UNIT 3 UNDERSTANDING LANGUAGE ACROSS THE CURRICULUM

Structure

3.0 OBJECTIVES

At the end of this Unit, you will be able to:

- appreciate that language is the foundation for learning;
- understand that particular kinds of activity requires particular kinds of language and language reflects the activity; the nature of an activity can be determined by the style of language use;
- comprehend that use of the particular type of language in a specific context, is referred to as 'Register'.
- differentiate between everyday registers and academic registers and analyse the features or components of academic registers;
- analyse that different subject areas employ their own languages and appreciate the importance of learning registers of school disciplines to facilitate learning of the discipline;
- appreciate that reading, writing, listening and speaking need to be integrated within each discipline to ensure that students have opportunities to develop subject-specific literacy skills so that; and
- design activities to promote language learning through content learning and integrate language and disciplinary literacy in subject classrooms.

3.1 INTRODUCTION

All learning involves language. Language enables us to understand new concepts, exchange ideas and communicate our thoughts. The language that children use at home, especially in the later years, is different from the language spoken at school. In school, the use of language differs according to the subject area. While teaching in English, teachers teach the English of Science and Technology, the English of the Classical Literature, the English used in official documents, and the spoken English of Mathematics. The word 'English' is therefore an abstraction which conveniently refers to a wide range of different forms of communication. But if we want to understand any language and use it for various purposes, or to teach that language, whether it is English or any other, as a first, second, or foreign language, we must look a little more closely at the nature of the varieties within that language. *We need to understand that particular kinds of activities require particular kinds of language and language reflects the activity. It is easy to determine the nature of an activity by the style of language use. By changing the style, tone or the vocabulary, we can change the language and the situation. When we talk about the use of the particular type of language in a specific context, we are referring to the term' Register'. Learning a school subject involves learning its register.*

Students need to learn the requirements in a particular subject area by understanding the specialized 'registers' of a particular discipline, whether, Chemistry, Sociology, Commerce, or English .By doing so , they can produce written texts like persuasive or argumentative essays in History or Science, lab reports in Science and summary/synthesis prose responses in Literature on final exams. While students have complex and sophisticated ideas, the way they present them, does not meet the academic expectations. Students do not understand the specialised vocabulary, meaning of technical terms, grammatical and lexical features and are therefore unable to write well-constructed essays. Students also wrestle with comprehending meaning of passages they read in the textbook. The lack of focus on language affects students from weaker socio-economic backgrounds more as they continue to underachieve.

3.2 HOW LANGUAGE VARIES: EVERYDAY REGISTERS AND ACADEMIC REGISTERS

Think and reply. Do you speak the same way at home as you speak with your students in the classroom? Do you speak differently when talking with your doctor than when you are chatting with your friend on the telephone? The answer is obviously 'no' because we all speak in different ways in different situations. These ways of speaking differently are called registers of language.

Think of the following spoken texts :

Conversation between friends

Commentary of a football match

Dialogues in a popular TV serial

News bulletin on radio

An academic lecture

Conversation between two doctors about a patient's surgery.

Examples of register include the language of a newspaper article, the language of a conversation about the weather, academic prose, a recipe in a cookery book, and so on.

Consider the following samples from different 'registers' of English taken from the newspapers:

1. PLAINTIFF alleged that defendant did beat, punch, and torture the plaintiff, and did damage and/or destroyed the expensive furniture belonging to plaintiff.'
2. EMBASSY SALE: By virtue of a Power of Attorney, issued by the District Magistrate, Saket, all the property of the Embassy of Timberlane, will be sold at Public Venue on Friday the 29th day of December, 2016, at 12 o'clock, local time noon of said day, property located as described below. [description omitted].
3. SAUTEED MARINATED VEGETABLES. Cut the vegetables in thick slices and parboil them. Marinate for several hours in a mixture of 1/ 2 cup olive oil, 3 tbsp. lemon juice, 1/4 tsp. Tabasco, 1 tsp. salt, and 1 tbsp. each chopped coriander and chopped chives. Remove from marinade, dip in flour, and fresh bread crumbs, and saute in hot oil until golden brown. Serves 4.
4. SITUATION VACANT. Requires 1. Teaching Faculty 2. Lab Assistant cum support. Faculty Qualification: BE/B.Tech/MCA from recognised University/'B' level from NIELIT. Experience: Minimum 1 Year. Application with Boi-data should reach 103, Pusta Road, Delhi by 30.03.2016.
5. LOST AND FOUND I, Shahana Khan, D/O M.A Khan, R/O 186/16 Shivaji Nagar, Hissar, inform you that my Birth Certificate and marksheet of Secondary School Examination, CBSE has been lost.
6. PUBLIC NOTICE CHANGE OF NAME: TO WHOMSOEVER IT MAY CONCERN. I, Sachin Malhotra, S/O Sh Pravin Malhotra, hereby give notice to the public at large that my name is changed to Siddhant Malhotra from the date of publishing this newspaper.
7. WEATHER Forecast. IMD, DELHI: Sunshine followed by increasing clouds. Temp: Max 40 degree celsius Min 35 degree celsius. Likelihood of winds and shower tomorrow.
8. MATRIMONIAL ALLIANCE WANTED ;Wanted a tall, fair ,beautiful English speaking girl for our Engineer son employed with a MNC, earning a six figure salary.

What does the language in each of these 'registers' tell you about the situation, the vocabulary, the style or the tone of the language? What is the difference between the language of a weather forecast and that of a recipe.

The kind of language used in each of the above examples reflects something of the situation in which it was produced. Particular kinds of activities require particular kinds of language. Very often, the nature of an activity can be determined by the style of language use. The style, tone or vocabulary of language changes with a

new type of activity.

What do you gather from the above? Is there is a difference in the vocabulary and syntex? When we observe language use in various contexts, we find differences in the type of language selected to suit different types of situation. We know that a certain kind of language is appropriate to a certain use and we can often guess the source of a piece of language from our familiarity with its use. For example, a religious discourse, a popular film song, a sports commentary, a teacher's lecture on biology, and a politician's election speech are linguistically distinct. The language of recipes certainly differs from the language of describing a scientific process.

