

Education Pack

Starter Set

Year 7

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What's in this document?

This document contains worksheets and handouts for use in teaching Language to students in Year 7. The worksheets can be integrated into a lesson plan, or used on their own. They are designed to match specific outcomes of the Australian Curriculum.

Each activity is prefaced with some information about how that worksheet may be used, as well as which Curriculum Sub-strand it addresses.

Year 7

- Bots
- Priming
- Hobo Signs

This set of materials is a starter pack. A more complete set of materials is available at

www.iolinguistics.com

We are available for consultancy in language education and teacher development training.

We hope you will find these materials useful, and contact us with suggestions. We can be reached at

info@iolinguistics.com

Bots

Topic area

Language technology, pragmatics, cognition

Sub-strand

Language variation and change

Understand the way language evolves to reflect a changing world, particularly in response to the use of new technology for presenting texts and communicating

Outcomes

Students will:

- devise tests to elicit language information from a computer,
- compare the performance of two AI systems,
- discuss the difference between human language and a bot's output

Materials

- A computer with an Internet connection for each small group
- This worksheet

Preparing students for the activity

Ask students: Why do we have conversations? Or in other words, when you have a conversation with someone, what are you trying to accomplish?

Answers could include: get information, give information, build social relationships, have fun.

Which of these goals could a computer perform?

Computers are pretty good at getting and giving information, though they need a lot of help understanding the questions that we're asking them. Computers have no need of social relationships or having fun. This is actually one of the great things about computers: they're tireless workers that can keep going at a single task, and never get bored. What if computers complained like humans do?

Format of the activity

This activity works well for students in groups of two or three. Give the groups time to test out the two bots and decide which one performed better. Then, get them to combine in small groups and tell what questions they asked, and how the bots answered. Finally, you may want to have some general class discussion about their findings.

Ideas for further discussion

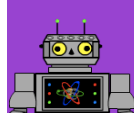
Ask: How did you test the computer for each of these questions? Which did the bots perform best at? Where did they go wrong?

Most bots are good at some of these tasks, like asking questions or telling jokes. They do much worse at remembering details about the conversation; in fact, they seem more geared to one-shot answers rather than keeping track of knowledge built up during the conversation. Also, humans have conversational goals; that is, they have a number of things to discuss, and when all those things have been discussed, then the conversation finishes or moves on to new goals. Bots do not try to keep track of conversational goals, like humans do.

Bots

A **bot** (also known as a *chatterbot* or *chatbot*) is a computer program designed to imitate human conversation. Human conversation is not easy for computers to mimic.

For this activity, you will gain experience with two bots.

Alice alice.pandorabots.com 	Talk-Bot tinyurl.com/talkbot 
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Evaluation

How well do these bots do at these tasks? You will need to figure out how to test the bots for these qualities. Try chatting to each bot, and give it a rating for each category.

Give 3 points for 'excellent', 2 for 'good', 1 for 'bad', and no points for 'terrible'.

How good are they at...	Alice	Talk-Bot
Remembering your name, if you tell it?		
Recalling other facts that you tell the bot?		
Answering factual questions?		
Elaborating (telling you more about their answers)		
Asking you questions?		
Remembering things that happened earlier in the conversation?		
Figuring out what words like 'it' and 'that' refer to in a sentence?		
Telling jokes?		
Giving answers that make sense?		
Generally acting 'human'?		
Total		

Add up the points. Which bot did better?

Questions for discussion

- Do you think you would ever confuse these bots for an actual person?

It would be unusual for a person to confuse a chatbot with a real person. Bots have obvious problems communicating.

The task of getting a computer to have a conversation is sometimes described as a 'Turing test'. It is named after WWII code-breaker Alan Turing (1912 – 1954), who is considered by many to be the inventor of the digital computer. In 1950, he wrote, "I believe that in about fifty

I N S T R U C T O R ' S C O P Y

years' time it will be possible to programme computers... to make them play the imitation game so well that an average interrogator will not have more than 70 percent chance of making the right identification after five minutes of questioning." The Turing test has never been passed. There is, however, a contest called the Loebner Prize, which is run every year, in an effort to find the most human-seeming chatbot.

