



The Language Inside Your Brain

(past tense suffix ‘-ed’ saying /d/ or /t/)

Lesson Objective

In this lesson, teachers introduce children to the results of a famous psycholinguistic experiment by Jean Berko, often called ‘The Wug Test’ (Berko, 1958). Children will do some of the actual test items themselves. The test items target the past tense suffix ‘-ed’.

Berko’s investigation demonstrates how young children internalise rules for forming the past tense in English, and is a fun way to show children how cognitive scientists try to find out what our brains know about language.

This lesson can be used in conjunction with a **linked writing activity** working explaining an imaginary activity clearly or with a **linked lesson about reading and spelling the past tense suffix ‘-ed’**. Instructions for both these activities are given after this lesson.

Note: Letter names are referred to using single quotes (e.g., ‘d’), while sounds that letters make are referred to using slant brackets (e.g., /d/). We have avoided using international phonetic symbols for sounds, choosing instead common English spellings when possible (e.g., /ng/ for the sound at the end of ‘bang’). We do, however, use the symbol schwa /ə/ to represent the English vowel sound that typically occurs in unstressed syllables, because this sound can be spelled in many different ways (e.g., mountain, telephone, again, computer, teacher).

Teacher		Students
Slide 1	<p>Today we are going to find out how clever your brains are. There are lots of things our brains know how to do for us, and some of them are things we don’t even know we know!</p> <p>Click to reveal boy’s question: This boy is asking, “How do I know how to talk?” What do you think our brains need to know for us to be able to talk? (e.g., we need to know words, we need to know how to put the words together into sentences, we need to know how to say the words using our mouth, tongue, lips, etc)</p>	individual children respond

	<p>Click to reveal girl's exclamation: This girl is saying, "Let's find out!" Let's find out about two important things our brains know for us to be able to talk. To do that, we are going to learn some made-up words for funny things we can do. Ready?</p>	
Slide 2	<p>Look, this dog knows how to glong. He's been practising how to glong for weeks. Can you all say that? He can ... glong.</p> <p>What does the dog have to do to glong?</p> <p>Knowing how to glong sure looks tricky!</p>	<p>glong</p> <p>individual children respond</p>
Slide 2 continued	<p>Yesterday, he did the same thing. Yesterday, he... Children should supply the past form.</p> <p>Note: There are many possible ways to express the past. Children may say 'Yesterday he... was glonging' or 'Yesterday he... did some glonging' or they may make up an irregular past form such as 'glang' or 'glung'. If this happens, model the regular past form 'glonged' and ask children to repeat it several times with you.</p> <p>What did you say? Let's listen again. Yesterday, he...</p>	<p>glonged</p> <p>glonged!</p>
Slide 2 continued	<p>Oh, right. He glonged. Emphasise the last sound /d/ as you say 'glonged'.</p> <p>Hmmm, you added a sound to 'glong' when the dog did it yesterday. Listen again.</p> <p>Point to the dog again as you say: This dog can glong. Then say: Yesterday, he glonged.</p> <p>What sound did you add? Yesterday, he glong-/d/. What sound?</p> <p>Look amazed. How did you know how to do that? Act suspicious. Have you ever heard the word 'glong' before? Have you ever heard the word 'glonged' before?</p> <p>But you all agree that we can say 'yesterday, he glonged'. That's what everyone said, right?</p>	<p>/d/</p> <p>no no yes</p>

