argued that new scientific understandings are generated through multiple representations of ideas, affective responses and evidenced based judgments (Tytler, 2007).

Source:http://andyrunyan.pbworks.com

Scientific Genres: There are five main genres of writing in science (narrative, description, explanation, instruction, and argumentation). Of these, narrative writing is used the least in science.

- ***Description*** involves personal, commonsense, and technical descriptions, as well as informational and scientific reports and definitions. Descriptive writing will often be structured by a chronological series of events; scientifically established classification strategies, systems, taxonomies; or accepted reporting structures of information (who, what, when, where, and why).
- ***Explanation*** involves sequencing events in a cause-effect pattern. Explanations attempt to link established ideas or models with observed effects (if…then).
- ***Instruction*** involves ordering a sequence of procedures to specify a manual, experiment, recipe, or direction. Instructions can effectively use a series of steps in which the sequence is dictated by tested science.
- ***Argumentation*** involves logical ordering of reasoning to persuade someone in an essay, debate, report, or review. Arguments attempt to establish the boundaries and conditions of the issue and then to logically discredit opposing viewpoints in order to support their own, or establish alternative interpretations.

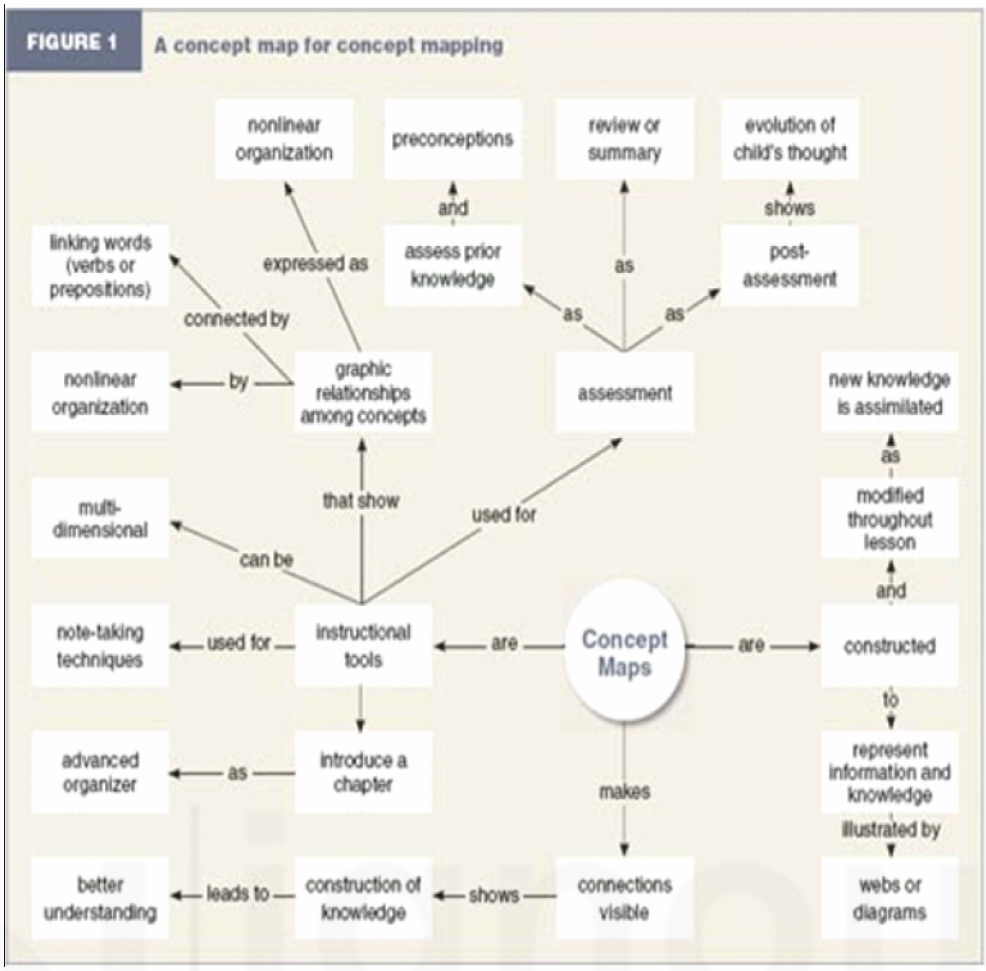
Note: *Genres are flexible, and the writer has to know enough about each one to address the function or purpose of the writing.* (Yore 2000)

Teacher's role

There is enough research evidence to suggest that students clarify their thinking and discover new ideas by writing about science topics (Butler, 1991; Halliday, 1992; Rivard, 1994,). Usually, students select a topic, recall understanding, draft a product, and produce a final piece. Science writing strategies include effective use of the dual nature of science language (Mathematics and English), graphic displays of data, scientific terminology, scientific metaphors, visuals, and the alignment of genre, purpose, language, and audience.

