

Language-learning task design: Using higher-order thinking skills

Penny Ur
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Higher-order thinking skills

Higher-order thinking skills are those which involve mental effort, which may take various forms (e.g. problem-solving, contrasting, applying, synthesizing...).

They are contrasted with lower-order thinking skills which need little effort, and are mainly associated with recall or identification of 'surface' facts or forms.

Various classifications

- ❑ Bloom's taxonomy
- ❑ Convergent versus divergent
 - ❑ Critical thinking
 - ❑ Creative thinking

Bloom's taxonomy of cognitive objectives

- ❑ Knowledge
- ❑ Understanding
 - ❑ Application
 - ❑ Analysis
 - ❑ Synthesis
 - ❑ Evaluation

Bloom, 1956

Revised taxonomy

Knowledge becomes a separate 'noun' category

The six cognitive processes defined as 'verb' categories:

- remember
- understand
- apply
- analyze
- evaluate
- create

Krathwohl, 2002

	Remember	Understand	Apply	Analyze	Evaluate	Create
Factual knowledge						
Conceptual knowledge						
Procedural knowledge						
Meta-cognitive knowledge						

Two suggested divisions of higher order thinking skills:

1. Convergent
2. Divergent

McGregor, 2007
Runco, 1999

The division preferred in this presentation:

- Critical thinking
- Creative thinking

Critical thinking

Critical thinking is the process of thinking that questions assumptions. It is a way of deciding whether a claim is true, false; sometimes true, or partly true.

Wikipedia

Critical thinking includes...

- ❑ Analysis: being able to distinguish between categories, generalize, exemplify etc.
- ❑ Precision: being aware of imprecision (vague, contradictory or tautologous statements) in input and one's own self-expression
- ❑ Logic: being aware of illogical reasoning in input and taking care to be logical in one's own thinking
- ❑ Criticism: being able to to apply criteria consistently in order to evaluate

Creative thinking

- ❑ The ability to think up original solutions to problems
 - ❑ The ability to create new constructs, interpretations or works of art

Creative thinking includes

- ❑ Divergent thinking: brainstorming a large number of responses to any cue or task
- ❑ Original or 'lateral' thinking: devising original, unconventional responses to problems or tasks

De Bono, 1967

Link to other classifications

- ❑ Critical thinking:
 - ❑ In the revised Bloom taxonomy: mainly *understanding, applying, analysing and evaluating*
 - ❑ Mainly *convergent thinking*.
- ❑ Creative thinking
 - ❑ Revised Bloom taxonomy: mainly *creating*.
 - ❑ de Bono: 'lateral' thinking
 - ❑ Mainly *divergent thinking*

Reasons for using higher-order thinking in language teaching

- ❑ Language learning
- ❑ Intellectual development
- ❑ Educational values
 - ❑ Interest

Language learning

New language items are better imprinted on our memory if we use *deep processing*.

This means relating the item meaningfully to its meanings and to other items previously learnt.

Deeper processing involves higher-order thinking skills e.g. connecting, contrasting, creating etc.

Waters, 2006

Intellectual development

The learning of facts and concepts.

+

The ability to relate these to each other, criticize, draw conclusions, create new ideas etc.

Educational values

The ability and willingness to think for oneself
As distinct from the unthinking acceptance of facts, values, directives etc. laid down by an authority.

Interest







Activities based on simple recall or knowledge of isolated forms and meanings tend to be boring.

Activities based on higher-order thinking skills are likely to be more interesting.

1. Critical thinking

Conventional vocabulary exercises

- Match picture to word or definition
- Gapfill

1.		A. A rooster
2.		B. A sheep
3.		C. A rabbit
4.		D. A cat
5.		E. A dog
6.		F. A duck

Analysis (1) Classifying					
a clock, a dog, a dress, a mother, black, a pen, bread, pants, a bag, a frog, red, boots, a cat, rice, a man, a baby, pink, a teenager, a hat, a t-shirt, a banana, a book, a sheep, meat, kids, a table, green, an elephant, sugar, white					
animals	colours	things	food	clothes	people

(vocabulary)

Match	
1. angry	a. unhappy and angry because someone has something you want
2. sad	b. feeling pleasure or satisfaction
3. jealous	c. lacking interest or energy
4. confident	d. having a strong feeling against someone or something that makes you want to shout or hurt them
5. tense	e. unhappy or sorry
6. doubtful	f. nervous, anxious, unable to relax
7. apathetic	g. uncertain about something
8. happy	h. sure or trusting

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Complete any three
1. I felt angry because...
2. I felt sad although...
3. I felt jealous when ...
4. I felt confident so ...
5. I felt tense although ...
6. I felt doubtful because ...
7. I felt apathetic so ...
8. I felt happy when ...

