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Should we do away with exams altogether? No, but we need to rethink their design and purpose

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Some exam questions are poorly designed and written – this needs to change. from www.shutterstock.com

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In our five-part series, Making Sense of Exams, we'll discuss the purpose of exams, whether they can be done online, overcoming exam anxiety, and effective revision techniques.

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Over the past two decades there have been frequent calls to abandon exams.

The major criticisms of exams in schools and universities tend to relate to either the misuse or overuse of exams, and not to the sensible use of exams in partnership with other assessment tasks such as presentations, research reports, creative responses, essays, reflective journals etc.

Rethinking the way in which some exams are delivered does not require us to abandon all exams in favour of other assessment tasks. This is akin to throwing the baby out with the bathwater.

Exams allow students to demonstrate their breadth of knowledge across a particular subject. This is more difficult to achieve with other forms of assessment.

Students also demonstrate their ability to retrieve and apply knowledge on the spot: a skill necessary in many professions.

But we need to look at what the evidence tells us about when exams are effective – and when other types of assessment are more suitable.

In debates about exams, the same myths are often brought up again and again. Here's what the research tells us about three of the most common exam myths:

Myth 1: exams only test for the recall of facts

One of the most common arguments offered against exams is that they test for rote recall only and not for deeper understanding.

Like others, we have experienced the frustration of sitting for an exam that focuses almost exclusively on the recall of isolated facts. Research shows that such exams are more common when teachers either write questions quickly or rely on published tests from testing banks. In both cases, the teacher has less opportunity to review whether or not the questions require deep understanding and higher-order thinking, which require the learner to both hold a strong body of disciplinary knowledge and be capable of applying it.

The solution is not to abandon exams, but to change how poorly designed exam questions are written.

A well-designed exam will assess the application of knowledge to real-world scenarios, the synthesis of knowledge across sub-topics, the ability to think critically, or to solve well-defined problems within a discipline.

These higher-order processes depend entirely on the question being asked. According to research, even quite short professional development programs for teachers are effective in changing the way they write exam questions.

Exams should not be used to assess the recall of meaningless facts: this is a misuse of the format.

Myth 2: Google renders exams irrelevant

A second argument sometimes offered against exams is that everything can be found on Google anyway.

The implication, of course, is that we no longer need knowledge in our brains when we have phones in our pockets.

A variant of this argument is that internet access should always be permitted during exams as this mirrors our experiences in real life.

These arguments are problematic for two reasons.

First, research shows that people without knowledge in a particular field are surprisingly poor at finding accurate information on Google. They are more likely to find and believe conspiracy theories, for example, less likely to know what search terms to use, and less likely to reason logically about the information they find.

Second, looking up information on Google is not the same as accessing a pre-existing network of knowledge in the brain.

Pre-existing knowledge is critical because it guides the way in which we interpret new information and underpins critical thinking and problem solving.

Even if a student is taught generic skills in critical thinking and analysis, a wide breadth of knowledge is also needed to know what arguments are relevant in a particular domain and how they might be applied. This breadth of knowledge cannot be obtained simply by Googling.

It is precisely because our teachers, surgeons, scientists and building engineers have an established network of knowledge in their fields, held in long-term memory, that they are able to instantaneously apply this knowledge in the workplace, critically assess the validity of incoming information, and solve emerging problems on the run.

Myth 3: exam study does not enhance learning

Exams do not just assess learning, they promote learning in several ways:

- Organising yourself to study promotes self-regulation and metacognition (that is, your understanding and control of your own learning processes).
- Re-organising and elaborating on the to-be-tested material during study enables deeper understanding of the material.
- The process of actively retrieving and applying that material multiple times during study is one of the best possible ways to strengthen knowledge. Just as practice helps muscles grow stronger during exercise, so too does it make connections in the brain grow stronger during study.

Far from being superficial, well-designed exams and proper study enhance memory and learning. from www.shutterstock.com

Of course, some study techniques are better than others.

Research shows that study in which students mentally manipulate the material – perhaps by forming their own questions, or by considering how different topics relate to one another – is more effective than study in which students passively scan their notes.

These techniques are a form of "deep encoding", in which the student is required to actively negotiate meaning and to make decisions about what goes with what.

Research also shows that spacing out study over time is more effective for retaining information than cramming the night before.

With this knowledge, teachers can support students to study in the most effective ways possible.

Exams should be used within a balanced assessment program

The goal of any assessment program is to enable students to demonstrate what they know and can do. Within this program, exams have specific advantages.

Exams should not be used in all assessments (or even in all disciplines). Some types of assessments are clearly better suited to particular kinds of knowledge and skills than others.

Where research skills are important, a research proposal or report may be more appropriate.

Where oral communication skills are important, a presentation task may be more appropriate.

And where depth of knowledge of a single topic is important – either because of the specific topic itself or because a more focused investigation will allow the student to practise and refine particular learning skills – then an essay, class debate, or similar assessment may be more appropriate.

But arguing that exams cannot do everything is not the same as arguing they can do nothing. In nearly all school and university courses there are multiple goals, therefore a balanced assessment program is critical.

When considering the purpose of exams

We need to be careful when considering the use of exams in schools and universities.

We need to know that they are appropriate to the knowledge and skills being assessed, and that they form part of a balanced assessment program with a range of different assessment tasks.

We also must be aware of the unintended consequences that emerge in specific testing circumstances.

This is true for national testing programs such as the National Assessment Program – Literacy and Numeracy (NAPLAN), for example, where the potential to publicly rank schools has led to concerns about "teaching to the test" and narrowing the curriculum. These unintended consequences must be addressed.

When used well, however, exams offer several advantages for learning.

• *Read more from the series.*

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