Pearson

Language learning

Training the brain to learn more effectively

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Global Scale of English

Fast-track your progress

What is the purpose of education?

That's a big question but one that is worth asking at a time when AI is disrupting the workplace[1,2] and global economies are facing a skills gap that will leave 85 million jobs unfilled by 2030[3].

If the goal of education is to develop productive individuals who can contribute to society and the economy, then why is it failing to equip individuals with the skills necessary for the workplace?

One answer lies in the pace of change. AI is accelerating the speed at which jobs are being disrupted. It is predicted that 65% of the skills needed across all industries today will have become redundant by 2030[4].

And the financial impact is huge.

Reskilling and upskilling the workforce is costing economies around the world billions of dollars in lost revenue due to the time it is taking for people to learn new skills[5]. We can't continue with the same training programs and hope for a better outcome. It's time to address the root causes underlying the amount of time it is taking people to learn new skills. It's time to train them to become more effective learners[6].

Learning how to learn

But wait! Isn't that what education does? Teach people how to learn things?

The answer in many cases is no. Most education systems focus on the "what" of learning rather than the "how". The content rather than the strategies for how best to learn that content. No one is saying that content is not important – but reviewing the ways in which we learn that content could have a significant impact on individuals, organizations and economies.

We all know people who are better at learning than others but what makes them good learners? It's easy to assume that some people are just born more intelligent than others but the truth is that with the right environment, encouragement and learning opportunities, everyone has the ability to become an effective learner.

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So what makes an effective learner?

Successful learners employ strategies that make learning more effective[7] - quicker, deeper, longer lasting - but fewer than half of students today regularly integrate those strategies into their learning[8].

What strategies are we talking about?

They can be categorized into two broad groups: behavioral and metacognitive.

Behavioral strategies include time management (scheduling in uninterrupted periods of time to study, spacing learning sessions), task management (breaking learning down into smaller chunks, organizing new information), active learning (asking questions, elaborating through practice, comparing and contrasting) and retrieval practice (self-testing, actively recalling information).

Metacognitive strategies on the other hand help learners to monitor and regulate their learning. These strategies support the setting and monitoring of goals, the tracking of progress and the reflection on what is and isn't working. Teaching these strategies can speed up learning and add up to 7 months of additional progress over the course of an academic year[9]. And the benefits go beyond time-saving. An increase in the level of a country's cognitive skills has been shown to correlate directly with an increase in annual economic growth[10].

So how then do we ensure that more of our students are employing these strategies? By integrating them explicitly into the teaching of all school and college subjects? Absolutely. But what if there were one subject in particular that had the potential to boost the brain's executive functioning and develop the very mental processes that enable effective learning?

Could language learning be the superpower to accelerate effective learning?

Let's look at the evidence.

> "Put simply, learning additional languages boosts the mental functions used to process information effectively. It literally re-wires the brain to function differently."

Improving information processing

The way the brain processes information depends on a set of mental functions that help us manage tasks, stay focused, and solve problems. These executive functions support skills like attention, memory, and information retrieval. All of which are key to effective learning.

> “Language learning leads to functional changes in the brain which translates into more streamlined neural connections, particularly in those who learn an additional language early in life.”

So where does language learning come in?

Put simply, learning additional languages boosts the mental functions used to process information effectively. It literally re-wires the brain to function differently. Research has revealed adaptive changes in the brains of bilinguals in the areas responsible for executive functions and the transmission of signals within the brain[11,12].

Cognitive flexibility describes the ability to adapt thinking and behavior to new situations or challenges. It is critical for effective learning[13], especially when the learning is linked to new ways of doing something and requires old habits to be replaced by new skill sets.

Moving between two (or more) languages is a juggling act that requires the ability to modify your thinking in response to changing situations or new information. It means adapting to different grammatical structures and searching for the right words and phrases in each language and for each new context. Studies show that bilinguals perform better on tasks that require this type of cognitive flexibility[14,15].

Improving attention

The many distractions of modern living create challenges for learning. To learn effectively, we need to focus and filter out noise, ignore unnecessary information and stay on track towards goals. Attention and focus are key to effective learning and these are achieved through cognitive control. Bilinguals are often better at both.