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Generalizing

What classes do the following belong to?

- a hammer – *a tool*
- sadness –
- a table –
- a mother –
- a palace –
- December –
- winter –
- biology –
- tennis –

(vocabulary)

Conventional grammar exercises

- Gapfill
- Sentence-completion items

Relative pronouns

(conventional exercise)

Q1 - Stratford is the town ____ Shakespeare was born in.

- a. where b. which c. Either could be used here.

Q2 - The hotel ____ we stayed was good.

- a. where b. which c. Either could be used here.

Q3 - The man ____ interviewed me seemed friendly enough.

- a. who b. which c. Either could be used here.

Q4 - The British Prime Minister, ____ was interviewed yesterday, denied responsibility.

- a. who b. that c. Either could be used here.

Q5 - The car ____ was stolen belonged to my partner.

- a. which b. that c. Either could be used here.

Analysis (2)

Logical analysis and exemplification

Define the following items:

- Example: A hammer is a tool which...
 - a cow
 - Canada
 - a chicken
 - a carpenter
 - cigarettes
 - coffee
 - a cinema
 - Christmas

(relative pronouns and clauses)

List 1	List 2	List 3
Australia apples August an airport an artist an African an alligator air	a book Bangladesh bread a bedroom a baby bottles a bus a birthday	a cow Canada a chicken a carpenter cigarettes coffee a cinema Christmas
List 4	List 5	List 6
a duck a doctor Denmark doors December a dream a daughter disinfectant	eyes England an elephant the evening an emperor an engine economics eight	Hollywood a helicopter hands a hotel happiness a hairdresser history a horse

Ur, Grammar practice activities, 2009

Analysis (3) Generalizing

Here is a list of sentences.

1. We have been working here for a long time.
2. They have been in the country since 1995.
3. The program has been going on for ten minutes.
4. I have loved this singer since the beginning of her career.
5. We have been studying English for four years.
6. She has lived in Haifa since she got married.

When do you use since and when do you use for?

(grammar)

Precision (1) *Inherent contradiction*

Do these make sense?

- an objective opinion
- a definite maybe
- an exact estimate
- the larger half
- genuine imitation leather

(vocabulary, critical reading)

Precision (2) *Tautology*

What's wrong with these?

1. A free gift
2. A new innovation.
3. We made too many wrong mistakes
4. He exaggerated the situation too much.
5. It's pure undiluted orange juice.
6. Let's meet together at six.
7. It's a biography of Kipling's life.
8. That is a basic and fundamental fact of life.
9. They commute back and forth every day.

(vocabulary, critical reading)

Logic (1) Underlying assumptions

What assumptions or emotive implications underlie these statements?

1. This food is composed entirely of natural ingredients, so it is good for you as well as being delicious.
2. This method is scientifically proven to be effective
3. Thousands of people have already signed up: join now!
4. Don't use this method: it is based on outdated, old-fashioned ideas.
5. Everyone knows that the earlier you start learning a language the more successfully you will master it.

(critical reading, writing)

Logic (2) Reasoning: Premise and conclusion

What's wrong with these?

1. These people drink a lot of red wine and have few heart problems: so drinking red wine is good for your heart.
2. The boy told me he'd left his book at home, but it was in fact in his bag: so he was lying. That shows he is a liar.
3. The word 'education' comes from a Latin word meaning 'to draw out', so education is about drawing out people's potential.
4. The roads in Israel are not very good, and there are a lot of traffic accidents; that shows that traffic accidents are caused by bad roads.
5. She spends a lot of time reading, so she reads very well.

(critical reading, writing)

Logic (3) Ambiguity

What's wrong with these sentences?

