The context of the Connected Curriculum

Jason P. Davies and Dilly Fung[1]

This opening chapter sets a broad perspective on some of the issues facing higher education in general: what kinds of pedagogical problems are we trying to solve, and why? After introducing the key UCL strategy of the Connected Curriculum and research-based education, it touches on a number of overarching themes about learning. These include the ways that educators construct environments for students to learn *in*, how their engagement is critical (and can be squandered) and the way that in recent years, higher education has rethought the curriculum in an attempt to move its focus from the teacher to the learner. As soon as we start to think along these lines, other questions emerge that might loosely be called 'identity-related' as we realize that one way or another, we are shaping our graduates' whole perspectives in far more ways than might initially have been expected. The chapter gives an overview of some of the key approaches that characterize modern university education, and sets the scene for the chapters that follow. In particular, it seeks to show how we have reached a point where research-based education is not just plausible and achievable, but in fact desirable, as a way of bringing a set of strands together that have hitherto rarely been coherently woven.

Introduction

A key aspect of UCL's 2034 strategy[2] is the commitment to having research-based education – learning through research and enquiry – at the heart of its curriculum. This is formulated in the Connected Curriculum,[3] a framework for curriculum development, which has six dimensions:

- Students connect with researchers and with the institution's research
- A throughline of research activity is built into each programme
- Students make connections across subjects and out to the world
- Students connect academic learning with workplace learning

- Students learn to produce outputs – assessments directed at an audience
- Students connect with each other, across phases and with alumni.

The six dimensions all stem from the core principle: that students learn most effectively through actively undertaking research and enquiry. The emphasis here is on drawing students into a research and learning community that collectively pushes at the edge of knowledge.

The philosophical underpinnings of the Connected Curriculum framework and its relevance to higher education more broadly are explored in a new open-access monograph, *A Connected Curriculum for Higher Education* (Fung, 2017). Fung draws on the field of philosophical hermeneutics (Gadamer, 2004; Fairfield, 2012) to argue that at the core of 'good' education is the development of both individuals *and* society. This is achieved through critical dialogue, within and across established disciplines, which advances knowledge and its impact for good on the world. Fung argues that the recent separation of research and education in higher education, in both policy and practice, should be challenged. Critical dialogue and open-minded analysis of evidence are at the core of both research and student learning, connecting the two. She argues that the curriculum in higher education can also be more usefully seen as a conceptual whole rather than as a set of separate curricula. Advocating a more connected and coherent set of research and learning opportunities that cut across traditional 'teacher', 'learner' and 'researcher' roles, she provides a range of case study vignettes of current practice from universities around the world, showing how departments today are responding to this challenge in innovative ways.

Fung provides 20 key questions about existing programmes of study in higher education for departments to explore with their students (Fung, 2017: 146):

Dimensions	Key questions for departments and programme teams
Core principle Students learn through research and enquiry	1. Are students encountering specific questions addressed by researchers and learning to articulate their own research questions, at every level of study? 2. Can we adjust our teaching methods, student assessments and other aspects of departmental practice to prioritize engaging all students actively in research and critical enquiry?

Dimensions	Key questions for departments and programme teams
Dimension 1 Students connect with researchers and with the institution's research	3. Do students have regular opportunities to learn about the institution's research, and other current research relevant to their studies? 4. Are students meeting with researchers and engaging with their work, for example through group activities such as 'Meet the researcher'? 5. Are students exploring the intellectual, policy-related, practical and ethical challenges associated with current research, and recognizing their relevance to professional life more widely?
Dimension 2 A throughline of research activity is built into each programme	6. Is there a well-designed core sequence of modules, units and/or learning activities through which students steadily build their research skills and understandings, and is this explicit to students? 7. Are students explicitly challenged to make intellectual connections between different elements of their programme? 8. Can students have some flexibility and even take risks with their research-related activities, for example by working towards a Showcase Portfolio for which they can curate their best work?
Dimension 3 Students make connections across disciplines and out to the world	9. Is the programme of study structured so that students need to step outside their home discipline(s) and see through at least one other disciplinary lens? 10. Are students required to make explicit connections between disciplinary perspectives, for example by collaborating with students of other disciplines to analyse evidence and issues? 11. Through making interdisciplinary connections, are students challenged to address complex global challenges?