Language variation is a result of differences in the social situation of use. This affects the word choices and syntactic ordering of utterances (lexico-grammar) and is called a register.

THINK AND REFLECT

1. Register is situationally appropriate language. For example, "Hello , there" is okay for the friends, but how do we say this to our teacher in school/college? How about 'Excuse me, Professor'"?

   We need to remember that varying our language according to the context is important. What we say, and how we say it, actually counts.

2. Notice use of register in everyday situations. Notice the different registers people speak with. Read the letters to the editor in that day's paper, listen to a radio broadcast, watch people in conversation at a dhaba or a tea shop.

   What register are they using? What features identify it as that register? Why do you think the speakers chose that register?

3. You have to write a letter of complaint to the Electricity Department for an inflated bill you have received.

   Will you write it in "usual" more conversational English or in precise business English? Will the two letters get different results? In what way? Which would the people in the Department, as readers or recipients of the letters be more likely to respond to favorably and why?

4. Identify different varieties of registers and their use in your everyday life. For example, a 'business' register? What are its features? When might it be useful? Is there a "medical "register?

   When we visit a doctor, often, we do not understand what he/she is saying. This is because, while speaking English, doctors use a medical register that is difficult for people outside the field to understand. Patients might be described by doctors as having "hypertension" rather than "high blood pressure," "anaemia" rather than "too little haemoglobin," and "cardiac arrest" instead of "heart attack.". Learning some of these word helps us in learning the language of power—that is, the language used in doctor's, lawyer's offices, and business offices.

5. How does knowledge of language help people become powerful?

3.2.1 Oral and Written Registers

All speakers use language in different contexts, under different circumstances, for different purposes. A language is primarily distinguished into spoken and written forms, both having different roles. Radio talks, academic discussions, and sermons are examples of registers within the spoken mode, while essays, technical articles, or sets of instructions in manuals are clear instances of registers within the written mode. You will agree that spoken and written English differ both in grammar and lexis. Even within the same field, like literature, we may identify different modes such as the fictional or narrative, dramatic, and poetic - corresponding to different genres - and hence distinct registers within the register of literature. Because situations tend to change and are varied, linguistic differences are a result of the differences in situations. For instance, the language of football differs from that of a church sermon in lexis as well as in syntax.

3.2.2 Differences in Language Features of Registers are not Arbitrary

Think of a sermon and a conversation between two or more participants. They are both in the spoken mode but they differ in the level of interactivity. Conversation is highly interactive, with two or more participants participating, whereas sermon is given by one person. Conversation can be about any topic and the purpose may not be specific, it can shift depending on the participants feelings and attitudes. Sermons, on the other hand, are more specific in terms of topic (religion, lifestyle, philosophy) and purpose (informative, persuasive). The language of conversation has many second person pronouns, whereas a sermon is likely to have more complex sentences and repetitions.

Language features like words, vocabulary distributions, grammatical classes, syntactic constructions, and so on are not arbitrarily used and different registers use the structure in varying degrees.

3.2.3 Same Individuals Use Different Registers in Different Situations

Individual speaker usually controls a range of registers extending from informal ones to formal ones. Small children control fewer registers than adults. Age and socio-economic status determine register control. We should also remember that the same individual uses different varieties of a language or registers in different situations. For example, the kind of English a person uses with his wife is certainly not at the shop or at the railway booking counter.

Register is a set of linguistic forms used in given social circumstances the kind of English he may use with his colleagues or his superior in the office. Later in the same day, the same person uses yet another variety of English.

Each register is signaled by changes in phonology (sounds), syntax (structure), and lexicon (vocabulary).

> THINK AND REFLECT
>
> If you had access to only a single variety of language, how would you express such things as seriousness, mockery, humor, respect, and disdain? Will you have difficulty in expressing yourself as the social situation changed around you?

3.2.4 Academic Registers

The term ‘academic registers is used to describe the characteristics of language

that make it academic. What are the characteristics of the language spoken at home and the one spoken at school? Is the language of school different from the language of everyday use? What is the difference ? One difference is that ,as compared to the language of everyday use, school language is more formal. The language of school is the language which the pupils use for thinking, for formulating and comparing ideas in specific subjects, for interacting with their peers to test their understandings and for making meanings of what they learn. It is the language that students must master in order to succeed in any content area.

Although Cummins has been criticised for creating a differentiation between conversational ability and the ability to use language for advanced literacy in this model, it is interesting to read and give one's opinion on it.

BICS AND CALP (Cummins, J. 1979)

It is important to note in the context of language skills ,the distinction between two sets of language skills – Basic Interpersonal Communication Skills (BICS) and Cognitive Academic Language Proficiency (CALP). BICS refers to the everyday language needed to interact socially- the abilities of interpretation, expression and negotiation are essential for interpersonal communication. BIC skills are mostly employed by students in social situations, when they are in the playground, canteen, bus, and talking on the phone, etc. Since these interactions take place in a meaningful social context, the language required in these situations in neither very specialised nor cognitively very demanding.

Cognitive Academic Language Proficiency, on the other hand, is the type of language which is essential for students to succeed in school .It is concerned more with the abilities of thinking and learning effectively from the curriculum processes. Since it refers to formal academic learning ,it includes listening, speaking, reading and writing about the subject area and content material. Academic language proficiency is ,however, not only about understanding of content and good vocabulary .It includes other higher order skills such as comparing ,classifying, synthesizing, evaluating and inferring. Academic language tasks depend on the context of the subject and as student progress to higher classes,, language becomes cognitively more demanding. In bilingual contexts, skills and concepts learnt in the first language are transferred.

Go through the above box and write down. What do you think of the differentiation? Let us go through the following definitions offered by various scholars to reinforce our understanding of academic language

- Academic language is "the language that is used by teachers and students for the purpose of acquiring new knowledge and skills . . . imparting new information, describing abstract ideas, and developing students' conceptual understandings" (Chamot & O'Malley, 1994, p. 40).
- "Academic English is the language of the classroom, of academic disciplines (science, history, literary analysis) of texts and literature, and of extended, reasoned discourse. It is more abstract and decontextualized than conversational English" (Gersten, Baker, Shanahan, Linan-Thompson, Collins, & Scarcella, 2007, p. 16).