Principles that should guide the development of writing-to-learn tasks in science*:*

- *Keep science content central in the writing process.*
- *Help students structure and synthesize their knowledge.*
- *Provide a real audience for student writers that will "value, question, and provide supportive criticism."*
- *Spend time prewriting, collecting information from various sources, sharpening focus, and planning strategically.*
- *Provide ongoing teacher support, guidance, and explicit instruction.*
- *Encourage revisions and redrafts based on supportive criticism to address conceptual questions and clarify misunderstandings.*
- *Clarify the differences between revision and editing.*



Source: Yore, Enhancing Science Literature for all Student

The following activities could be used for writing-in-science:

- ***Descriptive Essays*** in which students are asked to explain a science concept (e.g., cell division, photosynthesis) in depth.
- ***Project-based activities*** involving collaboration and generation of new ideas;
- ***Notes based on field trips*** where students record their observations of the natural world, flora and fauna.
- ***Logs*** in which students report their experiments conducted in the laboratory are different from Lab Reports. Log entries focus on the observations, hypotheses, methods and findings. The problems experienced and mistakes committed while conducting the experiments are also recorded.
- ***Science diaries*** to record the experience of participating in science quiz, exhibitions and competitions.
- ***Letters*** *to newspaper editors,* members of local community, political leaders, in which students write about contemporary and popular stories and topics for raising issues and/or attracting attention.

Use of Concept Maps in writing

Concept maps show the links between ideas in your **writing**. They can help learners avoid **writing** that lacks clarity and cohesion. Concept maps are a graphical representation of sub concepts to a main topic or central concept, they are

structured hierarchically and show relationship between concepts with linking words. Teacher models how to create a concept map using everyday science examples (buoyancy, water cycle, photosynthesis, mass and matter, etc.)

Source:http://www.nsta.org/publications/news/story.aspx?id=53174

How are concept maps made?

When constructing a concept map, follow these four simple steps:

1. Place the main topic or idea at the top or center of the page.
2. Organize the subtopics in order from the most general to the most specific.
3. Use a linking word in the form of a preposition, verb, or short statement to connect the relationship of one concept (or term) to another.
4. If applicable, add crossing links to show connections and relationships between different words on the map (Llewellyn, 2002).

8.9.3 Writing in Social Science

Social Science writing combines the characteristics of writings in science and humanities. For example, in Geography, the use of graphs, diagrams and maps in combination with the text makes it closer to natural sciences which are objective in nature and 'fact' driven. However it is not possible for social scientists to observe social institutions, social behaviour and social trends under a microscope, in the way as scientists observe the structure of a cell or a leaf. Since Social Sciences study the human aspects of the world which are unpredictable and subject to change, writing in the social sciences is often about presenting arguments with evidence, persuasion, analysing and questioning presumptions underlying different theories, etc. Writings in social science are in the form of *'discussions,' 'analysis', 'explanations'*, etc., each one of which has specific purpose. In the discussions format, arguments are built logically and need to be defended. There is often an overlap between "analyze" and "discuss." Analyzing a given topic involves breaking an argument down to understand and question its underlying assumptions and premises and critically interpreting it in one's own words. Similarly, "compare and contrast" writings highlight the points of similarities and differences between the authors/social scientists.

8.10 'WRITING TO LEARN' CLASSROOM

"Free writes" The objective is to use writing to activate prior knowledge and generate free ideas to help build student understanding around a concept disregarding grammar, spelling, punctuation, and the like. Some hints are:

"Write down all the important points you remember from yesterday's discussion discussion."

"From what you recall from lab report, write down what is to be done in lab today, any procedures that confuse you, and what the experiment is expected to create or show."

You write three key words on the board from the last class or reading and ask students to explain their importance prompt, or use of data in a meaningful way..

Writing Prompts

Using the following prompts helps students to write with a sense of purpose:

Can you think of an example to prove the statement that _____?

> Someone who has a different opinion on this might say _____. How will you counter that argument ?
>
> I am not very clear by what you when you write _____. Can you please reword it?
>
> What makes you think so? "Whether it's a poem or a mathematical or science phenomenon, a teacher can ask questions like 'What do you notice? What does that make you think of? Why do you think so? How did you observe that?'"

Students write technical terms into their own words.

Teacher ask the students to translate the science social science, terminology and concepts they're learning into their own words to understand, clear their misconceptions and write in their own words. This can be done through writing assignments, activities, and discussions.

Predict and Write ! *

Teachers can use this strategy to have students predict and write before doing experiment and observations, for example, teacher can ask, what happens to mass during a chemical reaction, whether the mass would increase or decrease, and why, under what conditions will seeds sprout and become saplings/etc.

The One-Minute Paper

This is an exercise which usually requires three to five minutes. Students are asked to summarize the "most useful " or "most useful" point(s) they learned from the day's lecture, reading assignment, laboratory, or discussion. Textbooks are kept closed. Students get an opportunity to activate their prior understandings.

One-Sentence Summaries**

As an in-class activity or a short homework assignment, students answer these questions on a specific topic in one (long) grammatical sentence: Who Does/Did What to Whom, How, When, Where, and Why? (WDWWHWWW) The topic may be a historical event, the plot of a story or novel, or by substituting another What for Who/ Whom, a chemical reaction, a mechanical process, or a biological phenomenon. This technique makes students distill, simplify, reorganize, synthesize, and "chunk" complex material into smaller, essential units that are easier to manipulate and remember.

