

Verbal giftedness

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Gifted verbal knowledge

What is verbal knowledge ? Networks of linked verbal concepts so that they form verbal propositions. These can

- be specific contextually based or more general, abstract; they can transcend time and context
- vary in the number of specific concepts they contain.

How is it learnt ? Through linguistic interactions with significant others in one's context.

Gifted verbal knowledge differs from that of non-gifted students in a number of ways:

characteristic	example for oil
• more verbal concepts.	They have a much wider set of categories to do with oil.
• more elaborated and differentiated links so that stimulating one set of ideas flows more easily on to other ideas.	Their concept of 'oil' is linked with many more concepts, for example, viscous, lighter than water, insulator, hydrocarbons, decayed animal matter
• a richer set of thinking strategies for linking ideas in novel ways; this leads to more sophisticated understanding	They can ask more complex questions about the set of ideas, for example, Why is it only small animals that formed oil ? Did different types of animals form different types of oil ? How did the depth of the animals affect formation of oil ?
• high intrinsic motivation to pursue verbal knowledge and to engage in verbal problem solving	They are motivated intrinsically to ask these types of questions.
• a greater efficiency in changing what is known, a comparative ease in adding new knowledge.	They add new knowledge about oil relatively easily.
• a greater verbal thinking capacity; more accessible knowledge, retrieve ideas more rapidly and easily, handle more ideas at once and comprehend ideas in more complex ways, see implications more easily, more complex, sophisticated thinking and problem solving.	They can hold in their thinking space at once all of the ideas in a paragraph. This helps them think more broadly about them. Paragraph 3 - where oil forms, under sea, to locate it, special drills, extract samples . This would allow students to ask "If you only get gas, how can you tell if oil is near by ? If you do strike oil, how can you tell how much there is ?"

Characteristics of students who think in 'gifted ' ways about language generally and about written text in particular (Bailey, 1996): they

- develop oral language early; they learn to talk early and develop verbal concepts rapidly.
- are interested in word relationships, use advanced vocabulary, understand subtle differences in word meanings, shades of meaning
- read text beyond their age, often teach themselves with little input, recall ideas easily and learn at a sophisticated level, intrinsically motivated to read, enjoy talking about literature.
- use language and grammar well , use different forms for particular purposes, for example, to persuade, to convince, to stimulate or activate, to communicate information, to please.
- analyse ideas and to debate them at a high level, can see consequences that peers tend not to see, see incompatibility in verbal information, are motivated to pursue it.
- recognise verbal patterns at an advanced level, put ideas together in unexpected ways, enjoy verbal puzzles and games, reason analytically and synthetically in complex ways.
- are motivated to 'want to know; 'self-driven' and motivated to experiment with new linguistic ideas, read or write spontaneously for long periods of time.

- learn spontaneously without directed teaching, prefer to manage and direct their learning on occasions and value being able to ask questions that extend their knowledge.
- become bored and frustrated when the learning pace is too slow. They may report needing fewer repetitions of and less exposure to an idea in order to learn it.
- pursue a set of ideas with little teaching, want to experiment with language before the teacher is ready for them to do so, want to question ideas with what may seem to be little information, want to debate at a high level.
- write descriptively and communicate well in writing, play with language.

Assessing a student's verbal knowledge to examine the extent of giftedness. Use tasks that assess through both convergent 'closed' tasks and divergent 'open tasks' to examine

- the number and types of ideas that can be manipulated at any time,
- the breadth of the ideas,
- the 'laterality' of the links (the extent to which any verbal concept stimulates others,
- the number of unexpected but reasonable links"
- the types of verbal propositions that can be manipulated
- the extent to which a verbal proposition can be transferred by analogy, generalised.

