1 Mental stretching

As we have seen in the Introduction, many psychologists would now tend to focus less on the view of short-term memory as a *place* which language passes through on its way to long-term memory, or even as the *process* by which this happens, but instead as the *state* in which our brains may be temporarily, but actively and consciously, engaged with auditory, visual or spatial data. To emphasize the active role that it plays, the term *working memory* is now often preferred.

Much of what is currently believed about working memory originates with the multi-component model developed and made popular by the psychologist Alan Baddeley. It consists of a *central executive*, controlling three systems – the *phonological loop*, the *visual-spatial sketchpad* and the *episodic buffer* – which are called into play depending on the type of data being processed.

The phonological loop

If a person who is talking suddenly stops and asks us to repeat what they have been saying, the chances are that, even if we have not been paying close attention, we will be able to repeat the last few words of their utterance. This is known as *echoic memory*, and we use it by playing back to ourselves in our minds the words that we have just heard. Since echoic memory lasts for only a few seconds and has a very limited capacity, the amount of language processing that can happen is negligible. This may be the kind of memory that is employed by language learners when a short utterance of up to around six known words is drilled in class by the teacher. Of course, if some or all of the words in the utterance are unfamiliar to the learners, then the power of echoic memory is even more limited and the chances of accurate repetition are decreased.

This type of memory can be extended, however, by what is known as the *phonological loop*. Unlike echoic memory which is a largely subconscious activity, this system is more conscious and acts as a sort of inner internal conversation, where utterances are constantly repeated to oneself to avoid decay. We can observe this process happening when we say a phone number to ourselves over and over again until we manage to find a pen to write it

15

Memory Activities for Language Learning

down! The phonological loop allows for more language processing than echoic memory, and consequently we may be able to notice aspects of form and meaning, and create links with what is already retained in long-term memory.

Interestingly, the phonological loop is also employed as a mechanism to deal with written material. When we read a text, or indeed write one, recoding the visual input as auditory data and replaying it within the phonological loop allow us to understand the links between different ideas in what we are reading and, when we write, to produce text that is logically connected and coherent.

Many of the activities in this section will challenge learners to engage with this process.

The visual-spatial sketchpad

There is another way in which we can process visual data in working memory. In the same way that echoic memory allows immediate repetition of very short stretches of auditory data, *iconic memory* enables brief retention of visual material. Again, since it lasts for such a short period of time – less than a second in this case – processing of the image in any way is very limited. It is extended, however, through the *visual-spatial sketchpad*, which creates a sort of virtual world in the mind, temporarily generating images and allowing them to be manipulated and reflected on. This is the system we use when we have to think consciously about the route between two different places, or when we produce a drawing. The implications of this system for language learning may be less immediately obvious, but if it is combined with auditory material – when we try to explain the route to another person, for example, or, as in Activity 1.7: *Delayed TPR* (Total Physical Response) below, when we link an action with its name – the linguistic memory traces may be made stronger by its deployment.

The episodic buffer

Another form of multi-sensory processing of data may also occur in the *episodic buffer*. Here visual, auditory and spatial information is combined with information about chronological order into single episodic representations. It may be employed when we recall a scene from a film we have just seen, or the events of a story we have heard, as in Activity 1.12: *Reordered story* and Activity 1.13: *Co-constructed storytelling* at the end

16

of this chapter. Recent evidence suggests that this kind of multi-sensory processing of information can leave longer-lasting memory traces, and indeed, the episodic buffer is thought to have very strong links with long-term memory.

An important point to remember about all of these systems is that they are severely limited by both time and capacity. External factors can also greatly diminish our working-memory abilities. Just think how difficult it can be to try to remember something or read while someone is asking you a question at the same time. Things are further complicated by the fact that we often overestimate how much of what is temporarily held in working memory will be retained later. There have been numerous occasions during the writing of this book when I have struggled to recall ideas I had had earlier, which, at the time, I was convinced I would remember without writing them down.

