THE CONDITIONS OF DEEP LEARNING

MIRA Notebooks

NOTEBOOK 3 · HOW THE BRAIN LEARNS

MIRA, Time and Attention

The scarcest resource in the classroom, and the hardest to protect

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MIRA model

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A student has the book open, notes to one side and the phone face down by their elbow. Every few minutes they flip it over, look, reply and go back. They think they are studying with the odd minor interruption. In reality, each time they return to the book the brain takes time to pick up the thread again, and never reaches the depth where real learning happens. They are not studying with interruptions: they are studying on a surface that learning never passes through.

There is a resource on which all learning depends and which, however, is almost never named as such: sustained attention. You can have the best method, the best technology and the best content, but if attention does not settle on something for long enough, that something never gets etched. Attention is the door through which everything else passes — and it is, today, the scarcest and most attacked resource in the classroom.

Working memory: a tiny desk

To understand why time and attention matter so much, we need to know a physical limitation of the brain. All the information we are processing at any given moment passes through working memory, a space of very limited capacity — something like a tiny desk where only a few items fit at a time.[1]

Cognitive load theory describes the consequences of that limit for learning: if the desk is saturated with poorly presented information or with distractions, there is no room left for what truly matters — building new knowledge out of what is already known.[2] Learning in depth requires keeping several items on that desk long enough to relate them. And that is only possible if attention is sustained.

The myth of multitasking

The most damaging belief of our time, as far as learning is concerned, is that you can do several things at once at no cost. That is not so. The brain does not process two attentional tasks in parallel: it switches between them rapidly, and each switch has a price. Classic research on switching cost estimated that alternating between tasks can consume up to 40% of productive time.[3]

Someone who studies while attending to notifications is not doing two things at once: they are doing one and then the other intermittently, paying a toll on each jump. The result is documented: those who habitually multitask with digital media perform worse on tasks requiring sustained attention and working memory, are more easily distracted and process information less deeply.[4]

> *Multitasking is not doing more in the same time. It is doing several things worse, remembering less of all of them, and training the brain so that distraction — not concentration — becomes its default state.*

There is a detail that is especially serious for schools: distraction is not just a one-off loss of time, but a skill that is trained. Every time the brain gives in to interruption, it reinforces the pathway that seeks interruption. Scattered attention, repeated, becomes the habitual way of functioning — and then concentrating costs more and more.

Deep time versus fragmented time

Not all learning time is worth the same. An hour split into twelve five-minute fragments is not equivalent to a continuous hour: it is worth much less, because much of it goes into picking up the thread again and again, and because it never reaches the depth that only comes after a sustained stretch on the same task. There is a shallow time — fragmented, interrupted, scattered — and a deep time — continuous, protected, concentrated. Only the second produces solid learning.

This has an uncomfortable consequence for an age that celebrates speed: deep learning is slow by nature. It needs uninterrupted time, and that time must be actively protected, because the environment — inside and outside the classroom — pushes relentlessly towards fragmentation. Protecting deep time is not nostalgia: it is a material condition of learning.

How MIRA protects and trains attention

This notebook is the reverse of another in the collection, *The Thinking Gap*: if there the problem was the immediacy that atrophies effort, here the resource to protect is the attention that immediacy fragments. MIRA does not offer a trick for concentrating, but a way of working that, by design, protects deep time and trains sustained attention.

Agency demands deep time. An authentic-production project is not done in five-minute fragments: it requires immersing oneself, sustaining effort, coming back the next day. By its very nature, project work creates blocks of continuous time and gives a reason to sustain attention — because there is a real product to finish, and one that matters. Where fragmented activity scatters, the project concentrates.

Metacognition trains attention on one's own attention. Stopping to plan, monitoring the process and reviewing what has been done forces the student to notice when they have become distracted and to steer themselves back — which is, exactly, the muscle of sustained attention. A student who learns to notice 'I've drifted' and to come back is training the capacity to concentrate just as one trains a muscle.

Resilience sustains attention when difficulty appears. The moment the task gets hard is precisely when the brain looks for the escape route — the notification, the distraction, giving up. Resilience is what allows attention to stay put precisely then, instead of fleeing towards immediate relief. And technology, in MIRA, is subordinate to this criterion: it is used when it builds, not when it fragments.

> *Protecting attention does not consist of banning the phone and hoping for the best. It consists of giving the student tasks worth their attention, reasons to sustain it and the training to recover it when it is lost. That is what MIRA does by design.*

In summary

Sustained attention is the scarcest resource of learning: without it, working memory cannot do its job and nothing gets etched in depth. Multitasking, far from saving time, squanders it and trains the brain for distraction. And deep time — continuous, protected — is a material condition of solid learning that the current environment erodes relentlessly. MIRA protects that time and trains that attention not with prohibitions, but with its way of working: projects that demand immersion, metacognition that trains refocusing, and resilience that sustains concentration when it is hardest. In an age designed to scatter us, teaching how to sustain attention is perhaps the most valuable competence the school can give.

Notes

1. Working memory is a limited-capacity system that holds and manipulates the information needed for ongoing cognitive processing. It is a central component of executive control, along with inhibition and task switching, and a robust predictor of performance on complex tasks.
2. Cognitive load theory (Sweller et al.): learning is limited by working memory. It distinguishes intrinsic load (the content's own difficulty), extraneous load (due to poor presentation or distractions) and germane load (the useful effort of building schemas). Reducing extraneous load frees resources for learning.
3. Rubinstein, Meyer & Evans (2001) estimated that alternating between tasks can consume up to 40% of productive time. The brain does not process attention-demanding tasks in parallel: it switches between them, and each switch (switching cost) has a cost in accuracy and time.
4. Various studies (e.g. Uncapher et al., 2020) link habitual multitasking with digital media to lower sustained attention, poorer working memory and more superficial processing of information, with measurable effects on academic performance. The adolescent brain, still developing, is especially vulnerable.