1. We need more comprehensive schools.
2. Visiting relatives can be boring.
3. Ambulance man helps dog bite victim
4. Enraged cow injures farmer with ax
5. Juvenile court to try shooting defendant
6. Stolen painting found by tree
7. Two sisters reunited after 18 years in checkout counter
8. Kids make nutritious snacks

(linguistic awareness, contrastive analysis)

Logic (4) Evidence-based conclusions

What would be your conclusion from this evidence?

She's wearing a white coat.
 She's wearing a stethoscope round her neck.
 I saw her examining a patient.
 In her office there's a certificate that says she graduated from medical school.
 She was interviewed on television about a disease.
 There's a notice outside her door that says 'Dr Smith'.

"She must be a doctor."

(grammar: *must*/ *can't* of logical necessity)

Logic (4) Evidence-based conclusions

He never smiles.
We sometimes see him cry.
The funniest jokes can't make him laugh.
He stays at home all the time.

"He can't be very happy."

"He must be unhappy"

(grammar: *must/ can't* of logical necessity)

There must be a party at their house.	That child must be lost.	She must have lost her house key.
That woman must be very rich.	That car must have been in an accident.	It must be very cold outside.
Nobody can have lived in that house for a long time.	That boy must be in love.	That television program must be very funny.
They must have gone to bed very late last night.	Something terrible must have happened.	The lesson must be boring.
I must have offended her somehow.	There must be mice in the house.	You must be very happy!

Ur, *Grammar practice activities*, 2009

Logic (5) Coherence

Insert an appropriate conjunction: *because / since, although/in spite of the fact that, so/therefore, but/however/nevertheless, and, moreover/in addition, if / provided that*

1. She is a good teacher ... she hasn't had much training.
2. I know they are here... I saw them a moment ago.
3. She has ten children ... she still has time to write books.
4. He is a good boss ... he has a sense of humour.
5. We will come ... we get an invitation.
6. We will certainly come ... we have plenty of time.
7. He's lived in the US all his life... he must know English.
8. He is a good speaker ... I don't like him very much.
9. There isn't much water in the desert ... not many plants can grow there.
10. It seems there's plenty of time ... we need to get started immediately.

(conjunctions)

2. Creative thinking

1. Divergent thinking

- ❑ How many things can you think of to say about this picture?
(oral fluency)
- ❑ How many ways can you think of to solve this dilemma?
(oral fluency)
- ❑ How many ways can you think of to compare a train with a car?
(comparatives)
- ❑ How many endings can you think of for the sentence: If I had a million dollars...?
(conditionals)

- ❑ How many ways can you think of to use an empty tin can? (A pen? A piece of plasticine?)
(oral fluency, *can/could*)
- ❑ How many adjectives can you think of to describe the noun *road?* *movie?* *song?*
(grammar: adjective-before-noun, vocabulary)
- ❑ How many nouns can you think of that could be described by the adjective *clear?* (*hard?* *black?*)
(adjective-before-noun, vocabulary)

2. Originality, 'lateral' thinking

1. Think of ten ways to compare a computer with a piece of spaghetti.
2. Find six questions to which the answer is ...*twelve*...(tomorrow ...of course! ...my mother ...)
3. Suggest at least three advantages of being an only child? (Of not having a cellphone? Of having no car?)
4. Name ten things you have never done.
5. Name six things that you can't touch, and why.
6. Say six negative things about ...*a pen*... *a cat*... *English*.
7. Say four NICE things about your friend, using negative sentences.

Some concluding comments 1

There is no strict dividing line between lower- and higher-order thinking skills.

It's a continuum.

Some concluding comments 2

The use of higher order thinking skills in language teaching materials contribute to good learning, and are important..

However:

Knowledge of facts and lower-order thinking skills are basic and essential.

Some concluding comments 3

It is easier to implement higher-order thinking skills in more advanced materials in the upper grades.

However:

It is just as important, and perfectly feasible, to implement them in beginner and intermediate materials, or in courses for elementary and middle school.

Some concluding discussion questions

What is the optimum combination of lower- and higher-order thinking skills in teaching materials?

In form-focused tasks (grammar, vocabulary etc.)?

In communicative tasks (the four skills)?

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**Thank you for your
attention!**

pennyur@gmail.com



Jeremy Harmer
**'Yes, but why do we need
teachers at all?'**

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