Dimensions	Key questions for departments and programme teams
Dimension 4 Students connect academic learning with workplace learning	12. Are all students on the programme(s) able to analyse the ways in which their academic learning is relevant to the world of work? 13. Do students have explicit opportunities to prepare for the workplace, for example through meeting alumni, shadowing, and work placements, and where appropriate through critiquing the notions of work and professionalism in society? 14. Can students articulate effectively the skills and knowledge they have developed through their research-related activities and through their wider studies and experiences, and showcase these to future employers?
Dimension 5 Students learn to produce outputs – assessments directed at an audience	15. Are some student assessments outward-facing, directed at an audience, thereby enabling them to connect with local and/or wider communities (whether online or face-to-face)? 16. Are student assessments across the programme suitably varied, enabling them to develop a range of skills including expertise in digital practices and communications? 17. Are students required to revisit and use feedback on their tasks, both formative and summative, in order to improve their work?
Dimension 6 Students connect with each other, across phases and with alumni	18. Do students have frequent opportunities to meet and participate in collaborative enquiry with one another in diverse groups? 19. Are they building connections with students in other year groups, for example through events or mentoring schemes? 20. Can students meet and learn from diverse alumni, and build a strong sense of belonging to an inclusive research and learning community?

As these questions suggest, the focus of the Connected Curriculum approach is on opening up thinking about curriculum design and promoting more creative and flexible ways of designing degree programmes. This includes motivating students to engage fully with their studies by enabling them to connect with local and wider communities. Undertaking enquiry-based activities appropriate for their discipline, students can present and explore their findings to interested parties beyond the university.

As Fung (2017) notes, the Connected Curriculum approach has quickly made an impact across the higher education sector – across the UK, Europe and beyond. Why is higher education, and UCL in particular, ready for such a strategy? How did we get to this point? And what do we hope to achieve?

Education for the future

Just over a century ago, in his *Democracy and Education* (1916), the philosopher of education John Dewey laid out his argument that complex societies, faced with the fact that individuals die but groups persist, must educate the young if they are to continue in any organized form and retain their accumulated specialist understanding. To do this they need to create a semi-artificial (educational) environment that systematically emphasizes what they wish to promote and plays down that which they do not. We do not control every aspect of how people respond, and we cannot ultimately *make* people learn what we wish them to, but we can create opportunities for them to learn and, by selecting environments and opportunities, steer them in the direction we wish them to go. He stressed this environment and set of opportunities should not become so artificial and disconnected that it became an arid set of disconnected and meaningless exercises, but there was an equal danger in making it so 'real' that it was impossible to guide what was being learnt. If it is to be a true bridge to the wider world rather than just another part of it, education *must* select elements to include from within that wider world. That selection requires deliberate prioritizing of certain aspects, and evasion of others. In other words, there is no 'neutral' education: whatever we choose to cultivate in our young will shape the future of our society.

Dewey also, almost hilariously from our perspective, noted that there was an enormous amount of knowledge to pass on to the next generation; he could probably never have imagined how much knowledge we have now. We passed the point long ago of being able to 'tell them everything' and need to switch our attention to equipping our students with the ability to find out what they need to understand and integrate this new

knowledge themselves. An undergraduate degree must be expected to be the culmination of 'schooling', and to be a preparation for the wider world and a full transition to adult life, even if that is then postgraduate education.