The capacity of working memory can be somewhat increased, however, through the process of *chunking*. If we take a telephone number such as 035689256, we can retain it more easily in working memory if we break it down into three units, 035–689–256, than if we attempt to remember each digit individually. This principle can also be applied to words, so a person who recognizes the chunks of language within the last sentence (*telephone number*, *more easily*, *working memory*, *break it down*, etc.) would have fewer difficulties retaining it than someone who did not.

There is also recent evidence to suggest that through training and practice, improvements in working memory can be made. Tracey Alloway's (2010) research would indicate not only that this is the case, but also that high working-memory levels in the young may be a better predicator of future academic success than traditional IQ tests. Thus, the activities in this chapter work with two ideas in mind. First, that encouraging learners to process language through their working memories is a useful step on the way to moving some of that language into long-term memory, and secondly that a well-trained working memory can help learners to develop in fluency, listening, reading, speaking and writing.

Memory Activities for Language Learning

1.1 Flash!

Memory focus	Processing an image in working memory and using language to talk about it.
Level	Any
Time	10 minutes plus
Preparation	Find some interesting images that contain a fair amount of detail, such as a street scene (see an example in Box 1.1a) or the interior of a house (see an example in Box 1.1b). Prepare to display them with a projector or make them large enough so that they can be seen by the whole class. With a small class, it may be possible for each person to be given their own picture to work with.

Procedure

1   Organize the class into pairs. Show them the picture and ask the learners to talk to each other about what they can see. Be available to deal with vocabulary queries as they arise, and encourage dictionary use. For lower levels, you may want to remind them of how the structure *there is / there are* works. Now tell them that they need to try to remember as much as they can about the detail of the picture.

2   After about 30 seconds to a minute, ask one person in each pair to turn so that he or she can no longer see the picture.

3   The 'seeing' person in the pair now asks questions to see what their partner can remember. These questions will vary according to the level of the learners. For the picture in Box 1.1a, these could include: *How many people are in the picture? What is the old lady doing?*, etc.

4   Change roles and use another picture.

18

Mental stretching

Box 1.1a: Flash!

From *Memory Activities for Language Learning*
© Cambridge University Press 2011   PHOTOCOPIABLE

Box 1.1b: Flash!

From *Memory Activities for Language Learning*
© Cambridge University Press 2011   PHOTOCOPIABLE

Memory Activities for Language Learning

Variations

1   Show just one image for 30 seconds. Now dictate a series of true and
    untrue statements about the picture. If the statement is true, the learners
    write it down as it is. If it is not true, they need to adapt it to make it true,
    and then write it down. This idea is based on an activity in *Images* by
    Jamie Keddie, Oxford University Press, 2009.

2   Show the learners a short video (maximum one minute) from a video-
    sharing website such as You Tube™ (http://www.youtube.com). Both learners
    in each pair watch the video. One learner tries to remember as much
    detail as possible, while the other thinks of questions to ask the other (e.g.
    What colour was the man's shirt?). After they have asked and answered
    the questions, they watch the video again to check.

3   Instead of using a picture, display a grammar table (like the one for an
    elementary group in Box 1.1c) for a short time. Make sure no one is writing
    anything down. Now take the table away and ask them to work in pairs
    to write down as many correct sentences as they can, just using words
    from the table. (There are 19 possible questions from the table below.)

Box 1.1c: Flash!

How long	did you	stay	last night?
How much		eat	
When		go	
What		get here	
How		do	
Why		go home	

From *Memory Activities for Language Learning*

© Cambridge University Press 2011   PHOTOCOPIABLE

20

4   Display a short text or dialogue for a short period of time. Take it away and then ask the learners to write what they can from memory. Now ask them to work with a partner and to pool what they have written to produce their best version of the text together.

Drilling

Drilling in its basic format involves the teacher saying a word, phrase or sentence in the form to be practised, and the learners repeating it. This can be done chorally, with the whole class together, or individually, by the teacher choosing the person to repeat. If the utterance is longer than around seven or eight words, then working memory, as opposed to echoic memory, will be employed to a certain extent, but simply repeating still does not provide much in the way of cognitive challenge for learners. Here are some variations on drilling which may help to make the process more stimulating and meaningful, and consequently make the language being practised more memorable.