In other words, we can gather from the above that:

1. Academic language is the oral and written language (and visual, auditory, etc) that students need in order to
   - Understand (real, listen, think)
   - Communicate (listen, speak, write, connect)
   - Perform (think, read, write, listen, speak, solve, create)
2. Academic language is necessary to participate in the content to
   - think
   - question
   - talk
   - learn

LANGUAGE	
Academic	**Everyday**
• Formal and authoritative • Display of knowledge and ideas mostly through written work • Sentences used are long and complex. • Action is changed into nouns to build concepts (pollution) • Passive voice is common (How much money was spent) • Long noun phrases (identifying the causes of pollution in cities…)	• Casual and friendly • Verbal, informal, use of everyday meanings • Smaller and simple sentences are used. • Action is through verbs indicated (smoke, dust) • Active voice is used much (use of money did they spend?) • Noun phrases which are short (polluting Cities…)

The use of academic language also differs from grade to grade depending on the learner characteristics like age, etc. The language which a child is able to master at the age of five varies greatly in sophistication and complexity as compared to the writing of a research thesis by an adult learner. Academic language is therefore developmental in nature, proceeding from simple to complex.

Mastering school language is a challenge for all students. It is important for pupils to develop competencies to deal with the language demands placed on them for learning specific subjects. The teaching of school language is a complex process and requires an understanding of language needs of the learners and language demands of the content .Teachers need to identify and consider the language demands as they plan to support student learning of content.

3.3 ACADEMIC LANGUAGE

What is Acvademic Language

Academic language is characterised by linguistic features which are specific to academic disciplines (Mathematics, Arts, Science, Social Science and Language) including grammar, vocabulary and discourse features across the four domains of language, namely, reading, writing, speaking and listening.

Is reading, writing, speaking and listening in Science different from reading, writing, speaking and listening in Social Science? If it is, then in what ways? What are the different thinking skills that underpin the language structures in different subject areas? In certain content areas such as Science, language and literacy may be exploratory and hypothetical; whereas in areas such as Social Sciences, language and literacy may be sequential or descriptive, The language for Physical Education focuses mostly on instructions and adverbial phrases ,whereas in English as a subject, the emphasis is on literary language that may have features such as metaphors and similes, etc.

Using School Registers to Teach

In the Mathematics classroom, language is required to be used in a particular kind of way which is different from how language is used in a science classroom. *Learning mathematics involves learning its register as learning science or history involves learning registers of science and history. the language of a discipline does not only mean a list of vocabulary or specialised words with specific meanings but the competence to communicate effective and to contribute to the knowledge of the discipline (oral and written) necessary.*

To continue our discussion, let us take a look at the language of NCERT's Science textbook of class IX, Chapter 3 Atoms and Molecules. (NCERT,

> *According to Dalton's atomic theory, all matter, whether an element, a compound* or *a mixture is composed of small particles called atoms. The postulates of this theory may be stated as follows: (i) All matter is made of very tiny particles called atoms. (ii) Atoms are indivisible particles, which cannot be created or destroyed in a chemical reaction. (iii) Atoms of a given element are identical in mass and chemical properties. (iv) Atoms of different elements have different masses and chemical properties. (v) Atoms combine in the ratio of small whole numbers to form compounds. (vi) The relative number and kinds of atoms are constant in a given compound.*

Take a look at the underlined sentences, phrases or clauses. They are in the passive voice or in simple present tense. This denotes that the Science register expresses neutrality, i.e. that facts have been proved, experimented or tested and accepted universally as truth. Textual language in Science tends to emphasize the passive voice, as a result, people are rarely present in Science talk or text, as either agents or participants (Lemke, 1990) There is an element of authoritativeness and human beings or any reference to self is hidden behind events, discoveries or concepts. Scientific discourse is kept "objective" as opposed to" subjective" by the use of simple present tense and passive voice. This gives the impression of an invisible ,objective author providing expert information. Abstract noun phrases that are derived from nouns are used,(e.g., the revolution of the sun around the earth). Complex content is put within shorter sentences with the help of long and complex noun phrases and clauses and technical vocabulary is used to pack more dense information effectively. (e.g., a natural solid with a definite chemical structure, the heat and pressure deep inside the earth;) Narrative and dramatic words are avoided and so are colloquial words.

Science requires different reading skills than reading fiction. This means understanding specialized vocabulary terms and phrases that are unique to Science, making sense of patterns and organisation of structure and texts of textbooks, recognising implicit and explicit cause and effect relationships and drawing inductive and deductive inferences. Writing in Science focuses on students learning how to describe, explain and predict phenomenon (Hand, Wallace & Yang, 2004).

Words are important in Science but more than in any other subject, there is a great deal of combination and interaction of words, pictures, diagrams, images, animations, graphs, equations ,tables and charts (Lemke 1998, Jones 2000). They all convey meaning in different ways. Students need to master these" multi-modal" or "non-linguistic" modes of representation to gain an understanding in Science A Science teacher should be sensitive to the linguistic features which reveal the characteristics of science and scientific processes viz. observers, formulation of hypothesis, testing and so on.

Even though Mathematics has a "universal" language, academic language plays an important role in Mathematics instruction. Mathematics has its own distinctive language ,grammatical features and language structures that make Mathematics texts are more precise, authoritative and technical. It is the challenges these features pose that may hinder student learning. As Dale & Cuevas, 1992 point out, challenges of the language of Mathematics include specialized vocabulary and discourse features along with everyday vocabulary that acquires a different meaning in mathematics .

Similarly, following is a corpus based analysis of .NCERT Mathematics textbook of class VI which shows how the language of Mathematics operates and where the use of determiners and prepositions are used to convey the mathematical concept of problem solving and abstraction. The most frequently used words are not the 'content' words, they are function words like articles, prepositions and so on. The word 'number' appears as the ninth most frequently used word. This reveals how the mathematical ideas and thinking are conveyed in language in assumptions, calculations, logical sequencing and thinking. Prepositions, determiners and conjunction play important role in making the calculations effective. For example 'into' matters more when we do a multiplication.