Some decades later, another American, the maths teacher and educational reformer John Holt, in documenting *How Children Fail*, told a story from James Herndon's *How to Survive in Your Native Land* (1971) about 'the dumbest kid in the dumb class'. Jim came across his teenage pupil at a bowling alley where he efficiently performed a complex set of counting tasks, keeping score of two lanes simultaneously (Holt, 1984: 175). The astonished teacher gave the boy bowling-based maths problems at school, but the teenager, who could solve them effortlessly at work, gave answers that were 'not only wrong but absurd'. Dewey's warning about keeping an artificial teaching environment still meaningful had not been heeded: too far divorced from a 'real' context, the school lessons had no meaning for this lad, and he did not even *expect* them to make any sense. The only sane response for the teenager was to get rid of this endless series of strange questions and impossible dilemmas by giving an answer – *any* answer – and enjoying the short-lived relief that the ball was, at least temporarily, back in the teacher's court.

Holt goes on to ask, 'how can we tell whether children understand something or not?' and notes that as a student, he got respectable grades but 'didn't have the faintest idea of what the course was about' (ibid.: 176). He continues that 'a field of knowledge … is a territory, and knowing it is … a matter of knowing how the items relate to, compare with, and fit in with each other' (ibid.: 179). Our final thought from Holt is his observation that it is much better for his young students to discover the basic properties of numbers for themselves, and by experience (ibid.: 200).

Though both writers were referring principally to children, a lot of their thoughts also apply to young adults, i.e. most university undergraduates. Both stress the absolute necessity of understanding as requiring meaning that depends on students establishing their own relationship with the wider world, not a second-hand surrogate from a teacher's description. In other words, they highlight the need to create a learning environment that manages to constrain meaning and connections to manageable levels, but does not stifle all the life and relevance out of the learning, and allows students to find their own way. Isolated and apparently arbitrary tests, equations and facts make real understanding impossible.

The third aspect of twentieth-century thinking to note here, roughly halfway between Dewey and Holt, is the idea of 'zones of proximal development' put forward by Lev Vygotsky (Daniels, 2005; Yasnitsky *et al.*,

2014). This idea essentially stresses that children (and, in our experience, adults) learn when a new idea is adjacent to their existing understanding, rather than being an entirely new set of ideas that arrives fully formed: advanced driving techniques are unlikely to be things you can pick up in the first or second lesson. Instead, the right kinds of opportunities must be arranged so that students are presented with chances to learn things that are genuinely new but sufficiently close to their existing understanding for that learning to be assimilated. You might say new learning has to be the right size to chew on.

These ideas seem fairly simple and obvious: society and knowledge are too complex to take in just as you go along, so we need carefully constructed educational environments and curricula if people are to understand rather than simply learn to repeat what they think are the right answers to pass exams. Furthermore, learning involves each and every person being able to discover facts for themselves. However, these thinkers were writing against a set of assumptions that are still common: for instance, the 'obvious' idea that one person explaining something to an audience is the same as the listeners understanding. In universities in particular, there is a sense that there is a huge amount to be learnt (because knowledge keeps expanding) and that, while undergraduate degrees have generally been organized to be manageable, the material to be learnt has often been the driving factor: the person with all the power has therefore usually been the teacher presenting the information rather than the learner actively putting their own learning together.

The emergence of 'the learner'

Somewhere between the late 1980s and early 1990s, universities began to pay attention to a range of ideas (inspired by the traditions that drew on Dewey, Holt, Vygotsky and a host of other thinkers) that put far greater emphasis on the learner as opposed to the teacher or the material. This had largely originated from schools and the further education sector, with ideas arriving in a variety of forms, such as 'learning communities' and 'communities of practice' (Lave and Wenger, 1991) and 'learning by doing' (Gibbs, 1988). The phrase 'student-centred learning' also began to gain traction at this point (e.g. Barr and Tang, 1995).