Types of tasks

area of verbal reasoning	assessment procedure, what to look for when assessing response
define the meanings of verbal concepts "What does continuous mean?"	assess the level of abstractness of the response, how it is linked with other concepts
indicate similarities, differences in meaning between two or more verbal concepts "How are a television set and a letter similar?"	note the types of similarities a student mentions, for example, perceptual similarities, functional similarities.
recall general knowledge "Name the two deserts in Australia"	note the time taken to recall specific facts; how accessible is the knowledge, move from more to less common general knowledge
how topic knowledge is organised "Prepare a speech about climate in Jeddah. Use as many words as you can."	ask student to suggest topic of interest and to talk about it for 5 minutes. Note how it is linked with other topics, the richness of links
transfer known propositions to unfamiliar contexts integrate two known propositions in unfamiliar contexts: "How might a desert on the Moon be different from a desert in Saudi Arabia?"	note how well students integrate the known features of the two contexts
assess how many ideas the person can handle at once analogise using verbal propositions	recognise the idea that doesn't fit
ability to infer reasonable cause and effect "Explain why the climate of Saudi Arabia is different from the climate in England".	note the types of relationships for which a student can analogize. Finish this "Red is to green as stop is to"
ability to infer reasonable cause and effect "Explain why the climate of Saudi Arabia is different from the climate in England".	note how well the person links cause and effect and the richness of the links
ability to decide whether verbal statements make sense, for example What does 'Many little drops make a shower 'mean'?"	note how well the person understands the meanings of statements.
ability to comprehend non-literal, metaphorical propositions Explain what 'Tom is as hard as nails' tells us	note the student's ability to comprehend metaphors.

Assessment procedures

group tests in verbal reasoning and vocabulary use to select students who are above 95 the %ile.	<ul style="list-style-type: none"> • Healing is to doctor as legal is to • Frank is older than Bill and Bill is older than Jack. Jack is Frank • Which two of the following sentences together prove that Mrs Jones has a cat ? All people in Rosco love pets All people in Rosco have cats Mrs Jones buys cat food Mrs Jones lives in Rosco
individual reading tests to test vocabulary and its breadth	<p>Which two of these are opposite in what they mean : decline win succeed fail</p> <p>The feeling parents have for their children is usually pity abhorrence affection reverence</p> <p>Which one of these things is most like these things: hawk, zebra, snake ?</p> <p>Which of these sentences best says what a guess is ?</p> <ul style="list-style-type: none"> • A mistake • Something that could be correct • Something we know is correct • Something that is almost correct • Something we can't find out
test of abstract verbal propositions	
evaluate students' writing portfolios	<ul style="list-style-type: none"> • 'originality of ideas, • depth of understanding of emotion or context, • choice of expressive words, • conciseness of expression, • developmental logic in sentences, good paragraph organisation, • well planned plot and maintaining a point of view or theme.

Assessment used by the National Language Arts Curriculum Project for High Ability Learners includes:

reading task students read text and	<ul style="list-style-type: none"> • say an important idea from the story in 1- 2 sentences • describe in their own words the significance of a sentence in it • comment on a theme of the story • suggest a title for the story
a writing task	after reading, students write a persuasive paragraph in which they say, with at least 3 reasons, whether they believed the text should be read by all students in their class
grammar task	use multiple choice tasks
speaking task	students listen to a speaker and then explain each of the main points said, organise the content of the speech into a graphic organiser that shows the relationships and cross links between ideas

Teaching activities The aim is to teach students

- to extend knowledge by cueing them to question or challenge it and then to add the new knowledge to what they knew
- new ways of thinking that will become new 'self questioning' strategies; self talk scripts that they can use to challenge what they know.

Activities to extend verbal knowledge can come from spoken and written information.

Teaching procedures :