N	Word	Freq.	%	Texts	%	mmas	et
2	THE	410	5.19	1	100.00		
3	TO	179	2.26	1	100.00		
4	IS	165	2.09	1	100.00		
5	AND	164	2.07	1	100.00		
6	IN	153	1.93	1	100.00		
7	OF	143	1.81	1	100.00		
8	A	133	1.68	1	100.00		
9	NUMBER	122	1.54	1	100.00		
10	NUMBERS	113	1.43	1	100.00		
11	WE	103	1.30	1	100.00		
12	DIGIT	72	0.91	1	100.00		
13	YOU	63	0.80	1	100.00		
14	ARE	50	0.63	1	100.00		
15	AS	50	0.63	1	100.00		
16	FOR	47	0.59	1	100.00		
17	OFF	46	0.58	1	100.00		
18	IT	45	0.57	1	100.00		
19	PLACE	44	0.56	1	100.00		
20	CAN	43	0.54	1	100.00		
21	THIS	41	0.52	1	100.00		
22	DIGITS	39	0.49	1	100.00		
23	AT	38	0.48	1	100.00		
24	GREATEST	38	0.48	1	100.00		
25	HOW	38	0.48	1	100.00		

Figure: Corpus analysis of mathematics textbook: Frequency counts of chapter 1 Class VI.

The discipline of History has its own specialized vocabulary, grammatical patterns and genres. Vocabulary in History comprises of words for naming objects (artefacts, monument,) describing time (decade, century, medieval, modern, ancient) and historical processes and historical concepts (colonialism, revolution, invasion, archaeology). Some Tier 2 words that are used are analyse, describe, explain, compare and contrast, etc.

History makes great linguistic demands on students as it is constructed mainly through texts and unlike Science cannot be experienced 'hands-on' through observations. History texts have information that is densely packed with multiple meanings, background information of the previous events, is presented, which is significant to the remainder text, followed by a chronology or record of events and the final part deduces the historical significance of events. Since History is one of the most text -rich subjects taught at school, much of what students learn is derived from textbooks, popular magazines, primary and secondary sources and supplementary readings and this poses a big challenge to students which is evident in what Jean Fritz (1982) wrote,

"I skimmed through pages but could not find mention of people at all, there was talk of dates…., cultivation… ..population, ...immigration…..but no human beings….."

Whether children are learning Mathematics, Geography or Science, language is the tool for learning. Reading, writing, listening and speaking are indispensable tools for the learning process as the students move across the curriculum. Surveys carried out by different agencies, national and international, each year point out to the poor performance of students in the area of reading, comprehension and writing leading to poor achievement in different subjects.

According to the Report of the National Achievement Survey published by NCERT in 2014, based on a sample comprising of 1,88,647 students from 6722 schools, from 33 States and Union Territories of the country.

Report of the National Achievement Survey

A reading comprehension test was administered to Class 8 students. The items were designed to test a range of relevant cognitive processes or 'reading skills', classified as abilities to: 'locate information', 'grasp ideas and interpret' and 'infer and evaluate.'

Locating Information : NCERT data on the performance of students of Class VIII on the cognitive process of locating information shows that overall, 54% students were able to respond correctly to items based on the ability to 'locate information', i.e.; simple retrieval of information from the given text.

The data on performance of Class VIII students on the Cognitive Process of Infer/Evaluate clearly shows that NOT even half of the students could respond correctly to a single item within this cognitive process.

Overall, it can be confirmed from the above presentation and discussion that 'Locating information' was found easiest whereas the abilities to 'Infer and Evaluate' were found to be the most difficult. The difficulty of items testing the ability to 'Grasp ideas/ Interpret' fell between the above stated competencies.

http://www.ncert.nic.in/departments/nie/esd/pdf/NAS_8_cycle3.pdf,p 86

Activity: Read the above information in the box and think of the implications of the results of the survey on learning in different subjects like Mathematics and Science. What is the relationship between the ability to infer and evaluate and learning Science and Mathematics?

The weakest area is in writing skills, the majority of children are underachieving in this vital area. This indicates the need for children to read more and to be taught strategies for improving vocabulary, grammar and sentence structures to meet their language needs in the content areas – Mathematics, Science and Social Studies.

Attention to the language demands of subjects and how curriculum content is taught and learned through language (Mohan 1986) enables mainstream teachers to plan for these needs. Within any activity or topic, teachers can plan for different strategies for conveying curriculum content and developing students' thinking skills by using language structures and content specific vocabulary.

3.3.1 Components of Academic Language

In this section, we will discuss the key components of academic language. These are:

1. *Vocabulary*
2. *Syntax*
3. *Language function and*
4. *Discourse*

VOCABULARY

Vocabulary refers to students' understanding of oral and print words and includes conceptual knowledge. In the early 20th century, John Dewey (1910) had stated that vocabulary is critically important because a word is an instrument for thinking about the meanings which it expresses. Vocabulary instruction in school is neither frequent nor systematic. Many words are unfamiliar to most students as they contain ideas necessary for a new topic. These are subject specific words that label content discipline concepts, subjects and topics. They are not very frequently used and are learnt when a specific need arises such as learning *'fulcrum'* or *'pulley'* during a Physics lesson will come across many new and unfamiliar words.

SYNTAX (Structure of a sentence)

The word 'syntax' refers to the set of rules and principles that govern the structuring of a sentence or a phrase in a language. Different words, if not put in an order, can create confusion or make meaning ambiguous. Syntax is how different parts of speech are put together to convey a complete thought. To convey meaning is one of the main functions of syntax. It involves the ordering of words to say what is meant to be said.

LANGUAGE FUNCTION

Language is used in a variety of purposes-both informal and formal. The purposes for which we use language to communicate is called language function, we use language to accomplish something in formal or informal settings, for social or academic purposes. Academic language function is the function through which students can express their developing understanding of the newly learned content. While using language for a specific purpose or function, learners also use grammatical structures and vocabulary.

Making the learners understand the language from the language functions perspective makes it easy for them to identify the language demands associated with specific academic tasks like *comparing* and *contrasting*, describing and *sequencing*, etc. If the learner learns how to use the language function *comparing* for instance, she can apply that skill to a range of contexts across different content areas.