The emphasis now came to be not so much on the presentation of material by a teacher but on its reception and acquisition by the learners. Learning occurs in many ways, and many contexts: sometimes it will happen straightforwardly in a lecture, but often facts only sink in during the re-reading of lecture notes, or when another student explains it, or when

the essay actually has to be written and the knots untangled, and so on. By definition, there must be more ways and places to learn than there are to teach because one can learn in all teaching contexts, but the penny can drop in virtually *any* context, though usually either while actively engaging with something or thinking about it afterwards. A key aspect of 'constructivism' is thus that people learn what they do (and reflect on), not what they just hear about. Somewhere in the process of learning something, learners must 'construct' their own version, (re)building in their own understanding the insight that another has tried to convey.

Student-centred learning

These ideas are nowadays generally referred to collectively as 'student-centred learning' or 'active learning': one learns to interpet by interpreting; one learns to analyse by analysing; and so on. In this model of education, the teacher is more a facilitator and a reality check than a guardian of all the correct information: teaching becomes a matter of creating the right conditions for learning rather than directly passing on knowledge.

Constructive alignment

The next landmark in this brief overview is the introduction into higher education of 'constructive alignment', whereby instead of testing knowledge almost as an afterthought, the assessment is understood to be an act of learning. An authority on this approach is Biggs and Tang (2011). In the old 'finals' mode of assessment, an exam would typically test a partially predictable subset of topics, creating the conditions for all kinds of gambling and guesswork by students about exactly what to revise: they arrived with a certain, supposedly measurable, level of understanding and 'demonstrated' it in the exam. Even though there is an argument that exams focus students' minds, it nearly always tips into anxiety, which undermines the learning process. There was certainly little expectation that one could discover something or learn something new in the exam room: learning was over, it seems.

A curriculum that is constructively aligned, in contrast, articulates 'learning outcomes' and begins by designing an assessment method that reflects what the teachers want the students to learn. If we want them to learn to sit and write for three hours addressing clearly defined but fairly randomly assigned problems, then 'finals' is perfectly aligned with that; as a law lecturer once pointed out to one of the authors, this is a good description of what his graduates do for a living. For him, the exam is explicitly a learning environment, where students get (more) practice in an

important and relevant skill. If people learn what they do, it is not a question of whether they learn something in an exam room, but a case of admitting that they are always learning something, even if it is 'just' to write quickly.

But for the most part, what we think they should learn is more varied, less narrowly time-pressured, and includes access to resources and one another; after all, this is how most things are done most of the time. The exam itself is not written under exam conditions but to a deadline known well in advance, with access to resources and critical review by colleagues.

Constructive alignment therefore brought our attention to designing a curriculum that persistently has the students doing activities directly involving what we wish them to learn. They should also be able to make mistakes, learn from one another, find out what they don't know (before it's too late), and so on. These activities will be actual practice for the final intended learning outcome; so, in a humanities degree for instance, discussion tutorials are perfectly aligned with the ultimate aim of building skills in interpretation.

As an approach, constructive alignment also invites evaluation by students, and information about how well the learning is going. This is more useful than their final results; students have a great deal of practice throughout their lives of passing exams by mimicking understanding, recognizing which formula to apply (without really understanding why), focusing on a teacher's favoured approach, and so on.

Modularization

Articulating distinctive learning outcomes allows for modularization, the breaking up of a degree course into fairly distinct and stand-alone units.[4] Entry requirements can be set – or every course would have to cater for beginners – and then learning outcomes specified. This puts teachers' attention on assessing only what has been addressed within that module, which makes possible the following. First, students on cross-disciplinary degrees can in theory realistically identify individual modules that fit with their overall interests, and not struggle or fail simply because there is an implicit assumption that they will already have completed other modules. A second area to which modularization is intended to bring greater clarity is the 'expected student workload'; a unit of credit can be equated to a set number of hours' learning, meaning that the workload for a degree is roughly comparable across an institution and between different ones. Though this is very difficult to get right (not least because people learn at different speeds), it is at least a commitment to manageable workloads for students.