8.11 LET US SUM UP

In this unit we have discussed that writing is a learning tool and explored the relationship between writing and thinking. Looking at writing as a process helps develop ideas and enables us to discover what we think. Writing becomes a process of making meaning across the curriculum. We must remember that every writing has a sense of purpose and that writing is a process, comprising of

* *https://www.edutopia.org*

** *http://www.lander.edu*

interrelated stages including negotiations with peers, teachers and readers. Writing is intimately connected with two fundamental processes – thinking and communicating. When students write in subject specific disciplines, they think about the contents in an active manner, instead of passive memorizing or textbook underlining. Active, critical thinking requires higher-level intellectual skills such as the understanding of concepts, the analysis of information, the evaluation of evidence, and the construction and testing of hypotheses. If teachers want students to think about the contents of their course, the students should be given opportunity to write, and thinking will be hard to avoid. When thoughts are written down, ideas can be examined, reconsidered, added to, rearranged, and changed. In this lies the essence of all teaching and learning.

8.12 REFERENCES AND FURTHER READING

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UNIT 9 ASSESSING LANGUAGE ACROSS THE CURRICULUM

9.0 OBJECTIVES

After completing this Unit, you should be able to:

- discuss the different types of assessment and principles of assessment;
- describe the characteristics of a good assessment plan;
- identify content and language demands of different objects;
- assess langauge behaviour and content through a variety of aural, reading and writing tasks; and
- use assessment as a mechanism to improve instruction and make decisions about interventions and reteaching.

9.1 INTRODUCTION

Assessment is an integral part of any teaching and learning programme. Whenever a question is asked and answered assessment takes place. Thus, both teaching and assessment overlap and merge into each other. In fact, it is not possible to have teaching and learning without assessment. Both teaching and assessment are based on the instructional objectives which provide direction to them.

Instructional objectives are those desirable behaviours which are to be developed in students. It is for achieving these objectives that instruction is provided. It is also to see whether and to what extent these objectives have been achieved that the assessment is made.

The three components of teaching and learning objectives, instructional process or the learning experience and assessment constitute an integrated network in which each component depends on the other. Thus, through assessment, the teacher not only assesses as to how far the student has achieved the objectives of teaching but also judges the effectiveness of the learning experiences, methodologies, means and the materials used for achieving those objectives.

9.2 TYPES OF ASSESSMENT

Summative Assessment is the commonly known type of assessment. It comes at the end of the term, course or programme of teaching. It involves a formal testing of the student's achievement. Annual and half yearly examinations in schools, and public examinations are the examples of such assessment. The purpose of this kind of assessment is to grade, rank, classify, compare and promote the pupils. It is also used for the purpose of certification.

Formative Assessment?,on the other hand, is inbuilt in the process of teaching and learning. Formative assessment can be defined as ***assessment for learning***. It is done during the course of instruction with a view to improving students' learning. The purpose of this assessment is to provide feedback regarding the student progress, by finding out the learning gaps and the weak points. The teacher can then organize remedial programmes for them.

Unlike summative assessment which is formal in nature, formative assessment is informal and can be undertaken by using multiple techniques like observation, quizzes, project activities, oral tests, written tests, etc.

Diagnostic Assessment is another kind of assessment which is more closely related to formative than the summative assessment. In fact it is to be carried out along with formative assessment in the class. Sometimes, even the summative assessment may be used for diagnostic purpose. \

9.3 PURPOSE OF ASSESSMENT

Assessment serves a number of purposes in education. Some of the well known purposes are to grade, rank, classify, compare and promote the students. It is also used for certifying the completion of a course, selection of students for admission or scholarship, and for predicting their future success in different endeavours. The basic purpose of assessment in school has been to bring about quality improvement in education which it does by providing feedback regarding pupil learning, classroom teaching, appropriacy of curriculum and course content. It also helps bring about all round development of the students' personality when it is used for developing their non-cognitive capacities.

9.3.1 Assessment for Learning

Assessment of pupil progress contributes directly to improvement in pupil learning. Assessment is used not only for improving instruction but can also be used for gaining insights into students' learning-who is understanding presented content and who needs more support. This is done in a number of ways. Assessment procedures help clarify for the pupil what it is that the teacher wishes her/him to learn. Through this continuous assessment, the teacher knows the extent of learning at every stage. If there are any hard spots or gaps of learning, appropriate remediation can be provided.

9.3.2 Improvement in Teaching

Assessment can also promote the accountability of the teachers. The children's results can tell whether the poor performance of the students is due to poor teaching, defective methodology or due to absenteeism of teachers or callousness in teaching. Thus assessment can work as an important instrument for improvement in teaching.

9.3.3 Renewal of Curriculum or Course Content

Assessment also gives information regarding the effectiveness of the course content. There may be certain curricular areas which may prove to be difficult for the students .This fact can be identified through assessment and its feedback. Hence, assessment can provide a basis for curriculum revision.

9.3.4 Development of Non-Cognitive Capacities

In today's world the development of intellectual powers is not enough. The development of social intelligence, emotional intelligence and aspects of personality is also as vital as the development of mental intelligence. The prime concern of education is to bring about an all round development of human personality by

developing non-cognitive capacities of students along with the cognitive capacities. This can be ensured only when a school takes up the system of assessing these aspects of children's personality.