use comparatively advanced, rich and sophisticated verbal content (spoken or written) with relevant vocabulary	
teach verbal concepts and vocabulary, including how concepts are organised, their origins of concepts, synonyms and antonyms.	
teach higher level thinking strategies. Ask questions that cue students to analyse, evaluate, reflect on and modify what they know.	Use questions to develop creative and critical ways of thinking. Why does oil form under the sea ? Where did the hydrogen and carbon come from to make oil ? What have you learnt about useful ways of thinking ?
teach students to link ideas in a variety of content areas and themes and to explore and link ideas in different areas of study; the social and physical studies.	<i>What questions might the Story of Oil answer for us ? What could you learn about the history / science / geology of oil ?</i>
allow students to learn by doing long term research projects, open -ended tasks, parts of which they decide. They plan and steer their way through tasks and learn at their own rates to reduce boredom. When beginning a unit they say the questions they think the topic might answer and what they know.	<i>What questions could you ask about how satellites can be used to detect oil ? What is being detected, oil or rocks that often occur with oil ? How accurate is this ? How deeply into the Earth can it detect ?</i>
Use collaborative learning groups and inquiry oriented learning. Students act as resources for peers as they work together, discuss and brain storm ideas, question and receive feedback.	<i>One group of students studies how oil was formed and how useful this information is for us. A second group can study how oil can be detected by satellites. A third group can study how oil is purified ? The groups can be encouraged to look for alternatives, options and how things could be done in the future.</i>
Use authentic assessment that asks students to produce responses rather than select the correct response and say their ways of thinking. Give them multiple ways of showing what they have learnt in creative ways. Let them see that others recognise and value their knowledge.	Components of an authentic assessment approach include: <ul style="list-style-type: none"> • open ended speaking /writing assignments ; students choose a topic, a genre, the key questions they will target or task parameters. • students keep a portfolio of outcomes that has multiple measures of their ability. • they show what they know in a range of formats; extended reports and essays, spoken presentations (speeches, interviews, role plays), portfolios, models, computer simulations, new ways of thinking and problem solving regimes in journals . • self and peer evaluate what they have done. Assessment criteria include (Johnson, 1996) <ul style="list-style-type: none"> • clarity of ideas • logical organisation of ideas • support for arguments • use of rich and varied vocabulary • good use of language. • use of writing / speaking conventions

Use the following procedures to assess student responses for a research project:

Authentic assessment of task	A little To some extent A lot
<p>Assessment of reasoning To what extent</p> <ul style="list-style-type: none"> • are the ideas consistent logically, that is, 'fit together' ? • are the ideas presented in a logical sequence ? • are the ideas prioritised effectively ? • are the propositions supported by evidence ? • is the reasoning accurate ? • is there evidence of creative thinking ? • is there evidence of critical thinking ? <p>Assessment of components of project To what extent</p> <ul style="list-style-type: none"> • is the focus stated clearly ? • is the focus justified as worthy of study ? • is existing knowledge re the issue examined in sufficient breadth ? • is existing knowledge re the issue presented clearly and summarised ? • is the approach taken to examine the issue specified clearly ? • are the outcomes of thinking or research stated clearly ? • are the outcomes interpreted correctly and implications drawn ? • are the conclusions drawn reasonable ? 	

Using written text to enhance knowledge through shared enquiry

Verbally gifted students are self motivated to read, to question, to infer and to use the knowledge they gain. Use higher level texts to stimulate questioning, problem solving and critical thinking. Ask them to

- identify the key messages a text conveys.
- search for answers to questions, solutions to problems and generate new knowledge.

Develop the enquiry through three phases of collaborative reading, discussion and writing. At each phase students

- question, explore, analyse and review both the text and what they know.
- develop vocabulary.

Phase of reading					
Getting ready or orienting stage activities	focus on purposes for reading: <i>Why am I reading text ? What questions might the text answer</i>	link text with what they know. <i>What do I think text is about? What might the key ideas be ?</i>	link ideas in text with what they know, use brainstorming, mapping, networking. <i>What other ideas might come up with these ?</i>	focus on how the ideas might be said	
While-reading stage: process text and self-monitor	work on the text; they <ul style="list-style-type: none"> • select information, process portion at a time, act on ideas, paraphrase, visualise, question, • review, summarise, • predict what might happen next • read further, relate what they read to what they expected, • consolidate the ideas read, gradually build an impression of the text. 				
Post-reading or review stage	review text understanding: <i>What did the text tell me ?</i> Brainstorm the group knowledge gained. Review, evaluate reading strategies used	evaluate the ideas critically : <i>Were the ideas useful/ plausible ? etc.</i> Why was the text written ? How well did it achieve its purpose ?	learn by reading. What new ideas have been learnt; how has reader's knowledge changed ? <i>What new ideas will I remember ?</i>	transfer, generalise the knowledge gained though creative thinking activities. What types of problems might it solve ? What new opportunities does it suggest ? Develop open-ended creative problem solving	develop and extend vocabulary ; <i>What new words were in the text ? How /when will I use them in the future. What words are they like (synonyms, antonyms)</i>

You can use this both in classroom or in withdrawal contexts. Students may need to learn how to operate in more open-ended, divergent learning formats.