It is not just students who are expected to benefit from modularization; it should also allow the institution itself to monitor what individual courses it is offering, and potentially allows for a greater focus of attention, resources and time than a more free-moving and unpredictable three years of study. Beyond the university, it provides information relevant to accrediting bodies (such as architectural associations or engineers' professional bodies) as well as external examiners checking that a particular course is comparable to the rest of the sector's provision.

Those, at least, are the aspirations: that students find their way through a set of carefully crafted educational environments, steadily and authentically accumulating the knowledge, skills and attributes that characterize a historian, an engineer, an architect, and so on.

There are, inevitably, drawbacks inherent in any system. Sidestepping the ever-present possibility that a good idea can be executed badly, modularization and close-knit organization can become too successful in identifying discrete areas of knowledge. Students, told explicitly what they will need to learn to 'pass the test' (and what that test includes), can become too narrowly focused on the intended learning outcomes. Rather than providing room to experiment and understand (particularly by making mistakes), the 'identification of what counts' approach invites an overly rigid focus on what teachers have specified. The advantage of the older, undefined, method was at least that students could not so easily identify 'what doesn't count' and strategically abandon it. It can also create a sense that anything not on the curriculum is not worth exploring, since it would otherwise surely be there.

Another disadvantage of organizing the curriculum into manageable chunks is that we can end up breaking it into separate parts instead. Learning, as the anecdote from Holt about bowling scores illustrates, is heavily contextual, with all sorts of subtle triggers to guide and shape responses. Teaching colleagues regularly report that students do not 'carry learning over' from one module to another, partly because we have created separate units.

A close focus on assessments and outcomes also threatens to go against the grain of group work: when each person is assessed individually, why should students work with anyone else? 'Student-centred', despite its aspirations, can sometimes limit what a teacher provides and work against learning: we can end up with too much fixity in intended outcomes, which becomes a straitjacket as we try to focus on creating learning opportunities. To put it another way, it is centred only on what sort of student we unconsciously assume is in front of us, and all too often that is an asocial

efficient machine whose motivation is inherent, but which can break down, at which point we should 'motivate' them again with incentives and encouragement. Most of us have yet to meet this student in real life; ours tend to arrive with the distraction of 'lives'.

A further difficulty that is often overly minimized is that of reducing authority: the traditional image of the authoritative and powerful teacher at the front, having the last word on everything, is something that we have endeavoured to move away from. But there are limits on how far we can become less teacher-centred: it is easy to forget how powerful the figure of 'the marker' is. Teachers have rightly decentralized a lot of the authority in the room in recent decades and moved to a more supportive role (and have hopefully become more approachable in the process), but when it is still teachers who award marks, power is never entirely absent from the conversation. A student once said to one of us that if he was honest, he preferred it when teachers didn't 'try to be his friend' as it complicated the relationship and whatever mark he ultimately received from them became the defining characteristic of their relationship from the moment he received it. The more approachable the teacher, the more the disappointment if he did not get the mark he hoped for, and the more confused the relationship became for him.

What exactly are we trying to do?

Underlying this ongoing consideration of how we might teach (or rather, how students might learn) is the serious question of what exactly we are trying to do. What is a degree? Students are not 'consumers'.[5] It is not an apprenticeship, where one learns a craft, because a great number of our graduates will go on to do other things, and we aspire to prepare them for that. Nor is a university 'a gym', where the activities themselves are meaningless and only the outcomes matter: whatever they go on to do, what they learn at university is worth knowing in itself. Nor is it a 'contract' for a 'service', since they can fail even after paying their fees. It is, as Land puts it, 'a proper entity – itself, and not really like anything else' (2016: 14).