9.4 CHARACTERISTICS OF A GOOD ASSESSMENT PROGRAMME

The meaning, types and purpose of assessment lead us to arrive at the following characteristics of a good assessment programme in schools.

9.4.1 Assessment is an Objective-based Process

In school we are interested in knowing about the development of the students' personality and his/her educational achievements. These are reflected in terms of intended learning outcomes or the instructional objectives. In order to be meaningful, all assessment in school must be geared to these instructional objectives. The selection of assessment techniques and tools is also based on the objectives to be assessed.

9.4.2 Assessment is a Continuous Process

Since growth is a continuous process, the teacher must remain cognizant of the changes 'that take place from time to time. Continuous assessment is, therefore, essential for getting reliable evidence about pupils' growth and development. To serve this purpose assessment needs to be integrated with teaching.

9.4.3 Assessment is a Comprehensive Process

The pupils have different dimensions of growth - intellectual, emotional and physical. These aspects are represented in the form of different objectives. Unless assessment provides information on all the aspects, it cannot be considered comprehensive enough. Thus, a good assessment programme should assess the scholastic and non-scholastic aspects of pupil growth.

9.4.4 Assessment is a Dynamic Process

Assessment is based on instructional objectives but at the same time it helps us to judge whether those objectives are appropriate for a particular group of students. Similarly, though assessment is based on the learning experience provided in the class, it provides evidence as to the effectiveness of that learning experience. Thus, assessment keeps validating the whole teaching-learning process through regular feedback. A good assessment programme brings in dynamism and leads to continuous improvement in the educational process.

Activity:

1. *In what way can assessment be used for taking decisions at different stages of teaching?*
2. *Mention the characteristics of a good assessment programme in a school.*

Principles of Assessment

Assessment is not just a process where a set of different techniques of testing are used. In fact, it is a process to determine the extent to which the instructional objectives have been achieved by the students.

There are certain principles which may provide direction to the process of assessment. These are:

- *Determining and clarifying what is to be assessed- deciding the content and language objectives*
- *Selecting assessment techniques in terms of the purposes to be served*
- *Combining a variety of assessment techniques for comprehensive assessment*
- *Knowing the strengths and limitations of various assessment techniques*

9.5 ASSESSING LANGUAGE ACROSS THE CURRICULUM

9.5.1 What to Assess - Content or Language?

The dilemma whether we need to assess the content or the language is faced by most teachers while assessing language embedded content. It is important, in this context, that we change our understanding of viewing content and language as separate components in instrution. Recent **views** on language have moved away from viewing language as comprising of grammar ,rules, vocabulary and structure to characterizing language as embedded in a set of domain specific actions within the systems of meaningful discourse within the classroom. (Van Lier & Walqui, 2012). **Academic language is therefore embedded in the classroom practices of the content area and is not** to be viewed as a set of separate conventions. Viewed thus, **the implications on assessment are as follows:**

- **specific content are a** constructs cannot be separated from explicit recognition of their language demands, language **therefore needs to be seen in the context of domains of knowledge. For instance,** we understand by now that there is an explicit language of science which is different from the language of math and the language functions are specific to each of these subjects;
- since language is embedded in the content, academic **language needs to be measured within the content areas?**, and
- assessments need to focus on the level of student's engagement with the language of the content being taught in order to test the aspects of language that are critical to domain specific knowledge representation.

9.5.2 Determing the Learning Objectives

We can easily infer from the Table above that language objectives are directly correlated to content objectives. Once a teacher decides the lesson topic , he/she have to think about the language necessary for learners to complete the tasks associated with the content objectives. The ***academic language is embedded in the lesson's content and as and when identified by the teacher becomes the basis for the lesson's language objectives.***

As a teacher, the following guidelines can help you to start thinking about appropriate language objectives for the topic in your subject:

- Decide what **key? vocabulary, concept words, and other academic words** students will need to know in order to talk, read, and write about the topic of the lesson
- Consider the **language? functions** related to the topic of the lesson (e.g, will the students describe, explain, compare, or chart information)
- Think about the **language? skills? necessary** for students to accomplish the lesson's activities .
- Identify **grammar? or language structures** common to the content area. For example, many science textbooks use the passive voice to describe processes.
- Consider the **tasks?** that the students will complete and the language that will be embedded in those assignments. If students are working on a scientific investigation together, will they need to explain the steps of the procedure? The language objective might focus on how to explain procedures aloud.
- Explore **language learning strategies** that lend themselves to the topic of the lesson. For example, if students are starting a new chapter in the textbook, the strategy of previewing the text might be an appropriate language objective.

(Adapted from Short, Himmel, Gutierrez, & Hudec, 2012.)

9.5.3 Alignment Learning Objectives, Assessment Techniques and Instructional Strategies

Once you have outlined course goals and objectives you need to identify the assessment techniques that will assess what students have learnt. There should be an alignment between learning objectives, assessment techniques and instructional strategies:

- **Learning objectives:** What do I want my students to know after they complete the unit/lesson?
- **Assessments:** What kinds of tasks should I select to assess whether students have achieved the learning objectives I have identified?
- **Instructional strategies:** What kinds of strategies should I select in and out of class so that students can achieve the learning objectives and prepare for assessments?