Dramatic drilling

Changing the way in which the learners say the words may help to make the language they are repeating more memorable. For instance, they could say the items very slowly, quickly, quietly or loudly. They could also repeat them in a way that reveals how they feel about the words: if the teacher is drilling a list of food items, for example, they repeat the word in an enthusiastic way if they like the foods, and in an unenthusiastic way if they do not.

Physical drilling

The teacher says the words while performing a physical action to make the meaning clear. The learners repeat both the words and the physical action. This works particularly well with a short story containing lots of action.

Who repeated?

The teacher stands with his or her back to the class and says a sentence in the form to be practised. Someone in the class repeats the sentence. The teacher tries to guess who it was who said it. If this is achieved, the person who spoke now has a turn at being the person at the front and says another sentence using the form.

Memory Activities for Language Learning

1.2 Reversed drilling

Memory focus	Encouraging learners to process reformulated versions of their own utterances in working memory.
Level	Any
Time	5–15 minutes
Preparation	None

Procedure

1 When the learners are engaged in a freer speaking activity, listen in unobtrusively and make a note of some of the things that they are saying that could be improved upon.
2 Now write each utterance up on the board in a reformulated version, which makes it more accurate and/or uses more complex or clearer language. This should be done at a level which is not too far above the level of the learners. Give each utterance a number.
3 Bring everyone together and draw the learners' attention to the reformulated utterances on the board. Deal with any issues about meaning.
4 Now ask a learner to pick one of the utterances on the board. This could be either a reformulation of the learner's own utterance or the utterance of another learner. Ask him or her to say the utterance out loud. You now repeat the utterance in as natural a way as possible. The learner can now repeat the utterance as many times as desired. After each repetition, provide the learner with a natural model immediately.

Note
The idea for this activity comes from *Counseling-Learning: A Whole-Person Model for Education* by Charles A. Curran, New York: Grune and Stratton, 1972. Curran is the creator of community language learning (CLL) and coined the phrase 'Human Computer™' to refer to this approach to drilling.

22

Mental stretching

1.3 The broken telephone

Memory focus	Providing practice in retaining long stretches of language in working memory.
Level	Elementary and above
Time	5–20 minutes (depending on the text)
Preparation	Choose a very short story or joke, suitable for the level of the group. Cut the text up into sections of one or two (if short) sentences. See the example in Box 1.3 for an intermediate group.

Procedure

1 Organize the class into groups of five to seven. Each group needs one set of the story sentences. These should be placed face down in order on the table next to the first person.

2 The first person in each group turns over the first piece of paper and whispers what it says to the next person in the group. The second person then whispers it to the next person, and so on. The last person, at the end of the line, writes down the sentence that he or she hears.

3 As soon as the first sentence has moved on from the second person, the first person can start whispering the second sentence to him or her, and so on. This way everyone is kept actively involved throughout the activity. When all of the sentences have passed down the line, the last person will end up with a complete version of the whole text.

4 Now ask each group to go through this version together, checking it for accuracy. Finally, they compare it with the original text and reflect on how any differences that they find occurred.

Memory Activities for Language Learning

> ### Box 1.3: The broken telephone
>
> a) The Japanese eat very little fat and suffer fewer heart attacks than the British or Americans.
>
> ✂---
>
> b) On the other hand, the French eat a lot of fat and also suffer fewer heart attacks than the British or Americans.
>
> ✂---
>
> c) The Japanese drink very little red wine and suffer fewer heart attacks than the British or the Americans.
>
> ✂---
>
> d) On the other hand the Italians drink lots of red wine and also suffer fewer heart attacks than the British or Americans.
>
> ✂---
>
> e) The conclusion is 'Eat and drink what you like. It's speaking English that kills you!'
>
> From *Memory Activities for Language Learning*
> © Cambridge University Press 2011   PHOTOCOPIABLE

Variation

The first person whispers the sentences to the second person in English. The second person then mentally translates this sentence into the mother tongue and says the sentence in the mother tongue to the next person. The third person then translates back to English, etc. Of course, this version is only possible in a monolingual group.