Most higher education teachers and professional staff would like graduates not just to have learnt (about) their subject but also to have glimpsed something at the heart of their academic discipline: Chemistry is more than the periodic table; language is more than grammar and vocabulary. Moreover, we are aware that attributes and behaviours cannot be limited to knowledge, but are linked to the practice and use of that knowledge. All the medical knowledge in the world does not equip someone for a laboratory or medical practice. As in every area of life, there are customs, unwritten rules,

written rules, irrelevant rules, etiquette, and the simple fact of 'practice makes perfect' to consider, even if few would believe that perfection is attainable. These 'cultures' vary from one discipline to another. From the perspective that we are also teaching them skills and attributes, students are not 'learning a discipline', but are rather the newest members of the 'disciplinary community'. Just as we do not expect adolescents to have grasped everything that is required of experienced adults, we cannot expect students to be proficient from the day they arrive.

However, this awareness that they are new can become the less helpful insistence that they cannot yet appreciate or even begin to understand cutting-edge or subtle aspects of research – surely they must acquire a vast amount of preliminary knowledge before they can actually do any exploration or formulation of their own versions of events, experiments, and so on. The result is that they become disconnected from the subject that interested them in the first place, whether that was a love of literature, a fascination with landscapes, or a desire to make the world a better place. While trying to prepare them for the more arcane aspects of our subjects, we have sometimes fallen into habits that hindered our own efforts: students given only basic understanding would struggle to see the broader relevance of what they were doing. They would merely be doing exercises – the repetition of apparently meaningless tasks for the sake of it – rather than activities – learning by doing.

Disciplinary communities

Treating students as fledgling members of the disciplinary community leads to subtle but important changes in practice, and contributes a great deal more meaning to the same activities and what they learn.

For instance, it is generally accepted that 'feedback is not always acted upon', as Pitt and Norton (2017: 499) mildly put it. However, as that study and many others show, students often receive their feedback as evidence that they have not yet reached some mythical point of perfection. Showing students the process of peer review, where established academics have their papers rejected and/or returned decked with metaphorical red ink, can have a profound effect: feedback is not then some exercise visited upon them by a tutting and disapproving tutor, but rather something to get used to, a normal part of academic practice (and indeed something to be expected in most areas of life). It is not something anyone ever 'moves past': it is rather an engine of discovery and an important part of the real practice of being a fully fledged scientist, architect, engineer, or linguist, etc.

It is a similar story with other areas of academic research: even undertaking relatively small and apparently menial tasks can lend relevance or meaning, but there must be a chance to see the wider picture. Filling up test tubes is boring, but filling up test tubes that will actually be used in medical experiments and potentially save lives has meaning. This is emphatically not a call to have students do (all) the menial work, but it is a suggestion that students should get a taste of it, as well as being shown the rest of the project of which the test tube work forms a part. Nor does undergraduate work need to be menial at all: the philosopher of science Hasok Chang oversaw undergraduate research projects at UCL during the 2000s. He ingeniously had students inherit work from previous years' efforts, thus spreading the workload realistically and allowing students to get to grips with particular aspects of research one at a time while retaining a sense of being part of a bigger picture. Nor was it just a 'sense': over time, they produced a book (Chang and Jackson, 2007; Chang, 2005).

The issue of meaning and relevance across the silos of modules or any other organization of learning depends upon this sense of a bigger picture. Teachers in the hard sciences in particular often say that students require an enormous amount of background understanding before they can begin to undertake anything resembling 'original research', but treating students as members of an academic community invites us to show them the whole of academic practice, at least in glimpses, thereby undermining a sense that many students have that they can ever 'arrive' at some sort of 'final understanding' of their subject. Involvement in some kind of 'real' academic activity is always a possibility worth exploring and indeed students often do get a taste of this in a final-year project or dissertation. As more and more initiatives appear that refuse to assume that we should shield students from 'the hard stuff', the possibility of making research-based education a central part of the undergraduate experience starts to become genuine.