Activity: Fill the Table below:

OBJECTIVES	ASSESSMENT TASKS
Interpret Exemplify Classify	
Use of academic vocabulary	
Summarize	
Presents a logical flow of ideas	
Infer Compare Explain	

Let us go through the following section to understand how to frame language and content objectives.

Science, States of Matter

Course Objective	Content Objective	Language Objective
Students know that matter has three forms: solid, liquid, and gas.	Students will be able to distinguish between liquids, solids, and gases and provide an example of each.	Students will be able to orally describe characteristics of liquids, solids, and gases to a partner.

Math, Two-Dimensional Figures

Course Objective	Content Objective	Language Objective
Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	Students will be able to classify triangles based on their angles.	Students will be able to read descriptions of triangles and their angles.

Colonial Communities

Course Objective	Content Objective	Language Objective
Students will use a variety of cognitive skills to demonstrate their understanding of the geography of the interdependent world in which we live.	Students will be able show how geographic features have affected colonial life by creating a map.	Students will be able to summarize in writing how geography impacted colonial life.

English Language\Informative/Explanatory Texts

Course Objective	Content Objective	Language Objective
Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. Provide a concluding statement or section that follows from and supports the argument presented.	Students will be able to draft a conclusion paragraph for their expository essay.	Students will be able to use transitional phrases (e.g., as a result) in writing.

Source: http://www.colorincolorado.org

9.6 ASSESSMENT ACROSS THE CURRICULUM

We can divide assessment across the curriculum into the following components:

- *Oral language (Speaking and Listening)*
- *Written language, and*
- *Content*

Ideas in different disciplines are not only generated through oral language; they also get expressed through written work. Assessment of writing skills is an equally important task which the teachers have to pay attention to. In all the disciplines, the use of technical and discipline-specific vocabulary is an integral part of oral and written language. Evaluation of students' writing should focus on student's ability to understand accurate theoretical information, understand the connections between concepts, make connections between ideas and use proper vocabulary and grammar.

Figure 1: ***Assessment Using Oral Language, Written Language, and Content Knowledge***

Levels of Achievement	**Not Yet Proficient**	**Nearly Proficient**	**Proficient**	**Highly Proficient**
Oral Language				
Speaking				
Uses academic and technical vocabulary				
Makes connections between content ideas				
Uses appropriate grammar				
Presents a logical flow of ideas				
Listening				
Asks clarifying questions				
Interprets speaker's ideas				
Paraphrases speaker's ideas				
Analyzes speaker's ideas				
Written Language				
Uses academic and technical vocabulary				
Makes connections between content ideas				

Uses appropriate grammar				
Presents a logical flow of ideas				
Content Knowledge				
Possesses accurate information				
Understands connections between conceptual ideas				
Understands theoretical information				
Understands practical information and relevant applications of science concepts				

Source : Grant,M.C, Fisher, D.etal(2010), Reading and Writing in Science. New Delhi\:Sage

9.6 ORAL ASSESSMENT

Oral assessment typically focuses on the following:

- ***Concepts, theories and procedures. Oral*** tests can be used to assess students' conceptual and procedural ,knowledge and to ensure that the responses are the students' own.
- ***Applied problem solving***. Students can be given real or hypothetical situations to analyse problems, offer solutions, justifying their decisions based on their knowledge and understanding through oral tests.
- ***Competence to communicate*** includes interpersonal competence and intrapersonal qualities. The former includes how the students communicate and interact with their teachers and peer-group.
- Intrapersonal qualities. Intrapersonal qualities include qualities of confidence, self-awareness, professionalism and ethics.

Oral skills involve the following **language operations** with regard to the content in the subject specific discipline :

- *The student is able to clearly convey information to the intended audience*
- *Information is well organized and content is appropriate.*
- *Utilizes correct grammar, intonation, projection.*
- *Demonstrates ability to competently and appropriately utilize supportive audiovisuals and/or technology (presentation software, equipment) to enhance oral communication*

9.6.1 Criteria for Assessment of Speaking Tests

The criteria for assessment of speaking skills may be:

Managing interaction and Providing information

This includes the following:

Elaborating/justifying

Expressing opinions

Justifying opinions

Persuading and comparing

Analysing

Negotiating

Explaining

Narrating

Paraphrasing

Summarising

Activity:

1. *What is to be kept in mind when planning a speaking test in your subject?*
2. *What aspects of the test taker should be kept in mind when designing speaking tests?*

9.6.2 Speaking Tests and Tasks

While it is not difficult to create a speaking test, it is important for us to ensure that the test can be scored, since only then can the performance be reported to the learner or the stakeholder.

Reading aloud In this case the learner is expected to read a text aloud with the correct pronunciation, intonation etc. The disadvantage in this case is that everyone is expected to read the same text to make comparisons easy. It is time consuming and not really attest of speaking. Assessment could also be subjective.

Conversational exchanges Learners are given various situations and are expected to respond by making sentences using particular patterns. Models of expected language may be given or may not be given. It is suitable for use with large groups. Language use is controlled so comparison and reliability is high. Content is closely related to that studied in the class. It is however not very authentic as the test is not communicative. The level of the learner in reading and listening will interfere with the learners' ability to respond to the stimulus.