	Wow! Your brain knew what to do, even though you had never heard of the word 'glong' before. Amazing!	
Slide 3	<p>Now let's look at another funny thing to do. These people know how to rick. Can you all say that? They can... rick.</p> <p>What do you have to do to rick?</p> <p>It looks pretty tricky to rick too!</p>	<p>rick</p> <p>individual children respond</p>
Slide 3 continued	<p>Yesterday, they did the same thing. Yesterday, they... Children should supply the past form.</p> <p>Yes. What did you say? Let's listen again. Yesterday, they...</p> <p>Oh, right. Yesterday they ricked.</p> <p>Emphasise the last sound /t/ as you say 'ricked'.</p> <p>You did it again. You added a sound to 'rick' when they did it yesterday. Listen again.</p> <p>Point to the people as you say: These people know how to rick.</p> <p>Then say: Yesterday, they ricked.</p> <p>But wait a minute. I'm not sure it's the same sound as before. What sound did you add? Let's listen. Yesterday, they...</p> <p>Yesterday, they rick-/t/. What sound?</p> <p>Look amazed again.</p> <p>But that's not the same sound you used for 'glonged'. How did you know how to do THAT?</p> <p>Act suspicious again.</p> <p>Have you ever heard the word 'rick' before?</p> <p>Have you ever heard the word 'ricked' before?</p> <p>But you all agree that we can say 'Yesterday, they ricked'. That's what everyone said, right?</p> <p>Wow! Your brain knew it had to do something different, even though you had never heard of the word 'rick' before. That's even more amazing!</p>	<p>ricked</p> <p>ricked!</p> <p>ricked</p> <p>/t/</p> <p>no</p> <p>no</p> <p>yes</p>

Slide 4	<p>Let's look at one more funny thing to do. This girl knows how to spow. She can spow really well. Can you all say that? She can... spow.</p> <p>What does she have to do to spow?</p> <p>I think it looks fun to spow!</p>	<p>spow</p> <p>individual children respond</p>
Slide 4 continued	<p>Yesterday, she did the same thing. Yesterday, she... Children should supply the past form.</p> <p>Yes. What did you say? Let's listen again. Yesterday, she...</p> <p>Oh, right. Yesterday, she spowed. Emphasise the last sound /d/ as you say 'spowed'.</p> <p>Let's see what sound you added this time. Listen again.</p> <p>Point to the girl as you say: This girl likes to spow. Then say: Yesterday, she spowed.</p> <p>Wait a minute. Was it a /t/ or a /d/ this time? Let's listen. Yesterday, she ...</p> <p>She spow-/d/. What sound?</p> <p>Look amazed again. Your brains are so clever! How did you know how to do THAT? Act suspicious again. Have you ever heard the word 'spow' before? Have you ever heard the word 'spowed' before?</p> <p>But you all agree that we say 'Yesterday, she spowed'. That's what everyone said, right?</p> <p>Wow! So sometimes we choose /t/ for things we did yesterday. What sound?</p> <p>And sometimes we choose /d/. What sound?</p> <p>How do we know which one to choose? Do we have to remember whether it is /t/ or /d/ for every word we ever hear?</p>	<p>spowed</p> <p>spowed!</p> <p>spowed</p> <p>/d/</p> <p>no</p> <p>no</p> <p>yes</p> <p>/t/</p> <p>/d/</p>

<p>Slide 5</p>	<p>Let' see. Here is someone sneezing. Maybe you learned that when they did that yesterday, you say they...</p> <p>Sneeze - /d/. What sound?</p> <p>Ok, remember: /d/ for sneeze.</p> <p>Now, here is someone smiling. Maybe you learned that when they did that yesterday, you say they ...</p> <p>Smile - /d/. What sound?</p> <p>Ok, remember: /d/ for smile.</p> <p>And here are some people walking. If they did that yesterday, you say they...</p> <p>Walk - /t/. What sound?</p> <p>Ok, remember that too. We use /t/ for walk.</p>	<p>sneezed</p> <p>/d/</p> <p>smiled</p> <p>/d/</p> <p>walked</p> <p>/t/</p>
<p>Slide 6</p>	<p>Act worried.</p> <p>Ooh, this is getting tricky. I don't know if I can remember this for every single thing we can do. And what if I don't know the word for something we can do? What happens then?</p>	
<p>Slide 7</p>	<p>We just found out what happens. We found out by making up words that we are sure nobody has ever heard of before. Words like 'glong' and 'rick' and 'spow'.</p> <p>It turns out you knew how to say someone did these funny things yesterday, even though you had never heard of them before.</p> <p>If a dog can glong, then yesterday he ... If people can rick, then yesterday they ... If a girl can spow, then yesterday she...</p> <p>Act relieved.</p> <p>Phew! Luckily, we don't have to remember which sound to use every time we want to talk about doing something yesterday. Our brains just know what to do. They have learnt a rule.</p> <p>They know a rule for talking about doing things yesterday, or anytime before right now. And you didn't even know it!</p>	<p>glonged</p> <p>ricked</p> <p>spowed</p>