2. What did these bots have a hard time with? Why do computers have difficulty with human conversation? (Think: How does a human learn language?)

Bots have trouble with the grammar of a sentence; their output is sometimes grammatically ill-formed. They have trouble with the meanings of certain words, like 'it' or 'that' (known as 'anaphoric expressions'). But the biggest problem is with pragmatics, or what kind of job the language user is trying to accomplish by making an utterance. Bots seem to say things more or less at random, and do not build on knowledge gained from previous utterances. They do not seem to really 'understand' anything the user says.

There could be many reasons that computers have trouble with language, most of which centre around the difference between the way humans and computers 'think'.

- Human language is very imprecise. For example, everyone knows that a 'heap' of sand contains many individual grains of sand. If you take one or two grains away, it still remains a 'heap'. If we take away all the grains of sand except for one or two, it is no longer a heap. But at what point did the heap cease to be a heap? The answer is that a word like 'heap' is not a well-defined concept. Instead, language users will define a pile of sand that they see as a 'heap' if it matches well enough with their ideas about 'heapness'. Computers do not natively possess such ideas, and it is difficult to teach them.
- Humans have real-world knowledge, and computers do not. Take this sentence: "The chefs prepared the pancakes, and the next day they were eaten." We know that the word 'they' probably refers to the pancakes because we have real-world knowledge about what pancakes are for and what chefs are for. Computers have no such knowledge, and so it is difficult for them to figure out the antecedent.
- Humans have human brains, which seem uniquely suited for learning language. Children learn language seemingly effortlessly, with no one explicitly teaching, and with no prior knowledge about language to use in their learning.
- Humans learn a language by listening to many examples of language in context that they receive from caregivers, as well as engaging in social interaction with other humans. Computers do not naturally have either of these inputs. Interestingly, however, the most successful bots use both of these: a large database with many examples of acceptable answers, some of which have may been gathered from humans in past conversations.

3. In the real world, what could someone use a bot for?

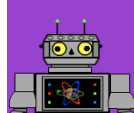
Bots are entertaining, but they are also being used for real-world applications:

- to help people find information in a database
- to help language learners practice conversation
- as shopping assistants for e-commerce
- or even as malicious agents for spamming or phishing scams!

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Generally acting 'human'?		
Total		

Add up the points. Which bot did better?

Questions for discussion

1. Do you think you would ever confuse these bots for an actual person?
2. What did these bots have a hard time with? Why do computers have difficulty with human conversation? (Think: How does a human learn language?)
3. In the real world, what could someone use a bot for?

Priming

Year 7

Topic area

Cognition, semantics, word meaning

Sub-strand

Text structure and organisation

Text cohesion

Understand that the coherence of more complex texts relies on devices that signal text structure and guide readers

Outcomes

Students will:

- understand how easily we understand language items depends on how well we have been prepared for them,
- recognise one way that texts can push them towards attitudes without reasoned argument

Materials

- This worksheet

Preparing students for the activity

Work through the exercise. If you are unfamiliar with the notion of priming, read the Wikipedia entry on *priming (Psychology)*. There is no need to understand all the technical details, but overview is important.

Format of the activity

Individual work. Half the class gets one sheet (Story 1), and the other half gets a second sheet (Story 2). After reading and filling in the words, students go around checking how many people completed words in particular ways. This last part may be done centrally by the instructor.

During the exercise, students may fill in the blanks with any word they want, but there is a very strong tendency for the chosen words to be semantically related to the story they read.

Ideas for further discussion

You may want to show students a copy of the Stroop Test, in which test subjects are asked to read a word naming a colour. If the word is in that colour, people get consistent priming, and can name the task quickly. However, they are much slower if the colour named and the colour printed disagree (for example, **RED** or **GREEN**). Because of the conflicting priming, processing of the task of reading the written word is slowed down.