Oral presentation (verbal essay) In this case a learner is expected to speak directly onto a voice recorder on a set topic for one or more minute. The topic may be given on the spot or in advance. The disadvantage of such a system may be that a wide criteria may have to be included; the topic may not interest the learner; offering choices may make comparisons difficult. If topics are given on

the spot, the performance may be a result of the non linguistic knowledge. Prepared topics could be memorised and may not in any way reflect speaking ability.

Some prompts that can be used for assessing oral skills.

- What did you notice when ..... ?
- What do you think will happen if ..... ?
- How might you explain ..... ?
- What connections can you make between ..... and ..... ?

Information transfer exercises: Learners are given a set of pictures and are asked to narrate the story primarily in a particular tense. It is important to select the pictures without any cultural bias. The picture must be clear and unambiguous.

Role play: In this case, the learner takes on a decided role and interacts in language appropriate to the role. Criteria for assessment must be clearly stated. There is the danger that a learner good at acting may influence the grading. Role familiarity is also likely to affect performance. Using different topics may affect comparisons and objectivity in testing.

Interview: In this case, there is no predetermined procedure. If learners are asked the same questions there is a chance of higher validity. However performance may vary according to the teacher's ability to draw out information. There is the question of familiarity with the learner as well.

Debate and Discussion: Learners are given a question or topic (either teacher or learner determined) to discuss in groups or pairs. A relatively large number of learners can be tested at a time. There may be a tendency for some learners to dominate. This has to be monitored. It may may need more than one examiner for the test to be reliable.

9.6.3 Assessing Speaking

Peer Assessment and Self Assessment

Learners take on the role of interviewer, observer and interviewee. They are provided with a predetermined scale. Teacher's control is very limited; scoring can be influenced by inter learner relationships. It be difficult with the younger age group.

To conclude, it may be said that each speaking test will be made up of one or more speaking tasks and each of these could have a different cognitive load. It could also be live or recorded. It could be individual, in pairs, or in groups small or big. Whatever be the task, the criteria for assessing each task must be clearly stated.

Activity: Select any three types of speaking tests to be used for assessment in your subject and discuss their advantages and disadvantages with your peer group.

Learner's Self Assessment Inventory

Some Questions to Find Out If I am a Good Speaker

Always/Often/Sometimes/Never

- *Do I speak loudly enough to be heard by all those to whom I am speaking?*
- *Do I speak at the right speed for my listeners?*
- *Do I articulate all my words clearly?*
- *Do I use the right vocabulary for my listeners?*
- *When explaining something, do I:*
  - *organise what I am going to say?*
  - *make my point clear?*
  - *explain what I mean by using examples and details?*
  - *use good grammar?*
- *use the words that can best be understood by my listener*
- *Can I describe common objects, events and people so that my listener is clear?*
- *Can I give simple, clear directions?*
- *Can I ask questions about information or opinions expressed by others?*
- *When I speak to anyone do I look for "signals" that the listener understands me?*
- *Do I vary my tone, and know which words to emphasise?*
- *Do I keep in mind my body and facial expressions while I speak?*

9.7 ASSESSING READING COMPREHENSION

Reading is an important skill because text and other reading materials are most widely used in instruction. Assessment of students' abilities to read and learn from textbooks in specific subjects is an important indicator for teachers as it has a direct bearing on instruction and student achievement in subject area.

9.7.1 Components of Reading Process to be Assessed

- vocabulary and structural knowledge;
- knowledge of how a whole text is organised (expository, narrative, cause-effect, compare and contrast, etc)

- content/background: prior knowledge related to the text;
- understanding of literary and informational texts. Informational texts rely upon discipline-specific knowledge and language;
- evaluation of text information and comparison with other sources of information.

9.7.2 Assessment Tasks for Reading

Using Book Parts

Based on the textbook or other printed materials for the class, construct eight to twelve questions focussing on knowledge of book parts and visual illustrations used. Questions such as the following can be framed

- On what page would you find information about Fundamental Rights?
- What does the symbol of a tree on the map on page 27 represent?
- On what page does chapter 5 begin?
- Where would you look to locate a chapter on the digestive system in the text?

  a) Glossary

  b) Table of Contents

  c) Literary Terms and Techniques

- If you came across the word "force" in your reading in the text, where will you find its definition?

You can use additional open -ended or multiple choice to find if students know how to use the textbook features. The students can be asked to use the textbooks/ materials. The assessment criteria consists of the time taken against the suggested time and the number of correct responses.

CLOZE TEST

Cloze tests are easy to construct and can be used conveniently in many content classrooms. When used for assessing content area reading ability, a cloze test is constructed by selecting a reading passage with words missing at regular intervals, which could be the fifth or the seventh word .A minimum of 40-50 blanks is suggested. Each blank space should be numbered for the purpose of scoring. Finally prepare an answer sheet showing the exact word in the original passage.

