

Participant 00:00:00

Science has discovered two, exactly two ways to memorize things. Mnemonic cues and spaced repetition. When I say mnemonic cue, I mean an association like a story. When you do this properly, what happens is that you see the symbol and then that causes you to recall the story that you told yourself or whatever. And the story causes you to recall the other piece of information that you were trying to attach to that symbol. Let me give you an example. When I was in graduate school at the University of Cambridge in the United Kingdom, I had a friend who was writing her dissertation on human memory. She had this study and she asked us, a group of her friends to come in and participate in the study. The only condition for participating in this study was that we didn't already know Korean. I didn't know Korean. So I go into this laboratory room and there's a screen and on the screen, they show me some Korean words and then the English definitions. This was about 12 years ago. And at the time, I didn't know Korean. Quite obviously, I still don't know Korean. So I apologize if I've written these symbols incorrectly. But what happened was they would show me these symbols for like five seconds along with the English definitions.

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Like this is the symbol for umbrella and this is the word in Korean, the symbol for mango, the fruit. They would show it to me for five seconds and I had to learn it and they would do this for a dozen symbols. And then at the end, they gave me a quiz to see how much I could retain, how much I could memorize. Now, it just so happened that right before I participated in this study, I had learned about mnemonic cues. For example, when I was shown this word in Korean, I noticed right here that this part of the word, it sort of looks like a roof, you know, it's like a pointy thing. It looks like a roof or sort of like an umbrella. Here, I'll write it in a different color. During my five seconds, I noticed that part, I picked up on it and then I imagined that there was, you know, a little stick going here, you know, the handle of the umbrella with a little curve at the bottom. And I imagined this opening and closing like an umbrella, it opened up, looked just like an umbrella. I just imagined this. I made a little movie in my head during those five seconds when I was trying to learn that this was the Korean word for umbrella. And then the five seconds were over and that symbol disappeared. When you first think about it, this whole imagining thing shouldn't work.

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Like you start off with two things, you start off with the Korean word and you've got the English synonym, the word that means the same thing in English. You've got these two things. And according to this method, apparently, the way to make it easier to learn, you know, and memorize these two things is to add a third thing, which is the story. You would think that adding something else, an additional thing that you need to remember that would make it harder. But it doesn't, that's just not how the human mind works. The human mind remembers things, it encodes things based on stories and points of connection. And so actually it turns out that if you do this sort of thing, you can remember things and not just, you know, the definitions of words, you can do this for all sorts of things. If you have to memorize the GDPs of a whole bunch of countries on a map or the labels for all the different bones in the human body or the names of a whole bunch of students in a classroom like I do at the beginning of most semesters. You just make up little stories, little associations with those things, right?

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So when I learn all of the names of, you know, 50 students in a lecture classroom, I look at the student, I ask them their name. They're in the classroom in front of everyone else. They say what their name is and then I take their name, maybe their name sounds like something. I don't tell them all this out loud. Also they look weird. There are some weird looking students. Everybody looks weird. If you look at them and

think about it, everybody has some weird thing about them. You focus on that weird thing, you think about their name, you imagine their name dripping over their head with one of the letters dripping around over their big ear or whatever it is. You do some little thing, you tell some little story, you make some little animation in your mind. You imagine some sound coming out of their head even though that sound isn't coming out of there, right? You do something like this. That's a mnemonic cue and it just works.

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Let's move on to spaced repetition. The idea here is that you have to memorize a whole bunch of things. Some of them you already know better than the other ones or they're just coming more easily, right? The ones that you know really well, you defer them to later, but the ones that you don't know, you repeat them within a shorter space. The old fashioned way to do this is with index cards. Here's a stack of index cards that I brought as a prop. Here's how you would use the index cards to implement some kind of spaced repetition technique. You need to learn some words or some labels or something or some facts. There's the prompt on one side, that is the thing that you're gonna see and then there's on the back, there's whatever you want to show up in your brain as soon as you see the thing on the front. Okay, here's what you do. You test yourself, right? You look at one side of the card and you see if you know what's going to be on the back. If you know it, you put it at the back of the pile. What that means of course, if it goes in the back is that you're not going to see it for a while because you've got to go through this whole stack before you ever see that one again. That's why you put at the back, the ones that you already know. You test yourself on a card and you don't know it.

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If you don't know it, you slide it into the middle that way you're going to get it more frequently at a shorter space, a shorter distance and you keep doing this over and over again and you can do it, you know, as a matter of degree, right? If you don't know one, but you feel like, you're kind of getting closer to knowing it than you put it in the middle. If you don't know it and you had no clue or whatever, you could put it really close to the front here. See, so you'll get it really quickly really soon again. You do this over and over again and you will memorize stuff. It just works. There are different fancy methods for doing this. One of the famous ones is the Leitner method named after some guy named Leitner. Maybe I'll find his full name, his photo on Google or something like that. Anyway, it's some method named after some guy. It doesn't matter. They're all basically variations on this very simple thing and you can find software, you know, apps for your phones or whatever that will refresh the cards in whatever order they think is the best order.

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But I think the simplest, best way is to use index cards. The way that you use the index cards matter, right? If you just put every card at the back of the pile, it's not efficient. It's not going to be an efficient way to memorize because if you take the cards that you really need to learn because you don't know them yet and you put them in the back, you're not going to get to them for a long time. And if they come just as frequently as the cards that you already know, you're just seeing these symbols that you already know over and over again. It's just not efficient. So, spaced repetition is the efficient way to get a whole bunch of stuff in front of you and to get it to stick in your memory. It's amazing how well both of these methods work and continually throughout my academic career since I was an undergraduate all the way through college and then a master's degree and then a PhD and now I'm a faculty member at the university and have been for several years.

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Like it's amazing how infrequently people use these when they want to memorize things, when they want to sync them into their brains. Okay, time for a pop quiz. Back when I was telling you about mnemonic cues, I put up the Korean words for mango and umbrella. Here's your quiz. Which symbol means mango? And which symbol means umbrella? I bet you can find the one that means umbrella right? Here it is. It's this one, but the one that means mango, one of these is the Korean word for mango. And that symbol was up on this board with the definition for just as long as the word umbrella was with the definition of umbrella. The difference is that I walked you through a mnemonic cue with this word umbrella, right? I bet that when you were looking for the word umbrella, you looked for this thingy. Remember this? You looked for that. You told yourself that little story or if you didn't even need to tell yourself the story because of the story, you knew to look for this little pointy thing, right? Because it looks like an umbrella. The answer, by the way is this one, this is the Korean word for mango. The point is this stuff works. The next lecture in this series is about how to take notes.