Other research includes work from Elizabeth Loftus, who showed subjects a video of two cars colliding, and then primed them by asking "How fast were the cars moving when they [smashed into, bumped into, contacted] each other?" Subjects who got the "smashed" version of the question consistently guessed higher speeds than those who got the "bumped" version. They were also more likely to "remember" that there was broken glass, when there was none in the video.

Priming

Read the following story, then do the word completion task that comes after it. In the word completion task, you just have to add one or more letters to the three given letters to make a new word. If the three letters happen to make a word themselves, just ignore that; you have to add at least one letter.

Story 1

William and his sister Mary were at the office last Monday, applying for a patent. The next day, they gave a demonstration of their new device. The invention looked like a small wardrobe, with locked doors on the front. After attaching its dangling cable to the wall, William slotted a small rectangular plastic key in a slot in the side of the box. The machine began to whirl.

The investor was so impressed, he gave them a banknote right away (although William said they preferred cash), promising to give them more on the subsequent day. All he wanted in return was a small missive declaring his ownership of 10% of the invention.

Word completion

Complete the following word stems with one or more letters to make *the first word* that comes to your mind.

che _____

cab _____

let _____

app _____

pot _____

plu _____

car _____

tom _____

bro _____

Priming

Read the following story, then do the word completion task that comes after it. In the word completion task, you just have to add one or more letters to the three given letters to make a new word. If the three letters happen to make a word themselves, just ignore that; you have to add at least one letter.

Story 2

Danielle's garden was absolutely beautiful. It wasn't just pretty, it was productive as well: if you could eat it, she probably grew it. There were vegetables: cauliflower, asparagus, leek, capsicum, kale, okra, parsnip, pak choy and more. There were also fruit: oranges, peaches, nectarines, apricots and so on.

On one bright summer's day, while Danielle was at the beach, a swarm of locusts ate the whole garden.

Word completion

Complete the following word stems with one or more letters to make *the first word* that comes to mind.

che _____

cab _____

let _____

app _____

pot _____

plu _____

car _____

tom _____

bro _____

Analysis

Go around the class, and count up the people who read Story 1 and wrote **cheque** for che____, and write the count in the box for cheque Story 1. Do the same for Story 2, and then repeat the process, this time counting who completed che____ with **cheese**. Keep doing counts till you have filled the whole matrix.

Stem	Word	Story 1	Story 2	Word	Story 1	Story 2
che____	cheque			cheese		
let____	letter			lettuce		
pot____	potential			potato		
car____	card			carrot		
bro____	brother			broccoli		
cab____	cabinet			cabbage		
app____	application			apple		
plu____	plug			plum		
tom____	tomorrow			tomato		

Add up the columns with numbers. You should have a higher number under Story 1 than Story 2 in the first pair of columns, because the first set of words were *primed* by Story 1.

On the other hand, people who read Story 2 should be more likely to choose the food word, so we should see the Story 2 numbers greater than the Story 1 numbers for the second column of words.

What's happening?

It's easy to think of certain words when you're presented with related words. This is known as *priming*. Priming changes which words are likely to occur to you, based on which words you have recently seen. This can work semantically, making you likely to think of words with similar or related meaning. It also works phonetically, so that words with similar form come to mind more quickly.

Poets frequently use *phonetic priming*. What are two ways that they do this?

Hobo Signs

Year 7

Topic area

Semantics, semiotics, writing systems

Sub-strand

Expressing and developing ideas

Visual language: how images work in texts to communicate meanings

Outcomes

Students will:

- derive the meanings of symbols in a real-life graphical system,
- recognise compositional elements of a sign,
- construct symbols for their own social system

Materials

- This worksheet

Preparing students for the activity

The worksheet provides some information on hobos. To introduce the activity, you might try drawing the following hobo signs on the board for the students to guess.



A kind lady lives here.



Get out of here quick!

Why might these symbols have been chosen for these meanings?