ACTIVITY: *Complete the following sample cloze test (Source: Themes in World History, Class 11, Unit 2, p50).*

By the sixth century BCE, (1).————had established control over (2)…….. parts of the Assyrian empire.(3)……..of trade developed overland, as well as along the (4)…….. of the Mediterranean Sea. In

the (5)…….. Mediterranean, Greek cities and their ……..... benefited from improvements in ……. They also benefited from trade with……..... people to the north of the……..... In Greece, city-states such as…….. and Sparta were the focus of civic life. From among the Greek states, in the late ……..BCE, the ruler of the kingdom of……., Alexander, undertook a series of……. and conquered parts of North Africa,....., reaching up to the Beas. Here, his soldiers refused to proceed ……. Alexander's troops retreated, though many ……stayed behind……..(49...).....(50)

Answers: 1. Iranians, 2. major, 3. networks, 4. coasts, 5. eastern……

Assessment criteria: A.50 percent and above; Finds the text easy to read, will read without much difficulty; B.35-50 percent: Needs some assistance; C. Below 35 percent :Finds reading difficult, will not be able to read on her own, requires much support.

Using Checklists for Reading Comprehension

Checklists provide information about the skills and behaviours of students related to the reading process in specific subject or topic of study. Checklists are normally not more than one page in length and consist of skills or behaviors that are of particular use in a specific subject. Student performances are generally recorded over a period of several weeks or months.

A checklist to observe students' reading comprehension over several weeks or months would demonstrate the use of following strategies in a variety of contexts:

- *makes connections*
- *predicts*
- *asks and answers questions*
- *infers, visualises*
- *synthesizes*
- *determines important information*
- *identifies point of view and main ideas in the text.*

Checklists are convenient to construct and different checklists can be constructed for students at different stages of reading, e.g; early readers, transient readers, reading for comprehension.

9.8 ASSESSING INFORMATION TRANSFER ACTIVITIES

In data-handling tasks, the following specific skills and techniques involved in completing the task are assessed. Some of these skills (the first four) involve explicit reading function

- *Gathering data*
- *Interpreting data*
- *Analysing data*
- *Comparing different sets of data*
- *Representing data in written, graphic or mapped format*
- *Problem-solving*
- *Drawing conclusions*
- *Hypothesis statements*

9.9 ASSESSING STUDENT WRITING

The ***purpose of assessment*** of student writing include:

to provide evidence of student's understanding of the role different types of writing play in the creation and dissemination of knowledge within specific disciplines.

- to provide evidence of student's knowledge to locate, interpret, and use discipline-specific arguments appropriately. Informs, persuades and motivates.
- to indicate how effectively student uses conventions of organization, utilizes? correct grammar, spelling, punctuation, and writing style appropriate for audience and situation.
- to provide evidence of student's ability to engage critically with secondary sources from a variety of disciplines demonstration of student's knowledge of and ability to write within the main genres of a discipline – i.e. to produce a summary, analysis, a comparison essay, and a close reading in all fields, as well as other specific forms within the discipline studied.

9.9.1 Types of assessment tasks

- *Essays*
- *multiple choice questions*
- *problem solving (mathematics, physics, among others)*
- *analysis of texts, data*
- *case-studies*
- *literature reviews, etc.*

Multiple Choice Questions

Here is an example of how a Science teacher can assess content and language functions in Science through a written task. In the topic, Soils, Rocks, and Landforms, the students are expected to explain that:

- The greater the flow of water across Earth's surface, the greater the rate of erosion and deposition.

  The scientific practices in focus are *interpreting data* and *constructing explanations. The* language functions students will exercise while engaging

in these scientific practices are *comparing, explaining, and providing evidence*.

- Students will compare observational data ,after an investigation, to *explain* the relationship between the amount of water that runs over a surface and the amount of erosion and deposition that occur.

The teacher can provide tasks such as:

- As _____, then _____ .

  As more water flows over a surface, then more erosion and deposition occur.

- When ———————— is changed _____, then _____ happened.

  When the amount of water flowing down the stream table is changed, then more erosion and deposition happened.

- The more/less _____, the _____ .

The more water that flows across the earth materials, the more erosion and deposition that occur.

Worksheet based short answer questions

Metals and Non-metals

Assessment Technique: Based on electron dot structures & bonding worksheet

Objectives: To enable the students to-

- Recall understanding of electronic configuration of elements and write it;
- Correlate the electronic configuration to the valence and type of bonds formed for elements
- Write electron dot structures of elements.
- Understand and show formation of ionic compounds by transfer of electrons.

Task: Individual

Procedure:

The students may be given the following worksheet after the teaching-learning experience of formation of compounds between metals and non metals, i.e. formation of ionic bonds.

Assessment Parameters: Each of the following questions may be assessed giving weightage as follows.

Ql. 3 marks	Q2. 1 mark	Q3. l mark
Q4. 1 mark	Q5. 2 marks	Q6. 2 marks
Student Worksheet		Time: 10 minutes

The atomic numbers of three elements A, B and C are given Answer the following questions on the basis of the data:

A = 12 B = 16 C = 6

Ql. Write the electronic configurations of all the three elements.

.....

.....

Q2. Which of these elements is a metal?

.....

.....

Activity: *What are the content objectives and language functions to be assessed in the above activity?*

Essay- Concept Essay

Essays are a powerful and fairly common tool of assessment. Concept essays are a bit different in that these are fairly short pieces of student writing in which the student is able to demonstrate her understanding of the topic.