Students can compile new words using the following chart

word	what it means	in a sentence	synonyms	antonyms	part of speech	word family	origin

As they read a text, they can organise the key ideas in each paragraph / section as follows

	Main question answered by paragraph/section	Summarise main ideas of paragraph/ section	Predict next section
1			
2			
3			

In a group, they can make up 5 difficult questions that can be answered by thinking about the text. These are given to another group.

Questioning the content

Students learn to ask higher order questions about the content they read and hear. These questions aim to teach them to think about ideas in different ways and to see possibilities and options they might otherwise have not seen. They can learn to ask higher level reading comprehension questions at the inferential, evaluation and appreciation levels.

Inferential Comprehension: Readers create higher level ideas about the concepts in the text by looking at them from different perspectives. They

- use intuition and imagination to predict or to infer ideas and links not stated explicitly
- 'go beyond' the text, 'read between the lines' to get possibilities not stated

Peter knew enough about bofs to be aware of the danger he was in. He thought about his predicament. Bofs, he knew, were short-sighted, but had a very good sense of smell. They also had very sensitive hearing.

In the distance he could hear the roar of the river. Would that cover the noises that he was sure to make as he tried to escape? Slowly and silently he turned and backed away from the clearing.

The bof couldn't see Peter, but knew that he was escaping; its sense of smell told it this. It padded along on its huge paws, claws sharp and extended. It moved its head from side to side, its nose pointing up and swinging like a radar scanner searching for its target.

Peter made his way to the waterfall. He stopped on the bank of the river, keeping as still as he could. Then he saw the bof again. It was standing on a rise that ran along the bank. It was hungry. It was also angry because it had been deprived of its dinner. It padded up and down on the green grass carpet making a soft grunting noise as it moved. It furiously sucked in air through its dilated nostrils as it searched for Peter's scent. Its huge arms thrashed around as it groped for its quarry. Suddenly its pointed ears pointed in Peter's direction

Questions at the inferential level can require readers to :

infer supporting details	suggest additional facts the author might have included in the text that would have made it more informative, interesting or appealing	What do you think a bof is? What extra things do you need to be told to help you make up your mind?
infer main idea	the general significance, theme, or moral of the text	What message do you think the writer is wanting to tell us?
infer sequence	<ul style="list-style-type: none"> • guess what might have happened between two explicitly stated incidents • guess order in which actions or incidents not explicitly stated occurred 	What do you think Peter was doing while the padded up and down on the green grass carpet making a soft grunting noise as it moved?

infer comparisons	likenesses and differences in characters, times, or places	A student thinks the bof is an abominable snowman. Can you find evidence in the text to support this answer or evidence that shows that the student is wrong ?
infer cause and effect	<ul style="list-style-type: none"> reasons for events occurring, motives of characters why author included certain ideas, words and actions. 	<p>Why do you think Peter <i>made his way to the waterfall</i> ?</p> <p>Why did the writer use the phrase "<i>It furiously sucked in air through its dilated nostrils</i>"</p>
infer character traits	the nature of characters using clues in the text.	
predict outcomes	<ul style="list-style-type: none"> infer ideas before the contexts in the text infer possible ideas later than the context in text. 	<p>What do you think Peter will do next ?</p> <p>How do you think Peter came to be there?</p>
'what would happen if...?'	change ideas in the text, for example, moving the theme to a different place and time in history : How would it have finished differently ?	What do you think a bof would be if the title of the story was Peter's adventures in Lilliput ? What would it be if the title was Peter's adventures on Mars ?

Evaluation: Readers judge or evaluate aspects of the content of a text by comparing it with

- external criteria, whether it agrees with what is generally known or expected.
- personal criteria, how it fits with what readers know and what they value.

