Do I deliver this unit online or face to face? How should I arrange my lesson? Do I incorporate pre-class and post-class activities? What methods should I use to engage my students: problem-based learning, active learning strategies, small group work? Should I ask students to come to class or connect remotely? If they come to class, should I ask students to bring and use their own devices? How should I arrange the classroom furniture for my lesson? Does it matter what I do or how I do it?

The current higher education environment presents multiple challenges for academics.

The above queries provide a few questions university educators ask themselves before they plan their classes.

**Challenges**

In their teaching, academics face larger classes, an ever-changing student cohort, and for many, institutional pressure for blended and online teaching.

As such, university teachers are confronted with many choices, with even our most confident and effective educators expressing concern about the best way to deliver their programs or lessons.

This raises the question of whether one teaching or learning design approach is better than another, and whether the investment in time and effort to transform curriculum is really worth the effort.

In the higher education context, researchers rely on well-formed studies and strong, reliable evidence to inform their decisions.

Similarly, teachers need the same rigour and evidence to support them in their decision making processes around teaching practices.

**Teachers need to know what works**

Teachers are looking for studies that indicate whether there will be an improvement in student success. This might be measured by an improvement in students’ learning experience (students are more motivated and inspired), their learning approach (better study approaches) or learning outcome (grades or employability).

There is an extraordinary number of individual studies that focus on evaluating a change to teaching practice.
For every study that says a change is better - for example, introducing social media into the classroom - there will be another that argues the opposite.

We have seen recent articles from The Conversation in which authors argue to phase out passive lectures followed by counter arguments to not abandon the humble lecture theatre.

Many of these studies are usually undertaken in one subject, in a particular year level, and using a particular approach. As such the results might be influenced by the particular context and culture of the discipline.

These limitations make it unclear whether similar results would be achieved if that same study was applied elsewhere. This in turn makes the evidence unreliable.

**Unreliable evidence**

When considering changes to curriculum and teaching practices, many research studies lack the research rigour required to measure the affect of the changes.

Most studies report on anecdotal evidence, they may not be peer reviewed or published in a reputable journal.

Many disciplines are embedded in their own research paradigms – physical sciences often use positivist approaches in which the researcher focuses on facts, formulates a hypothesis, collects data from large samples and runs statistical tests to determine whether X causes Y.

In contrast, social sciences often use anti-positivist (interpretivist) approaches whereby the researcher focuses on gaining a better understanding of the situation. They collect data usually through interviews or case studies, using a small number of cases or over a long period of time.

In education there is no common approach to systematically obtain, collate and interpret the data, so often a combination of approaches are used.

The strongest evidence usually comes from meta studies, sometimes called meta analyses. These are studies that examine all the individual studies addressing a particular research question.

Usually a meta study involves a systematic review of published research in which the approach (data collection and analysis methods) is considered in terms of its academic rigour.

Those that pass the criteria for methodological rigour have their results synthesised, and conclusions are drawn about the collective meaning.

Studies included in the meta analysis may come from different disciplines and be undertaken in different contexts, but conclusions can be more confidently and broadly applied.

Systematic reviews take a lot of time and money because they involve a number of steps and usually a team of people.
Many have generated over tens of thousands of studies that might attempt to address a particular research question, but are usually filtered to a small select few that pass the rigour markers.

Meta studies that use systematic reviews are likely to provide educators with the practices that have the biggest impact on their students and can bust educational myths.

Systematic reviews are common in the medical field, but not as common in higher education.

In the secondary school context, John Hattie in his book on Visible Learning has completed over 800 meta studies for secondary school practices that improve achievement.

Robert Mazzaro from Colorado has explored classroom instruction that works and provides a list of top ten methods for teachers to use in their classroom.

And Geoff Petty is leading an evidence-based teaching network in the UK.

Few studies on effective teaching in higher education

In higher education, very few meta studies that adopt a systematic review have been completed.

The Australian Government’s Office for Learning and Teaching (OLT) once provided funds for these types of large-scale, multi-institutional studies, but funding has since ceased.

There a few meta studies that have attempted to undertake a systematic review in learning and teaching in higher education:

- One investigated the effectiveness of supplemental instruction, a term used to describe models of extra support provided for students to help them develop strategies to succeed. It found that supplemental instruction correlates with better grades and lower failure rates.

- Another explored the appropriate mix of online and face to face components to develop the best learning course. The study found that an effective blend is based on a number of criteria.

These included: the teacher’s willingness to try new teaching approaches, their experience in using technology and their workload, the students’ access to campus, their access to technology and their outside commitments, the type of course (theoretical, practical or a combination) being taught, and enrolment types (on campus vs off-campus vs both), and the support available from the institution such as technical support and professional development.

- Researchers have also undertaken a systematic review to explore what teaching quality is. In doing so they reviewed the instruments that measured teaching quality in higher education, and found that teaching quality was comprised of a common set of dimensions.
These include but not limited to: it is personable, motivates students, creates interactions, uses effective assessment processes, is performative, places realistic demands on students, helps students make meaning, develops students’ autonomy and has an international perspective.

Teachers in higher education need objective evidence to inform and guide how they should modify their teaching practices or programs so that urban educational myths do not persist.