Student as teacher

Approaching the issue of learning from a different angle, the saying goes that the best way to learn something is to teach it. This aligns perfectly with the inescapable fact that the majority of our graduates will go on to present information, projects and findings of various kinds to an audience. Whether we are thinking about preparing them for the future, or even just learning while they are with us, their presenting ('teaching') is an invaluable opportunity. Traditionally they would submit work to be marked by one or two academics, an audience that it is rather limited and generally at least a little unnerving: then, their efforts were typically discarded after marking.

In our information-rich, media-savvy world, typing out an extended piece of work, which is then marked and consigned to literal or metaphorical landfill, seems rather uninspired. Borrowing the environmental engineering and ecology principle that 'waste is food' (i.e. food for something else; see, for example, Chiras, 2016: 142, 585), there seems no reason not to provide an opportunity to create actual artefacts, by which I mean videos, software, installations, reports of actual projects, histories of real communities, and so on. Now the sense of meaning and purpose is greatly enhanced: the audience in the students' minds while preparing their work is not just one or two markers whom they may or may not like or trust, but rather they are actually participating in their disciplinary community and the broader society that Dewey was so keen they should join. Why wait?

This has a bearing on a critical issue in education, the issue of motivation. The higher education community is very concerned about 'motivating students' (at the time of writing, Google Scholar returned over 250,000 results across subject areas for 'student motivation university'), but often does so without really thinking about more than the subject matter that they are already finding demotivating. While it is true that a great performer could make watching paint dry interesting, and a supernova could be made unimaginably dull, this puts too much emphasis on the teacher to be sustainable or fair. Crucially, this also often overlooks the fact that the students are already highly motivated, just not necessarily about what is in front of them, or in the form that it has come.

Who are these students?

Our students bring complex and unfinished identities into our teaching environments, as do those supporting their learning. They will continue to develop that identity through their academic work, making judgements and discoveries about what they care about and how they want to go about being part of it. Providing opportunities to do that actively can transform not just their learning, but also the subject itself. For instance, 'gender', which gained a foothold as 'Women's Studies' (or similar) in the Humanities and Social Sciences, transformed those fields. In pharmaceutical research, which tends to focus on 'rich people's diseases' (Fraser, 2014), students from developing societies have a great incentive to learn what they can about diseases affecting their own countries; '(Big D) Deaf' students will bring a new perspective to linguistics and related subjects (not to mention their peers).[6] More recently, Black Studies has come to the fore in the UK with campaigns such as 'Why is My Curriculum White?' and #WhiteCurriculum, reflected in UCL's 'Liberating the Curriculum' initiative.[7] Responding to

such questions requires a rethink of what is important in a subject, what has been overlooked – and what has been systematically excluded. The dialogue is an enriching one, even if at times the incumbents find it difficult to address the concerns being put to them.

We should in no way assume that only minority or marginalized groups have interesting identities: as a young teacher, one of us was on the receiving end of an angry speech by a young woman from Yorkshire, furious that she was being expected to learn about the notion of 'class' as part of a history degree, because her father's lifelong work as a manual farmhand had made it possible for her to go to university, and therefore proved that that there was no such thing as 'class'. A whole seminar about class and identity could be built unpicking that moment, but the point is that we make assumptions at our peril. Furthermore, we should never assume that just because someone has a particular ethnic or religious background, they must be its ambassadors: they might have come to university intending to move past it, to become 'just' a scientist, architect, medic, and so on.

The point is that while motivation can be 'created' in students, we would be foolish not to provide a way for them to bring their existing motivations to bear, creating a synthesis of learning the subject with their own distinctive flavouring. It is no longer possible to learn everything about a subject, but if students can follow their interests to connect with the world more widely, they will find things to learn and explore that we have not thought of: this is the thinking behind Connected Curriculum and also UCL ChangeMakers.[8]

These rich lives

At graduation, the distinctive person who has been emerging all this time as a student is moving from the partially sheltered environment of education to represent themselves in the world. They may well have done far more at university than their academic studies: for some, roles like being president of the student film society will mean the academic work was a backdrop for their other interests, but either way, they are now expected to take first responsibility for their lives. By default, this means the world of work, which is even true of postgraduates. It means rather than fitting into a role to which they are more or less assigned, or perhaps 'guaranteed' is a better term, they must now negotiate and articulate who they are and who they might be in response to a particular environment. This is true not only of job applications and interviews, but also of the whole process of finding one's way through life. It will require more than presentation skills or CV writing: it calls for an engaged understanding, critique and assimilation of

what that will entail, and they will benefit from having a good grip, not just on how to learn, but also how *they* learn.