Evaluative level questions ask readers to judge

reality or fantasy;	Are events, or characters in a text likely to occur in real life ?
fact or opinion	Can text information be supported objectively ? Is author trying to sway the reader's thinking by writing subjectively ?
adequacy or validity	Is the author's treatment of a subject accurate and complete when compared to other sources on the subject ?
appropriateness;	To what extent does text resolve an issue or a problem ?
worth, desirability or acceptability	Judge how suitable a character's actions, the author's views, subject matter or style are ?

Appreciation : Readers respond emotionally to the text, its artistic elements, literary techniques, forms, styles, and structures. Questions at the appreciation level can require readers to :

- make an emotional response to the content, its ability to stimulate and sustain interest, excitement, boredom, fear, hate, or amusement.
- identify with characters and incidents portrayed by the author.
- react to the author's use of language, such as words or style.
- respond to the imagery evoked by the text, the author's ability to "paint word pictures", to lead readers to visualize, smell, taste, hear, or feel the ideas described.

How does the writer 'come through' in the text ?

What can you tell about the writer from the writing ? How might the writer's background, feelings, etc., affect the message that is written ? Students can examine a text and ask the questions

- Why did the writer write the material; what was the purpose in writing ? What is the author really saying ? They can discuss the notion of 'reading between the lines'.
- What can you tell about the writer from the writing ? How did you go about deciding this ?
- How important is it to know the writer's perspective ?
- How could the writer's background, feelings, etc., affect the message that is written ?

Students compare different types of text, for example, propaganda text, advertisements, two newspaper articles about the same topic, two letters to the Editor on the same issue. They discuss how they make decisions about each author.

Example : What do you learn about the author in the following Letter to the Editor:

We recently heard in the media the unfortunate death of a boxer while competing in a professional bout. We also heard about the death of a para glider. With this news came the familiar call came out to ban one of these sports. Can you guess which one? Boxing, of course. No-one said we should ban para gliding.

The numbers show which sports are the most dangerous. Boxing has a very low fatality rate when compared with other sports; 1.3 per 100, 000 participants. For motor cycle racing there are 7 per 100, 000, 11 for scuba diving, 51 for mountaineering, 123 for sky diving and 128 for horse racing.

Let us remember that the individual has the right to freedom of choice in a democracy.

If boxing is prohibited because it damages health or can lead to death, then it is logical to prohibit the other sports, junk food, alcohol and other causes of ill health.

Building word knowledge : Word study

For words that have several different meanings	Students 'solo-brain storm' the different meanings of a word, for example, <i>How many different meanings can you think of for 'run' in 1 minute or 5 minutes?</i> Students select different types of meanings for an object, for example, how many uses can you think of for a glass bottle or a nail, for example, <ul style="list-style-type: none"> ways of using its 'inside space' to hold / store things/ measure volume ways of using its shape (as a model for drawings, for papier mache) ways of using it as a weapon (for throwing,) ways of using the glass it is made of ways of carrying a message
What do they mean?	For unfamiliar words in a text, students say the information they need to decide what each might mean (for example, see the word in several contexts).
Link words with other words	<ul style="list-style-type: none"> students 'solo-brain storm' synonyms and antonyms for a word <i>How many synonyms can you think of for deserve?</i> Give them a limited time, for example, 1 minute or 5 minutes. Have them discuss how they did this. self-brain storm the contexts they can think of for a word such as 'hands'. Give students a word and ask them to develop it as a topic, for example, to <ul style="list-style-type: none"> speak about it for 5 minutes avoid repeating what they have said. interview a peer about it. They swap roles.
Guess the meaning of a word from how it is said or written.	Students <ul style="list-style-type: none"> guess what <i>radial, radiant, irradiate</i> mean, using what they know about <i>radius</i> and <i>radiator</i> link groups of letters with what they mean, and make a list of letter strings and meanings. look at the origins of words, trace the history of words they use.
How have the meanings changed?	What new words have entered the language over the last century? What new words might be expected to enter the language in the future? What affects this? They reflect on how is our language is changing. They can <ul style="list-style-type: none"> look at changes in how we use words, for example, changing nouns to verbs. Examples of this trend. Why is it occurring? Which words might change next. look at how spelling conventions have changed with technological developments (word processors, etc) and with changes in the mass media, why we spell the ways we do. think about what new meanings we might expect in the next century. What new ideas might we talk about in the next century in various subject areas? Suggest some new words for these meanings. Who initiates the change? Example : You are running a fast food restaurant for the health conscious in the Year 2055. What types of food are you serving? How is the food prepared? How will you advertise your food?