Speakers of multiple languages need a strong language control system to monitor and ensure that they are using the correct language. When switching between different languages, the brain needs to filter out interference from the language that is not being used. This practice has been shown to strengthen concentration skills[16].

Research with bilingual children shows that they outperform monolinguals on tasks that require cognitive control[17]. The same has also been shown to be true for adult learners[18] and for those second language speakers who are not yet fluent[19].

As well as task-based research, the field of neuroimaging can also shed light on the brain activity of bilinguals. The type of cognitive control used when managing different languages typically uses areas on the left side of the brain. Neuroimaging studies have found activation in these same areas in the brains of bilinguals during non-language tasks[20], suggesting that a strong language control system carries over to a more general-purpose executive control.

> “Language learning offers a powerful tool for developing the cognitive and metacognitive skills essential for effective learning. It not only enhances cognitive flexibility, attention, and working memory but also encourages the development of metacognitive abilities that support the training of effective learners.”

Building Memory

Working memory holds information in your mind for a short period of time while you use it. Its capacity is known to correlate with learning outcomes in both literacy[21] and numeracy[22]. Greater capacity aligns with better outcomes. Research suggests that the process of learning a second language increases working memory capacity[23].

Why is that?

In order to communicate using the correct words and grammar, bilinguals must keep both languages in their mind, constantly switching between the two and retrieving the correct information. This engages working memory in a kind of workout which ultimately builds capacity in the same way that a physical workout builds muscles. MRI scans have revealed denser grey matter in the brains of bilinguals in those areas dedicated to language and memory[24].

But a good memory is not just defined by capacity. Efficiency in the way you use working memory is also important[25]. Language learning leads to functional changes in the brain which translates into more streamlined neural connections, particularly in those who learn an additional language early in life[26]. Increased functional connectivity boosts working memory, enabling effective learning.

Improving metacognitive skills

Metacognitive strategies enable people to regulate their learning behaviors. These behaviors include such things as realistic goal setting, dealing with setbacks and difficulties and evaluating progress.

Effective learners recognize what they do and don't know, choose the right strategies to help them learn, and regularly monitor these strategies to see if they are actually working. Knowing a second language might help you to develop these strategies, at least in language-related tasks. Those who have already learned a second language approach new language learning tasks in a more thoughtful and intentional way[27] and are more accurate at judging whether they've learned something correctly or not[28].

Addressing learning challenges

A key challenge for those in the workplace who need to upskill and reskill is the application of knowledge and theory into new situations[29]. Many learn how to do something and then continue to practice in exactly the same way without adapting or improving. According to Mark Williams, Professor at the School of Sport, Exercise and Health at Loughborough University in the UK, many fail to engage in "deliberate practice or growth practice — specific, purposeful practice to improve an aspect or weakness in performance[30]."

The process of learning a language requires precisely that: the application of knowledge (grammar rules and vocabulary) in novel situations in order to achieve a communicative goal in a given context. If communication does not have the desired effect, for example the listener does not understand, then the speaker has to try again, possibly choosing different words or rephrasing completely. An intrinsic part of language learning is "improving weaknesses in performance".

> "Language learning offers a powerful tool for developing the cognitive and metacognitive skills essential for effective learning."

Is it possible that language learning primes the brain to embrace "purposeful practice" and to constantly strive to find the most effective and efficient ways of doing something? It certainly requires the ability to solve problems. Language learners need to decipher unfamiliar words and structures and work out how to express ideas in the new language. Managing two languages appears to train the brain's ability to multi-task and handle complex decision-making. These problem-solving and executive function advantages mean language learners can tackle challenges in other domains more effectively, using the mental agility developed through language study[31].

At a time when AI is leading some to question the value of language learning, it is clear that the process of learning an additional language brings more than simply the ability to communicate with a wider audience. Language learning offers a powerful tool for developing the cognitive and metacognitive skills essential for effective learning. It not only enhances cognitive flexibility, attention, and working memory but also encourages the development of metacognitive abilities that support the training of effective learners. Behaviors, such as goal setting, time management, and reflection still need to be taught but the evidence suggests that the bilingual brain is more likely to be receptive to learning these behaviors.

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