She can compare events, ideas, phenomenon, objects in Science, Mathematics, Social Science, Literature, etc. With increase in competence in language functions, the learner can gradually use complex sentence structure.

Many of these language functions coincide with the higher order thinking skills in Bloom's taxonomy.

1 Knowledge Identification and recall of information	define fill in the blank list identify	label locate match memorize	name recall spell	state tell underline
	Who _____? What _____? Where_____? When _____?		How _____? Describe _____. What is _____?	
2 Comprehension Organization and selection of facts and ideas	convert describe explain	interpret paraphrase put in order	restate retell in your own words rewrite	summarize trace translate
	Re-tell _____ in your own words. What is the main idea of _____?		What differences exist between _____? Can you write a brief outline?	
3 Application Use of facts, rules, and principles	apply compute conclude construct	demonstrate determine draw find out	give an example illustrate make operate	show solve state a rule or principle use
	How is _____ an example of _____? How is _____ related to _____? Why is _____ significant?		Do you know of another instance where _____? Could this have happened in _____?	
4 Analysis Separating a whole into component parts	analyze categorize classify compare	contrast debate deduct determine the factors	diagram differentiate dissect distinguish	examine infer specify
	What are the parts or features of _____? Classify _____ according to _____. Outline/diagram/web/map _____.		How does ____ compare/contrast with ___? What evidence can you present for _____?	
5 Synthesis Combining ideas to form a new whole	change combine compose construct create design	find an unusual way formulate generate invent originate plan	predict pretend produce rearrange reconstruct reorganize	revise suggest suppose visualize write
	What would you predict/infer from _____? What ideas can you add to _____? How would you create/design a new _____?		What solutions would you suggest for ____? What might happen if you combined _____ with _____?	
6 Evaluation Developing opinions, judgements, or decisions	appraise choose compare conclude	decide defend evaluate give your opinion	judge justify prioritize rank	rate select support value
	Do you agree that _____? Explain. What do you think about _____? What is most important?		Prioritize _____ according to _____? How would you decide about _____? What criteria would you use to assess ____?	

Source:http://www.flicker.com/

DISCOURSE (Vocabulary, syntax, language function)

Discourse refers to how members of a subject area speak and write about their content area. Discourse is putting words and sentences together to clearly communicate complex ideas. It contains several elements such as structure and organisation, manner of speaking, complexibility, intelligibility and audience. Discourse can be understood as a process of communication. It is communication but it is a specific style of communication which is used mostly in the world of academics. Textbooks, research articles, dissertations, science journals, logs, etc., are examples of different types of discourse.

3.4 DEVELOPMENT OF ACADEMIC LANGUAGE

In the initial years there is a marked overlap between the language child uses at home and the language used at school. Gradually, there is an increase in the level of sophistication and complexity in the language used at school. Academic language is not exclusive of features of social language, the overlap continues in classroom situations in the two registers in the form of classroom language and social interaction as well as language related to academic study.

Academic language proficiency is acquired over a long period of time. Research studies suggest that that academic language is best learned through meaningful input, focus on content and language (dual focus) simultaneously, and practice in the use of language and by drawing students' attention to linguistic forms and language functions.

3.5 LANGUAGE IS THE FOUNDATION OF LEARNING

For teachers to incorporate the goal of making their students acquire proficiency in reading and writing the language of Science, Mathematics or Social Science, it is important that they have an understanding of the various forms of literacy attainment.

Shanahan and Shanahan (2008) work is important in this regard .They examine how literacy development progresses in three stages: basic literacy, (decoding and knowledge of words that appear frequently in all reading tasks) intermediate literacy, (common word meanings, basic fluency)and disciplinary literacy (literacy skills in specific disciplines: history, science, mathematics, literature, etc). The third stage of literacy called disciplinary literacy is where the skills are not formally taught but are difficult to learn because the nature of discipline specific texts becomes difficult and abstract. These three stages can be presented graphically in the form of a pyramid. Although these stages do not develop in a linear fashion, it is important to master each of these stages to acquire proficiency in reading. Proficiency is acquired in each stage when readers repeatedly draw on their previous understandings of supporting comprehension for reading new texts.

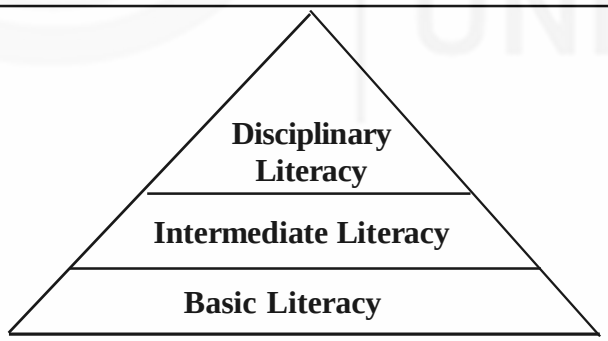


Figure: The Increasing Specialisation of Literacy Development

Basic Literacy: Literacy skills such as decoding and knowledge of high-frequency words that underlie virtually all reading tasks.

Intermediate Literacy: Literacy skills common to many tasks, including generic comprehension strategies, common word meanings and basic fluency.

Disciplinary Literacy: Literacy skills specialised to history, science, mathematics, literature or other such matter.

Source: Timothy Shanahan and Cynthia Shanahan (2008) "Teaching Disciplinary Literacy to Adolescents Rethinking Content-Area Literacy", Harvard Educational

Review, Volume 78: 1 (Spring 2008, p.44).

You will notice that at the *base* of the pyramid, we have the basic skills which are foundational for all reading tasks. These are decoding skills, comprehension of print and literacy conventions and recognition of high frequency words.

At the *upper primary level*, students move into the *second stage*, i.e., *intermediate literacy.* At this stage, students are better adept at comprehension and can overcome weaknesses in comprehension by using different strategies for comprehension. They are also able to identify and interpret different text structures, i.e., cause and effect, comparisons, problem-solving, etc.

The *third stage* of disciplinary literacy is the stage where students are at the *secondary level* and it is here that the teacher's intervention in development of skills is required the most. At the third stage, the narrowing of the pyramid suggests the specialised nature of reading and learning, it is more focussed to the needs of a particular discipline and less generalizable to other areas.