Slide 8	<p>Scientists can find out about the language rules our brains know by doing tests like this one.</p> <p>Maybe you would like to be a Glong-Rick-Spow scientist one day! You could even make up a funny word for doing that special kind of science... what would your word be?</p>	
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Notes on English past tense rules

Rick: We form the past tense of words ending in /p/, /ch/, /k/, /f/, /sh/ and unvoiced /th/ (as in 'froth') by adding /t/. Hence, the imaginary word 'rick' becomes 'rick/t/'. In fact, we have no choice but to add /t/, due to the physical constraints of pronouncing such sounds together. We never pronounce clusters like /kd/ in any English words.

Glong: We form the past tense of words ending in all other consonant sounds except /d/ and /t/ by adding /d/. Hence, the imaginary word 'glong' becomes 'glong/d/'. Again, this is largely due to the physical constraints of pronouncing such sounds together. We never pronounce clusters like /gt/ in any English words.

Spow: We also form the past tense of words ending in any vowel sound by adding /d/. However, in these cases (as well as in the case of the consonants /r/, /l/, /n/ and /m/) there is no global constraint on pronunciation. For example, it is possible to say both 'purred' /purd/ and 'pert' /purt/, 'penned' /pend/ and 'pent' /pent/. This means the imaginary word 'spow' (ending in the vowel sound /ow/) could potentially become 'spow/d/' or 'spow/t/'. But if children have learnt a rule specifically about forming the past tense, then they should add /d/, not /t/. Strikingly, this is exactly what they do.

Berko, J. (1958). The child's learning of English morphology. *WORD*, 14:2-3, 150-177, doi: 10.1080/00437956.1958.11659661

Writing activity

Lesson Objective: Children reinforce the notion of the past tense suffix orally and then work on writing an explanation using appropriate verbs and adverbs.

1. Invite children to work in groups, pairs or individually to draw someone doing a funny activity (e.g., walking on ceiling, cleaning the moon, riding a jellyfish, etc).
2. Ask them to invent a name for their activity and help them to write two sentences about their drawing, providing the spelling (e.g., This man can _____; Yesterday, he _____).

Note: some words children choose for their activity may end in the sounds /t/ or /d/. These words will take the past tense ending '-ed' sounding like /əd/ (e.g., 'flad', 'fladded'). Teachers can point out that there is a third sound our brains sometimes choose for the past tense (/əd/) and we know the rule for that too.

3. Children can present their drawings to the class and test each other on what the past tense for their imaginary activity would be.
4. Ask children to write an explanation of what their imaginary activity involves.

Plural suffix '-ed' (saying /d/ or /t/) reading and spelling lesson

Lesson Objective

Children work on learning to read and spell the plural suffix '-ed' in English, when it is pronounced /d/ or /t/.

Teacher	Students
<p>1 Terminology: Past tense You are all very clever. You knew how to talk about doing some funny made-up activities yesterday even though you had never heard of them before. You knew that we say: a dog can glong and yesterday he...</p> <p>He glonged, that's right. When we talk about something that happened yesterday (or any time before right now), we say it happened in the past. When did it happen? In the...</p>	<p>glonged</p> <p>past</p>