Manipulating verbal propositions, solving verbal problems.

Teaching students to solve verbal problems by using tables Teach them to 'guess' rules or general patterns by asking themselves key questions.

They sort through and organise feedback they receive when they ask questions or pursue an enquiry. A type of activity here is where students know the characteristics of different items, are

given some of the characteristics and need to identify the actual item. They organise and prioritise information, think in possibilities, eliminate alternatives and categorise.

As an example, suppose students have the following information about six children.

name	age	preferred sport	pets at home	preferred texts for reading	favourite TV programs	has brothers / sisters
Adam	12	football	cat + dog	adventure	comedies	both
Tina	13	hockey	fish	adventure	travel	brothers
Peter	12	hockey	dog	magazines	comedies	sisters
Jill	12	tennis	cat	biographies	comedies	brothers
Sue	13	football	dog + fish	magazines	mystery	brothers
Fred	13	tennis	fish	biographies	mystery	sisters

All students have the information. One student selects a name. The others guess who it is by asking questions that receive a "Yes" or "No" response, for example, "Does the person have a cat?" Students need to develop ways of keeping track of the feedback they receive. The aim is for students to guess the identity with the minimum number of questions.

Students can investigate situations in which this type of reasoning can be used, for example,

- when they want to identify a particular item; there is an unknown gas in a space and they need to identify it. They know the properties of possible gases
- when they want to diagnose a problem, a medical condition or a mobile phone not working, when they have a set of possible conditions and symptoms
- when they want to select a particular item, according to specified criteria, for example, to purchase a car

	odour	support burning	in the air
oxygen	no	yes	yes
nitrogen	no	no	yes
carbon dioxide	no	no	yes

	colour	4-wheel drive	doors
Ford	white	yes	4
Mazda	beige	no	2
BMW	blue	yes	5

Teaching students to convert data to table form Converting information to a tabular form gets it ready for critical and creative thinking. Knowing how to organise information so that it can be more readily used in thinking assists individuals in the knowledge age.

Organise the criterial information in the following scenario into table form and solve the problem.

Two men are trapped on a ledge halfway up a 300 metre high cliff. They can be rescued only by 2 people being lowered from the top of the cliff 150 metres above them. The rescuers need to be able cliff climbers. They may also need first aid knowledge and at least one of them able to take a leadership role and remain cool in an emergency.

The leader of the rescue team has 7 potential rescuers, A, B, C, D, E, F and G available. They differ in their cliff climbing ability and in their ability in other relevant areas. A is a very strong person emotionally and is good at climbing up and down cliff faces. He is average at taking leadership role and has no first aid knowledge at this time. E and G are excellent cliff climbers, E has excellent first aid knowledge (G has little) and G is good as a leader (E isn't). E isn't very emotionally strong while G is above average in this. B is an excellent leader with good emotional stability, is average at cliff climbing and has little first aid knowledge. C has a little skill as a cliff climber, average first aid knowledge and emotional stability and is above average in leadership skills. F has good first aid and cliff climbing ability, D has no ability in either area but has average leadership ability and has excellent emotional stability in an emergency while F has no leadership ability and very low emotional stability in an emergency.

Which two rescuers would you recommend the leader send, if the rescue is to have greatest chance of success ?

Solving problems based on ordering the information Some verbal problems need the key information to be arranged in order. Problem solvers need to identify the essential information and organise it in an order. An example is as follows:

Eight types of experimental apple trees labelled A H are arranged in order of the number of apples they produce in a season. The order begins with the tree that produces most apples. Tree A is ranked fifth in order of apple production. Tree H comes just before F in the number of apples produced, A comes just before B, G comes between B and E and B comes between C and H. Which tree produces least apples ?