At this stage, the discipline -specific texts become more abstract and complex and students find the abstract nature of textbooks and other reading materials difficult to comprehend. Students do not usually pay much attention to the language that is used in texts, in fact this is an aspect neglected both by the teachers and the students. Students read but they do not think about the meaning of the words they encounter. If they understand the text they just think about the meaning and not be bothered about the grammatical and lexical features of the text for a deeper understanding. Subject teachers do not teach any skills formally and the language teacher, trained in teaching literacy skills in literature, may not find it easy to guide students to comprehend meaning of *polynomials* from a Mathematics text or *Force* from a Science journal. Consider the following example:

Language in Academic Development

An 8th grade item on the NAEP test shows a rectangle that is twice as long as it is wide, and asks, *What is the ratio of the width of the rectangle to its perimeter?*

It doesn t seem difficult, but only 11% of American 8th graders got it right as opposed to 56% of 8 th graders in Singapore. What was hard about it? The language looks easy enough and there are no numbers to mess with! There are some technical terms: *perimeter* and *rectangle.* There could be a problem with the words long and wide. W e assume the students know the word *ratio* and what it means by the 8th grade. The student needs to interpret the descriptor *perimeter* as meaning twice width and length from the dimensional words wide and long. The next step is to recognize what is called for, and this is the difficult part.

Source: The Role of Language in Academic Development 2003 CALIFORNIA STANDARDS TEST SCORES Lily Wong Fillmore, Ph.D. Jerome A. Hutto Professor in Education, University of California, Berkeley.

In the above example, contrary to the popular belief, we find that Math learning is not just about technical terms. It is important to understand that in Math, ordinary terms are used to refer to relationships which students need to understand. The student needs to recognize that what is called for is the proportional relationship of width to perimeter. This often seems to confuse the students because they are not always conscious of what is expected of them and what the language is saying.

3.6 ACTIVITIES TO DEVELOP LANGUAGE ACROSS THE CURRICULUM

3.6.1 Providing Rich and Varied Language Experiences

If students have access to reading materials in a variety of texts, to discuss and write ,they will come across many new and unfamiliar words. Books and readings are culturally specific, so learners may not be able to use their background knowledge to make meaning from a text which they cannot relate to. The choice of book should be taken care of and the teacher should support the learners through discussion and pre-reading activities.

3.6.2 Teaching Individual Words

Teaching individual words that are important to the content is a challenging task. Teachers can use the strategy of teaching aloud and make it more comprehensible to learners by using props, gestures and images. Themes from the text can also be repeated and opportunities for role play, text enactment, discussion, etc can be created in the classroom to support word building, reading and comprehension in different subjects like History, Political Science, Geography, Literature, etc.

Fostering Word Consciousness

This essentially means that teachers foster curiousity and interest about words in their students. The advantage of word consciousness activities is that they are exciting and enjoyable and build on the existing pool of words that children may possess. By creating a word rich environment, promoting word play and teaching students about words, teachers can build a framework for fostering word consciousness.

Morphemes - Prefixes, Roots, Suffixes

Many words in the English language are made up of word parts called prefixes, roots and suffixes. These word parts have specific meanings that when added together can help determine the meaning of the word as a whole. However, words may not always have a prefix and a suffix.

Prefixes

1. Direct instruction of pre-fixes, suffixes and root words can greatly enhance and build the vocabulary and reading comprehension of secondary school students. Students at this stage need to understand that most words are structured according to logical patterns of meaning and spelling. Together with clues from the context, a morphological approach may benefit diverse learners (Carlo.et al, 2004)

Students improve their learning by learning the most common prefixes. Prefix is a group of letters which have a special meaning and appears at the beginning of a word. Dis (not, opposite) is a prefix which gives meaning to words such as disagree, disharmony, disintegration, etc. Sub (under, less) can be used as a prefix and result in creation of words like subtract, submarine, substation, etc, Examples of other prefixes are : un, re, en, over, mis, non, trans, etc. English teacher might introduce the prefix trans (across, through) and this can be subsequently reinforced by the content teachers. Social Science teacher can use the prefix to discuss terms such as transportation, transformation, transatlantic, transcultural, etc and give examples from terms beyond her domain area. To reinforce understanding.

Science teachers could discuss the terms transfusion, transponders, transparent, transplant, etc. Teachers can make connections to related words beyond their domain, giving the students a chance to deduce that all terms that contain the prefix trans means across or through.

Common Prefixes

Prefix	Meaning	Examples
un- re-	not, opposite back, again	unkind, uncertain, unchanging replay, regress, reform
in- (im-, il-, ir-)	not	inedible, immortal, illegitimate, irreversible
dis-	not, opposite	disagree, disharmony, disintegration
en- (em-)	to make, cause, put	enlighten, encompass, embark, empower
non-	not	nonsense, nonfiction, nonpartisan
in- (im-)	inside, within	insight, introvert, insert, implant, import
over-	above, superior	overlord, oversight, overarching
mis-	wrong, bad	mistrust, misnomer, misconstrue
sub-	under, less	subtract, submarine, substation, subset
pre-	before	preheat, predict, preposition
inter-	between	interstate, international
fore-	before	forewarn, forerunner, before
de-	remove, from	derail, dethrone, deduct
trans-	across, through	transcontinental, transfer
ex-, exo-, e-	out	exhale, exit, exoskeleton, evaporation
com (cor, col, con)	with, together	committee, correspond, colleague, congress

Adapted from : http://www.readingrockets.org/article/linking-language-cross-discipline

Numeric Prefixes

Math and Science teachers are better placed to use and point out the meaning of numeric prefixes such as mono, bi, tri, tetra, hexa,etc. Teachers can start with the use of simple words by using the prefix, such as bicycle, triangle and hexagon and move to more complex words like tetrahedron, polycarbonate, etc.