Given below is a 'Concept essays' from a course on calculus, an unlikely subject for writing an essay.

(*a*) *In your own words, explain how the ideas of differentiation have been extended to apply to functions of two variables and to vector functions of one variable. Use diagrams to help your explanations. Try to explain why the extensions have been done the way you have explained and not some other way. For example, explain why partial derivatives are the central idea for functions of two variables as opposed to, say, finding the slope of the tangent plane.*

(b) Summarise, in your own words, in about a page or so, the factors which existed in the seventeenth century which led to the main ideas of calculus being invented at that time.

(Source: Roberts, undated; cited in Toohey, 1999: 177)

9.9.2 Using Portfolios for Assessment

A portfolio is a collection of work done by a learner over a period of time. Individual learners can select the work they want to display in the portfolio which may be from day-to-day work or fortnightly/monthly/term tests. In this way, the learners are initiated into taking responsibility for their learning and actively taking part in organizing their learning. A systematically kept portfolio provides information to the learner, teacher and parents about the learning progress made by the learner. The teachers should motivate the learners to review their portfolio periodically, say once a week/fortnight which is a kind of self-assessment by the learners. Portfolio is a systematic progression of tasks that can be linked to specific course goals and objectives and provide an opportunity to the teacher to interpret whether each goal was accomplished .What goes into the portfolio will largely depend on the learning objectives you set for each class.

A portfolio may consist of the following:

- Sentences/paragraphs demonstrating vocabulary/grammar skills (Language)
- Different kinds of writing samples (letter, report, essay, story, lab reports textbook reviews, etc in Language, Social Science and Science)
- Unit tests
- Learning goals

- Self assessment report
- Teacher observations
- Parent observations

Check Your Progress 1

Design a suitable marking code which you could use for correcting writing errors in the subject of your choice.

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9.9.3 Rubrics

4 Outstanding	1 Limited	2 Adequate	3 Strong	4 Outstanding	Score
Knowledge of Writing Conventions (Grammar, Syntax, Spelling)	Communicates ideas poorly and makes pervasive errors	Communicates ideas successfully, yet demonstrates some difficulty in mastering the writing	Communicates ideas well by demonstrating an accurate knowledge of writing conventions	Communicates ideas clearly by demonstrating an excellent knowledge of writing conventions	
Writing Organizational Skills	Shows difficulty in presenting ideas in an organized sequence	Adequately develops ideas following a logical sequence	Successfully develops ideas following a logical sequence	Develops ideas exceptionally well following a logical sequence	
Writing Argumentation Skills	Lacks enough persuasive examples in order to clarify the overall argument.	Persuasive examples to support the essay may consist somewhat of opinion or unproven data.	Uses persuasive examples well to support the overall essay. Evidences clear understanding and evaluation of different perspectives	Uses exceptionally persuasive examples to support the overall essay. Shows exceptional ability to understand and evaluate different perspectives	
Conventions of the Discipline	Shows some knowledge of the subject and limited use specialized concepts	Shows knowledge of the subject and engages in use of specialized concepts	Shows clear understanding of the subject and facility with specialized concepts	Shows deep understanding of the subject area and high degree of facility with specialized concepts	
				Average Score	

Adapted from http://web.stu.edu

9.9.4 Rubrics for Self-Assessment (Mathematics)

Using a rubric for self-assessment of written work in Mathematic's

Competence in mathematics demands more than measurement of performance skills of students. Assessment should also focus on whether students have managed to connect the concepts they have learned, how well they can recognize underlying principles and patterns amid superficial differences, their sense of when to use processes and strategies, and their grasp and command of their own understanding. The following rubric is an example of how a teacher can achieve this objective.

Guide to Completing the Problem

1. Conceptual understanding of the problem
   - I used diagrams, pictures, and symbols to explain my work.
   - I used all the important information to correctly solve the problem
   - I have thought about the problem carefully and feel as if I know what I'm talking about
2. Procedural knowledge
   - I used appropriate mathematical computations, terms, and formulas.
   - I correctly solved and checked my solution to the problem.
   - I used mathematical ideas and language precisely.
   - I checked my answer for correctness.
3. Problem-solving skills & strategies
   - I looked for other possible ways to solve the problem.
   - I used problem solving skills/strategies that showed some good reasoning.
   - My work is clear and organized.
4. Communication
   - I communicated clearly and effectively to the reader.
   - In my solution, one step seems to flow to the next.
   - I clearly used mathematics vocabulary and terminology.
   - My sentences make sense and there are no words left out.

(Source: www.nap.edu/read/2235/chapter/6#72)

9.12 LET US SUM UP

Assessment is a very important aspect of the teaching – learning process. As a teacher, it is important to understand the purpose and types of assessment. The Unit gives a context for assessment in the teaching learning process by emphasising on the link between learning objectives, strategies for assessment and instruction.

The Unit discusses the importance of viewing language as a part of the practice of teaching context and separate from it. Aspects of knowledge critical to representation of subject specific knowledge in need to be assessed. The role of the teacher in identified learning objetives in content area and language demands of the content is very important. The Unit provides a variety of tests at a tools for assessment in of content and language across the disciplines.

www.nap.edu/read/2235/chapter/6#72