2	<p>The past form of glong is...</p> <p>The past form of crawl is...</p> <p>The past form of show is...</p> <p>What do we call it when we talk about something happening before right now? The...</p>	<p>glonged</p> <p>crawled</p> <p>showed</p> <p>past!</p>
3	<p>Writing the past tense suffix</p> <p>What sound do we hear at the end of 'glonged' and 'crawled' and 'showed'? Emphasise the /d/ sound at the end of each word.</p>	/d/
4	Yes, we hear /d/. What letter makes the sound /d/?	'd'
5	<p>We will use the letter 'd' with the letter 'e' to write the past form of our verbs.</p> <p>Write the word 'crawl' on the board.</p> <p>Read this word with me. Crawl.</p> <p>Help children sound out the word if necessary.</p> <p>Write the word 'crawled' on the board and underline 'ed': crawled.</p> <p>Read this word with me. Crawled.</p> <p>Point to 'ed'. When we write a verb in the past, we add the letters 'e' 'd' to show that we mean it happened before right now. What letters?</p>	<p>crawl</p> <p>crawled</p> <p>'e' 'd'</p>
6	<p>Terminology: Suffix</p> <p>When we add a letter or letters to the end of a word to change its meaning or the way we use it in a sentence, we call it a suffix. What is it called?</p>	a suffix
7	<p>Point to the 'ed' of 'crawled' again. The letters 'e' 'd' are a suffix. If we add the letters 'e' 'd' to a word like 'crawl', then we are telling someone when the crawling happened. It happened in the past.</p> <p>My baby brother likes to crawl. Last week he crawled all the way across the garden.</p> <p>Remember, a suffix changes the meaning of a word or the way we use it. Say that word again with me. Suffix.</p>	suffix
8	<p>Guided practice</p> <p>Write the word 'show' on the board.</p> <p>Read with me. Show.</p> <p>I can show you my pen right now. Show the children a pen.</p> <p>What letters do we need to add to this word to make the past form? That's right. We need to add the suffix 'e' 'd' to make the past.</p>	<p>show</p> <p>'e' 'd'</p>

	<p>Call on a child to add the letters 'ed' in a different colour. Read the new word with me. Showed. I showed you my pen yesterday.</p>	<p>showed</p>
9	<p>Write the word 'pick' on the board. Now read this word with me. Pick. I like to pick flowers. We will add the letters 'e' 'd' to make the past form of this word. Add 'ed' in a different colour.</p> <p>Read the new word with me. Picked. Yesterday, I picked some flowers. What sound can we hear at the end of 'picked'? Pick-/t/. Emphasise the /t/ sound. What sound?</p> <p>That's right, we hear /t/. Sometimes the past sounds like /d/ and sometimes it sounds like /t/. Your brain knows what to say. But we always write it the same way. Point to the letters 'e' 'd' in 'picked'. How do we write it? With the letters...</p>	<p>pick</p> <p>picked</p> <p>/t/</p> <p>'e' 'd'</p>
10	<p>Independent practice Now it's your turn to write some words in the past. Students can work in exercise books or on student whiteboards.</p>	
11	<p>Write the word 'train'. I train once a week for soccer. What word? Ask children to say the sounds (/t/ /r/ /ai/ /n/) as they write if necessary.</p>	<p>train</p>
12	<p>Let's add a suffix to your word to make it a past form. Write the letters you need to change 'train' to 'trained'. Yesterday, I trained.</p> <p>What letters did you add?</p> <p>Show me your work. Check children's work and provide feedback. Read the word with me. Trained.</p>	<p>children write 'ed'</p> <p>'e' 'd'</p> <p>trained</p>
13	<p>Repeat Steps 10-12 with the following words, reducing support when children are ready. Provide a sentence context for each word.</p> <p>jump, yell, sigh, soak, play</p> <p>Point out that the past tense sounds like /t/ in 'jump' and 'soak' and like /d/ in 'yell', 'sigh' and 'play', but that we always write it using the letters 'ed'.</p>	

14	<p>Throughout the day</p> <p>Point out the past tense suffix ‘-ed’ in material being read throughout the day.</p> <p>Note: many regular verbs in English double the final consonant (e.g., drop, dropped) or drop the final ‘e’ (e.g., bake, baked) when forming the past tense. These forms can still be pointed out when reading for the purpose of noticing the past tense suffix, but the more complex spelling rules will need to be taught separately.</p>	
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