Numeric Prefixes

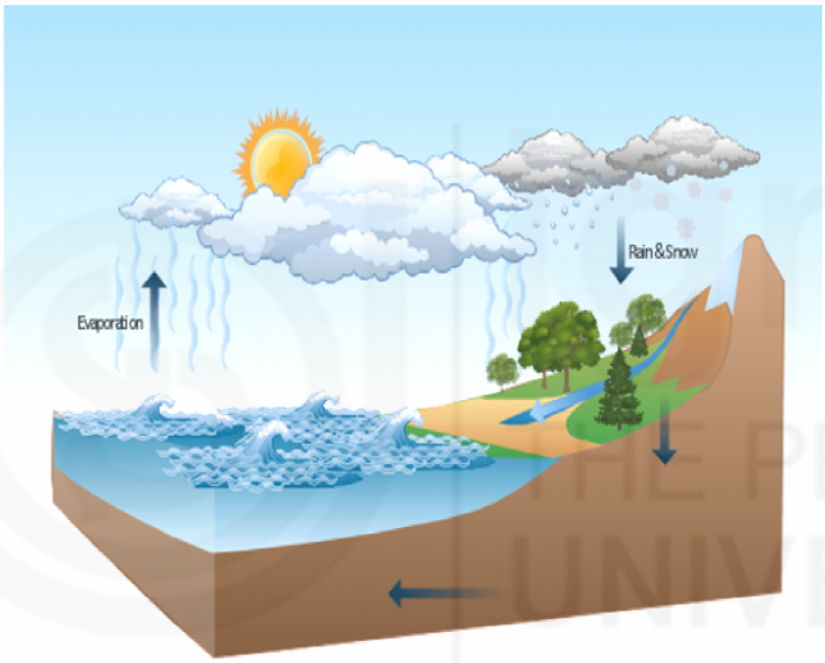
Meaning	Greek	Latin	Examples
1	mono	uni	monotone, monoxide, unicorn, unicycle
2	di	bi, du, duo	dioxide, dilemma, binoculars, bipartisan, duet
3	tri	tri	triangle, tricycle, triplicate, triumvirate
4	tetra	quad (quart)	tetrahedron, quadruplets, quartet, quarter
5	penta	quint	pentagon, iambic pentameter, quintuplets, quintet
6	hexa	sext	hexagon, sextuplets
8	octo		octo octopus, October, octagon, octave

Adapted from : http://www.readingrockets.org/article/linking-language-cross-discipline.

.**Chunking Long Sentences**

- Chunking sentences and words Teachers need to pay attention to long sentences that contain too many clauses, extended noun phrases, conditional sentences, passive voice, etc and help students unpack the different parts of the sentence;
- Students can be given tasks from different texts to break long sentences in different parts and ask the meaning of the parts
- Teachers can get the students to underline the transitional words and phrases and ask them as to how they relate with the sentence, what relationship do they convey
- Teachers can give fill in the blank paragraphs to students to fill noun phrase, verb phrases, transitional words and punctuation.

3.6.3 Sample Lesson Plans



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

Water cycleLesson Plan 1

Subject	:	Science
Topic	:	Water Cycle
Objectives	:	Students should be able to explain the water cycle
Resource	:	Textbook, Worksheet 1, Speaking Activity I
Duration	:	1 lesson
Procedure:		
Brainstorming	:	Show the picture to the students ask them what it makes them thinks of. Write down their answers after writing the word ‘WATER’.

1. Show the students a wet piece of cloth.
2. Ask students what will happen to the piece of cloth if you put it in the Sun for few hours.
3. Ask students why a piece of cloth becomes dry and where the water has gone.
4. Ask students to turn to textbook with the Chapter entitled 'The Water Cycle'.
5. Ask students : What does the word 'cycle' mean to the Suggestion:
6. Draw students' attention to the new words in the paragraph. Teach students how to pronounce the words accurately by separating the words into chunks.

iii. va/pour
ix. e/va/po/rate
x. e/va/po/ra/tion
xi. con/dense
xii. con/den/sa/tion

Work for pronunciation (to be taken in groups)

Draw students' attention to the pronunciation of the following endings

d) Pronounce '-tion' as/ n/
e) Pronounce the /v/sound as in 'vapour', 'evaporate' and ' evaporation' correctly by putting the teeth on the lower lips.

Work for vocabulary building (to be taken in groups)

Draw students' attention to the parts of speech of the following words:

a) evaporate (verb), evaporation (noun)
b) condense (verb), condensation (noun)

1. Tell students that water changes and there are many forms of water. Write the word 'forms' on the blackboard in red. Ask them to pay attention to how water changes and the forms of water when they read the paragraph.
2. Ask students to explain the water cycle by activating their existing knowledge about the forms of water. Draw simple pictures on the blackboard as students explain the water cycle.
3. Pair work: refer to Worksheet 1.

"Characteristics of 'Worksheet 1":

i. Provides students with clear instructions

ii. Provides students with an example.

*Extension work for grammar.

Draw students' attention to the use of 'Simple Present tense' in describing a process.

4. Pair work: refer to Speaking Activity 1

*Characteristics of 'Speaking Activity 1':

i. Provides students with clear instructions

Worksheet 1

Name: ..... Class: ..... No.: .....

The water cycle

The words in the following sentences are in wrong order. Make the students work in pairs. The first one has been done for you as an example.

1. Sun/water/from/heat/sea/the.

   The sun heats water from the sea.

2. Water/the/and/into/water/evaporates/changes/vapour

   .....

   .....

3. water/the/the/up/rises/sky/vapour/to

   .....

   .....

4. the/vapour/cools/water/down/and/to/droplets/small/form/condenses

   .....

   .....

5. water/gather/form/and/clouds/droplets/the

   .....

   .....

6. water/bigger/grow/the/clouds/in/the/droplets

   .....

   .....

7. the/rain/when/as/ground/the/water/droplets/to/fall/may/they/enough,/big/are

   .....

8. sea/the/to/back/travels/rain/the/when/falls,/water

   .....

Speaking Activity 1

The water cycle

III. Instructions:

Explain the water cycle to your partner.