A second type of word problem requires students to reason in alternative ways about verbal information. An example is the following:

Three contestants in a competition, Ann, Jack and Bob have finished the competition but don't know how much money each has earned, because different questions were worth different prizes. At the end of the competition, the three contestants sit in a row, one behind the other, with Ann behind Jack and Bob and Bob in front. Each contestant won either \$ 8,000 or \$ 12,000. There were two prizes of \$ 12,000 available to be won and four prizes of \$ 8,000 available.

A card indicating the amount each contestant earns is pinned to the contestant's back. Ann can see the amount won by the other two contestants and says "I don't know how much I won but I know how much you two won". Jack can see how much Bob won and says "I know how much Bob won". Bob can't see how much anyone earned but says "I have won \$8, 000." Work out if he is correct and how much the others won.

Debating an issue, defending a point of view Students who are gifted verbally enjoy the stimulation of pursuing a point of view, analysing an discussion intended to persuade or debating an issue. Students can improve their strategies for arguing, discussing and for logical analysis.

Analysing an argument As an example, suppose students are analysing the argument of a traffic safety organisation that the red light should be replaced by a white colour. Examples of critical thinking skills that can be taught to enhance this ability include the following:

critical thinking skills	question that focuses the thinking	example
identify the issue	What is the main issue in the argument, the question to be answered, problem to be solved ?	Should the red light in traffic lights should be replaced by a white coloured light ?
purpose of the writer	What is the goal or purpose of the writer. What does s/he want us to believe ?	to convince readers /listeners that the red light in traffic lights is not as safe as a white coloured light
point of view	What is the point of view of the writer ?	red lights are more likely to be 'misread' than white light and therefore more likely to lead to accidents in all contexts
identify /examine the evidence for the issue	What facts can be provided to support the case ?	some colour blind people can see white but not red lights white light has better visibility potential than red light
identify and analyse the assumptions made in the argument	What does the argument assume about key issues ?	drivers not reading traffic lights correctly causes accidents the colour of traffic lights is used in making driving decisions
identify and analyse inferences made in the debate / argument	What can the listener /reader infer from the argument ?	changing the colour of the red light in traffic lights to white coloured lights will reduce accidents because drivers will be able to see them better and therefore stop more quickly
identify implications	What does the argument imply ?	traffic control authorities should replace the colour of lights in traffic lights

Use the above framework to analyse the argument in the Letter to the Editor presented earlier.

Students can learn to develop their own arguments by using the following cue questions. Suppose students were presenting an argument for less homework:

question that focuses the thinking	example
What is your main issue or problem ?	Students have too much homework.
What are examples of it ?	At 7th grade level students have on average 3 hours homework each night. This gives them less than 2 hours a day to engage in out of school activities.
What is each key point in your argument ? What evidence supports your argument ?	Less homework would give students time to learn more about topics not taught at school. Students need to learn how to work, how to take care of their environment. At present there is little time for this. Less homework would give students time to spend with their family doing family activities. This would reduce the anxiety and stress that students experience
What is your conclusion ?	

Students can be encouraged to take multiple / opposite perspectives on an argument or issue.

Examining a set of verbal propositions from multiple perspectives

Students' knowledge of a topic can be enhanced by learning to examine the topic from different perspectives, for example, by using Bloom, de Bono's Six Hats, Taylor's Multiple Talent Model. They can learn to ask questions that require them to

- visualise the ideas, think about them in particular contexts.
- think about them in different cultural contexts
- think about them in different historical contexts
- think about the ideas using scientific mathematical criteria
- imagine the ideas being operationalised or being used
- reflect on how the ideas might be used in the future

For a given a topic or a theme, they can plan a set of questions they will research to answer, perhaps by drawing a concept map. They can experiment with different types of questions, see the types that help them to learn best, apply or use the ideas in unfamiliar situations, analyse them, look at causes and / or effects, predict events, modify them and evaluate or judge them.

Enhancing writing ability.

Giftedness in writing developing along the following path (Vantsassel-Baska, 1996):

- encourage early writing behaviours
- support young writers to test out and trial ideas in writing
- encourage students to reflect on their writing attempts
- have students write about their life experiences
- develop artistic interest as an analogue to literary ability
- support emotionally the writing process.

