



The campus of Yale-NUS College, a collaboration between Yale University and the National University of Singapore. The writer, who is the NUS president, says that as we turn more towards online learning, one's "university years" may not necessarily be spent at university. Instead, learning will take place everywhere. ST FILE PHOTO

# Universities need to tear down subject silos

The post-Covid-19 world requires universities to move from subject specialisation to interdisciplinary teaching and research

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For some time now, university leaders, and educators in general, have had our eye on issues such as the rapid pace of technological change and its implications for what and how we teach, and what and how students learn – the opportunities and challenges arising from Industry 4.0, in other words.

More recently, we had to grapple with deglobalisation and rising geopolitical tensions, and what such trends might mean for how universities conduct research, recruit students and attract talent.

Then Covid-19 happened. What we defined as major challenges of the day had to be juxtaposed against the existential crisis of a generation, as the pandemic has been described.

And one of the things an existential crisis does is that it makes us ponder uncomfortable and profound existential questions.

In addition to the "what" and "how" questions, we now have to

also ask "why?". Why do we teach what we teach? And why do we teach the way we do?

As president of the National University of Singapore (NUS), my job isn't simply to prepare my students for a world of work, but also for life outside the university's gates.

Now, in this Covid-19 "new normal", there is even greater urgency to not only help my graduates find jobs, but also to make sense of all these confusing changes occurring in our midst.

In order to accomplish all of that, NUS must radically transform itself. Steady and incremental change is a luxury we can no longer afford.

## THE PAST: SPECIALISATION

For the longest time, graduates could specialise, find specialised work that matched their training and remain in their chosen industries over their careers. If they had to move, it would be to adjacent industries.

At the same time, universities largely focused on pre-employment training – the last stop on the education journey before entering the working world.

These assumptions no longer hold.

Our young adults will graduate into a world of "wicked problems", problems that are ill-defined, mutate all the time, defy single-discipline solutions and even challenge established bodies of knowledge.

Covid-19 itself is an example of that: It is more than a medical issue, with a broader impact on society, politics, the economy and the environment.

To even try to understand it, much less solve it, requires integrating knowledge, skills and insights from different disciplines.

These are the types of problems that our graduates will have to confront and deal with. Thus, we need to broaden the intellectual foundations of our students' learning.

Our traditional approach prioritised depth of knowledge. We now must balance depth with breadth. Disciplinary rigour is still necessary, but will not be enough. And we will need to rethink what we mean by "rigour".

We need to cultivate in our students the ability to synthesise knowledge from across different fields. The key to this is to broaden the curriculum and increase

interdisciplinarity in our curricula.

But just having the breadth requirements is insufficient; the point is to integrate these disparate elements into a coherent common curriculum.

As a lifelong academic and educator, used to teaching by subject silos and managing colleagues grouped by their academic fields, I acknowledge that such an interdisciplinary approach will be difficult to accomplish. But I strongly believe that this turn towards interdisciplinarity is the way to go.

There will be misgivings and resistance. Especially in Singapore, but also in many other places, we tend to prize the specialist over the generalist. Our kiasuism also means we often "over-teach".

## AN INTERDISCIPLINARY WORLD

What does this mean for NUS?

We will have to shift the student workload. For a start, we will ease the excessive requirements for subject majors so that we can add breadth to the curriculum overall.

If we want our students to be able to connect the dots in new and unusual ways, it helps to broaden their horizons and expose them to more dots.

This is not merely a quantitative change, but a qualitative one. In order that our graduates be agile, adaptable and effective problem-solvers, we will move more towards problem-based pedagogy and experiential learning.

Lifelong learning will also be a defining characteristic of university education.

The rapid pace of change means that the half-life of knowledge is decreasing quickly. The long-held assumption that spending three to four years in one's early 20s in university would suffice and set one up for life, with the occasional upgrade, has also failed.

Your "university years" are no longer those few years but could span 20 years or more of continuous learning.

In fact, as we turn more and more towards online learning, your "university years" may not necessarily be spent at university. Learning will take place everywhere. The university will be everywhere you go.

Some students may feel a deep sense of discomfort at learning things out of their comfort zone. Certainly, their expectations of university education will be upended.

Well, growth is discomfiting, and those pangs are a small price to pay if that discomfite can stimulate and inspire minds in novel and unexpected ways.

I understand that some students and parents may see these changes in our educational framework as diluting expertise.

Some who are set on a career in medicine or mathematics may question why they need to be exposed to, say, anthropology. Others may worry that core skills are being diluted and academic standards lowered.

But I think these fears are unfounded. This is not about making trade-offs between specialisation and generalisation, but injecting greater flexibility into our curriculum.

I believe our community can and must accommodate a diversity of proclivities: those who incline towards expertise in a single

discipline, the interdisciplinary expert who can solve problems that straddle two or three disciplines, and the effective problem-solver who can see connections and gaps across disciplines.

Through these changes, which we will be making in the months ahead, we hope that our graduates will learn to frame and manage wicked problems; be curious and alert to opportunities beyond their areas of expertise; and pick up the knack of exploring and charting their own academic journey through lifelong learning – in class, at home, at work and at play.

## PROFESSORS TOO NEED TO CHANGE

What holds true for changes in store for our learners also holds true for professors.

If our professors are to provide range, they too must embrace range – for better learning and better research. Studies show that more diverse teams of experts produce more impactful research.

This may be an even bigger challenge than changes in education. Universities are organised along disciplinary fiefdom-like lines. The academic enterprise traditionally rewards depth and specialisation.

This way of organisation is inadequate for a world whose problems do not respect such disciplinary boundaries. If the university does not adapt and change, it will get left behind, at best. At worst, it becomes extinct.

Many a university leader has tried and failed to get researchers to embrace range and interdisciplinarity. Covid-19, however, demonstrates the value of embracing different disciplines to solve a problem at once global and local, epidemiological and societal.

My colleagues have tapped our strengths in engineering and medicine to develop test kits and vaccines; in public health to set guidelines on mask-wearing, personal hygiene and safe distancing – even through cartoons – and in social work and business to address mental health or improving food delivery services during the crisis.

Longer-term responses on food security and economic resilience will similarly require such depth and breadth.

As we chart our way in a world of persisting and even increasing disorder, we find that agility is indispensable for individuals and organisations.

"Agility" sounds like yet another management fad, but it is not.

In an essay titled *The Hedgehog And The Fox*, British philosopher Isaiah Berlin argues there are two types of thinkers: hedgehogs, who know that one big thing; and foxes, who draw on a mix of ideas and experiences.

In fact, you could go back even further to the ancient Greek poet Archilochus, who said: "A fox knows many things, but a hedgehog one important thing."

Societies will need both the hedgehog and its deep expertise as well as the fox and its agility and versatility. Here at NUS, we intend to produce graduates who possess qualities of both groups.

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