II. Language support:

During Group Work

A. Can you explain the water cycle to me. Please?

B. Yes, sure. Water ....

A. Thank you.

B. You're welcome.

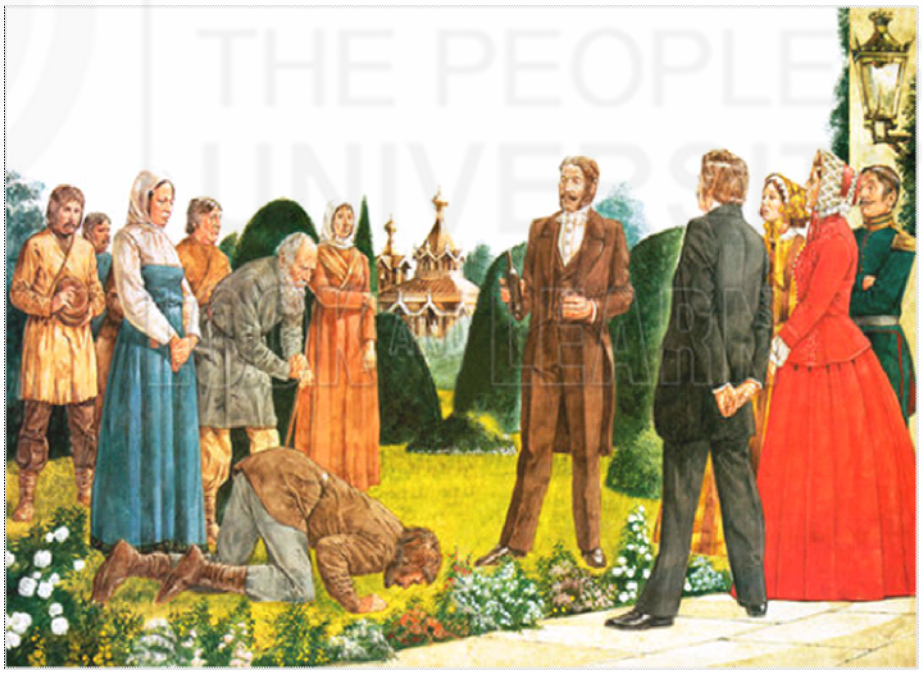
Starting group work

- Let's start. I am A and you are B.
- Would you like to start first?

Useful phrases

- water changes into ...
- water evaporates ....
- water vapour condenses .....
- water droplets gather .....

Source:http://www.edb.gov.hk



The picture shows a nobleman watching as a serf kisses the ground at his Emancipation ceremony.

Source: http://www.lookandlearn.com/blog

Lesson Plan 2

History	: Subject
Nobles and Peasants	: Topic
Students should be able to compare and contrast the lives of nobles and peasants.	: Objectives
Textbook, Worksheet 1, Speaking Activity I	: Resource
1 lesson	: Duration

Procedure:

1. Show students the picture and ask students them if they have any knowledge of the lives of nobles and knights. Ask them what does the picture say?
2. Tell students that 'peasant' is a French word and is pronounced in a different way .
3. Explain to students about the two kinds of peasants: serfs and freemen. Ask them to break the word freemen into two parts, 'free' and 'men' and to guess the meaning of the word 'freemen' first. Then ask them what 'serfs' would probably mean. Ask them if there is any similarity between words like 'serve' and 'servant'.
4. Ask students to guess the difference between these two kinds of peasants. Write down their answers on the blackboard.
5. Ask students to compare their answers by reading the relevant paragraph in the textbook.
6. Check the answers with the students.
7. Pair work: refer to 'Speaking Activity 1'

*Procedure:

Worksheet 1

Instructions to the Teacher:

Provide students with clear instructions

Provide students with a language initially and withdraw it gradually.

Name: _____ Class: _____ No.: _____

The lives of nobles and the peasants in the Middle Ages

Complete the following paragraph:

The nobles and the peasants in the Middle ages had ..... ways of life. The nobles lived in ..... but the peasants lived in ..... The nobles wore ..... but the peasants

Speaking Activity 1

(A)

Instructions to the Teacher:

Provide students with clear answers

Provide students with a speaking frame a text.

I. Complete the following table by interviewing your classmate who has got 'Speaking Activity 1(B)':

Nobles	Peasants
1. lived in _____	1. Lived in small huts
2. wore _____	2. wore simple cloths.
3. _____	3. worked hard
4. _____	4. had a poor life

II. Language support in the classroom:

May I ask you a few questions?	A:
Yes.	B:
Thank you. What kind of house did the peasants live in?	A:
They lived in	B:
What kind of clothes did the peasants wear?	A:
They wore	B:
What did the peasants do every day?	A:
They	B:
What kind of life did the peasants have?	A:
They had a	B:
You've been very helpful. Thank you.	A:
You're welcome.	B:

Speaking Activity 2

(B)

Instructions to the Teacher:

Provide students with clear answers

Provide students with a speaking frame a text.

I. Answer the following questions in complete sentences:

1. What would you like to be in the Middle Ages, a noble or a peasant?

   I would like to be _____ in the Middle Ages.

2. Why?

They are ..... reasons why I would like to be ..... in the Middle Ages. First, ... Second, ...

.....

.....

(To express more reasons, use the words 'Third', 'Fourth', 'Fifth', 'Sixth' and so on.)

II Pair work:

Find out what your neighbour would like to be in the Middle Ages.

III. Language support:

During pair Work

A. What would you like to be in the Middle Ages, a noble or a peasant?

B. I would like to be .....

A. Why?

B. There are _____

Starting pair work

- Let's start. I am A and you are B.
- Would you like to start first?

Source:http://www.edb.gov.hk/attachment/en/edu-system/primary-secondary/applicable-to-secondary/moi/support-and-resources

3.8 LET US SUM UP

In this Unit, we have discussed that language is the foundation for learning and that literacy skills become more difficult progressively due to the abstract nature of discipline-based texts. In this context there is a need to understand the concept of language across the curriculum, its significance in learning, and the role of the teacher in identifying the language demands of the subjects and providing necessary language support to students.

The focus of the language across the curicullum approach is

- *enabling students to understand that different subject areas draw on different sets of lexical and grammatical resources to construct their own disciplinary knowledge, values, and cultures, is therefore an important objective of language across the curriculum.*
- *helping students to understand the variability of academic language, the general patterns of academic language and to appreciate how these patterns find a place in different school subjects is the focus of language across the* curriculum approach.