Qualities in the writing of students with writing talent. The writing of VG students include

- the use of paradox
- the use of parallel structure
- the use of rhythm
- the use of imagery
- melodic combinations
- unusual figures of speech (alliteration, personification, and assonance)
- unusual adjectives and adverbs
- a feeling of movement
- sophisticated grammar using punctuation, parenthesis
- prose lyricism
- a sense of humour
- a philosophical or moral bent
- a willingness to play with words

Analogies, metaphors and similes

Analogies are ways of noting similarity between ideas that otherwise seem different. They allow us to use what we know more widely and to handle an increased amount of information at a time. When people use analogy we say they are 'analogising'.

Thinkers can use analogies in different ways

- between propositions
- in similes
- in metaphors

They can learn to analogise by working on analogies in each way.

Analogies between propositions Students are provided with pair of propositions linked in particular way, for example

basket ball is to sport and banana is to _____

Students decide the required word by making two meaningful links; *basket ball is an example of sport, a more general category* and *basket ball and bananas are examples*. They use the two links to generate a possible response. They need to be able to identify the two meaning links and to retain them in short term memory so that they can integrate them.

Examples of analogies tasks are

- Red is to green as stop is to _____ (colour to action)
- knife is to cut as pencil is to _____ (example to function)
- book is to radio as eye is to _____ (information source to sensory organ for perceiving information)

As well as reasoning in analogies, students can be asked to explain what is the meaningful link between two concepts, for example, a wire and a hose are similar in that both can carry or transport something that is moving.

Students can identify the meaningful link in other examples. They are instructed to discover how the two concepts are similar or alike:

- kidney and sieve
- semaphore and talking
- bats and porpoises

Students can generate their own analogies. This activity requires then to integrate both creative and critical thinking. They begin with a general category name, a function, etc., and suggest examples or specific terms, for example

general category name or function	examples
holding, retaining items	box, container, jar, bottle, purse, glass, tank
measuring distances	ruler, tape measure, tachometer, trundle wheel
words describing positive emotions	love, adore, worship, cosset, pet,

Students can look for analogies between different categories or contexts, for example

- sources of energy 200 years ago, now and 200 years in the future
- how different cultures manage time.

They can reason using analogy in intuitive ways by asking *What would it be like if...?*

- we no longer had access to paper ?
- light travelled one tenth as fast
- our language didn't have words for negative emotions; our language allowed us to talk only about having less positive emotion.

In this way analogies can help us make links between what is known and what is possible, what options we might have.

Analogising is an effective way for developing creative outcomes by moving what we know from some contexts to others. Students can learn to transfer problems and difficulties from contexts in which they occur to different situations and reflect on how the problems might be solved in the invented contexts, for example, a student who is having difficulty interacting with a particular peer may visualise interacting with the person in alternative contexts or visualise others interacting with the person.

Analogies in similes Analogies in similes are links between propositions indicated by the word 'like', for example, *Working in an organisation is like running a race* or *Saving money is the same as storing glucose in the muscles*. Students can

- generate their own similes
- examine the value of similes, how they assist our thinking
- explore whether there are different similes for different times, how the meaning of a simile changes over time, possible future similes, particularly those for the information age.

Metaphors as analogies Metaphors allow us to build images that link by analogy with another verbal concept. The metaphor *surfing the Internet* provides an image that assists understanding of how a computer samples and selects information from the Internet. The metaphor *rotten to the core* provides an image that explains why a person may display malevolent behaviours in a wide range of situations.

Metaphors are useful when we seek to communicate or to understand abstract concepts and propositions, for example, evolution or emotions. We represent concepts in evolution using a pathway or a ladder. We link emotions with temperature, for example, *a cold heart, an icy manner*. We use metaphors such as *'as hard as nails'*, *as tough as old boots*, *as happy as a lark* to describe how people operate.

Students generate their own metaphors and compare with those of others, for example
as high as _____
as slow as _____
as pretty as _____
as deep as _____

They can discuss the values of metaphors, when and how to use them and how they can use them to enhance creative thinking in the future.