For the first symbol, an object (like a kind lady) might be represented by a cat because the two are associated in some way. This is sort of like what we do in English: the news might say "Canberra commented..." when they mean "the Prime Minister commented..." because the two are closely related.

The second sign might have two arrows instead of one because two arrows would be twice as urgent.

Format of the activity

As always, try the activity yourself first. It's a good idea to let the students tackle the matching activity on their own for a couple of minutes, and then compare their answers to others and help fill in each other's blanks together.

The second page is optional, and can be used to expand on the ideas on the first page.

Additional ideas for discussion

What made it difficult to guess some of these signs?

This communication system is a little bit hard to decipher if you're not in the hobo group. In some ways, the challenge of deciphering hobo signs is similar to the challenge of deciphering an unknown writing system, like hieroglyphics — except that these hobo signs are intentionally difficult to understand.

Why didn't hobos just write in words?

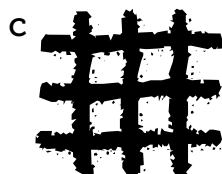
Two reasons: Many hobos could not read or write, and the signs had to be incomprehensible to outsiders. You wouldn't want people to understand the comments you just made about them.

Hobo Signs

During the Great Depression, many people were poor and had no work. Some would travel from place to place, working when they could, and living on whatever was available. In the USA, these people were called *hobos*. From the 1880s until the 1940s, hobos used signs to communicate with each other. They were not always able to read, so they would scratch these symbols on walls or in the dust to warn each other of danger or let each other know where they could find food or a place to sleep.

Matching

Here is a collection of hobo signs and their meanings, but the meanings are all mixed up. Determine which signs go with which meanings.



1. Religious talk will get you a free meal.

d

2. Prison

c

3. Bad water

b

4. There is nothing to be gained here.

e

5. Good place for a handout

g

6. Beware of four dogs here.

l

7. A kind lady lives here. Tell a pitiful story.

h

8. These people are rich.

a

9. Dangerous neighbourhood

i

10. A man with a gun lives here.

f

11. Don't go this way.

k

12. Well-guarded house

j

I N S T R U C T O R ' S C O P Y

Question for discussion

What helped you to determine the meaning of these hobo signs? Did you notice any recurring shapes or symbols?

Many of the hobo signs are **iconic**; that is, they look like the thing being represented. For example, the sign marked 'a' shows a rich man's top hat and a pile of gold. The 'prison' sign is appropriately grate-like. Others are a little harder to guess. Sign 'f', saying that a man with a gun lives here, seems a bit opaque until you realise that the triangle is a hobo with his hands in the air. That "hobo triangle" comes up again in sign 'h', where the triangle is telling a pitiful story about the three little triangles (perhaps child hobos back at home). One would think an "X" shape is a bad thing, but here the X marks the spot for something good. It's the box with the dot that marks the danger.

Analysis

Based on your analysis of the hobo signs, try filling in the blanks with either the meaning or the sign.

1		This is the place.
2		Danger
3		Fresh water, safe campsite.
4		Something good / all right

Try it yourself

Hobos used these signs to warn other hobos of danger, or to give help. What signs would help you to communicate in your social environment? Ideally, they should make sense to someone in your group, but not to people outside of it.

Do not actually draw these signs around your school, though. Hobos were not always popular wherever they went, and you won't be either if you engage in vandalism!

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- | | | | |
|---|-------|--|-------|
| 1. Religious talk will get you a free meal. | _____ | 7. A kind lady lives here. Tell a pitiful story. | _____ |
| 2. Prison | _____ | 8. These people are rich. | _____ |
| 3. Bad water | _____ | 9. Dangerous neighbourhood | _____ |
| 4. There is nothing to be gained here. | _____ | 10. A man with a gun lives here. | _____ |
| 5. Good place for a handout | _____ | 11. Don't go this way. | _____ |
| 6. Beware of four dogs here. | _____ | 12. Well-guarded house | _____ |

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Sign	Meaning

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