This grasp of their own distinctiveness is worth little if it degenerates into a sense of their own specialness: everyone has to be distinctive for it to be of value. Few things in life are achieved alone, and grasp of the process of interaction is often the difference between a desultory result and one to be proud of.

This leads us back to assessment. Students make essays, reports, and so on, and the marker is the implied audience. But, as already mentioned, the audience or viewers are also involved in the composition process and must be factored in. Audience matters because to get our message across, we anticipate them in a million ways, adjusting our language, tone, sentence length, and so on. To misjudge this is, at worst, to waste everybody's time and as in every other area of life, we (can) learn from experience. To represent the same idea to different audiences and in different forms is to understand it more deeply, as we reflect on what is important and relevant to those audiences.

What if artefacts or objects submitted for assessment could be 'real' in the sense of being produced, not just as an anxious exercise to gain a mark, but as things in themselves? Assessment for a wider and more varied audience unleashes a level of interest that few markers can inspire: if the video you are producing will go on YouTube, you simply cannot approach it in the same way as if it is uploaded to a university virtual learning environment, never to be seen again. Once again, thinking education through takes us through 'getting across content' to 'cultivating the person'.

Universities have a key role to play in society as a whole: we live in interesting times and if our graduates are not ready to play a confident and capable role in shaping and reshaping our ever more complex society, then who is? If we wish our graduates to have a distinctive role that makes a university education worthwhile, we will hope for them to be key players, able to identify and champion relevant and important themes. They will need to bring together everything touched on here, and more. They will need support from those with experience to join or build networks in the wider world. This is not a vision of our graduates taking over the world for their own benefit and to further their own interests but rather to think beyond parochial issues, something each generation has to take on for itself.

Universities thus have a powerful impact in terms of what kind of teaching they offer, what attributes graduates might have, and what skills they bring to the wider world. As institutions, they have a very long perspective, shaped over a millennium, and to look long-term means to

look more closely, and if universities are anything consistent over time, they are institutions where people look into things until they really understand them. This survey has endeavoured to bring together all the reasons why we have reached a point where research-based education can, and should, be the core of what we do as related aspects of teaching and research. In those senses, UCL's Connected Curriculum is an idea whose time has come, though it is not the only way to go about addressing the threads highlighted here. While it is designed to embrace a wide variety of other ideas, it is something that synthesizes a great range of what we now understand and value about teaching, learning and research as a field of activity in higher education.

Notes

[1] Addresses for correspondence: j.p.davies@ucl.ac.uk; dilly.fung@lse.ac.uk

[2] www.ucl.ac.uk/2034

[3] www.ucl.ac.uk/teaching-learning/education-initiatives/connected-curriculum

[4] Modularization is also discussed by Tansy Jessop and Gwyneth Hughes in Chapter 5.

[5] See Jenny Marie in Chapter 3.

[6] The Deaf community do not consider a lack of hearing to be significant: see https://en.wikipedia.org/wiki/Deaf_culture.

[7] Outlined in Chapter 7 by Teresa McConlogue.

[8] This is explained further by Jenny Marie in Chapter 3.

References

Barr, R.B. and Tang, J. (1995) 'From teaching to learning: A new paradigm for undergraduate education'. *Change: The Magazine of Higher Learning*, 27 (6), 13–25.

Biggs, J. and Tang, C. (2011) *Teaching for Quality Learning at University: What the student does*. 4th ed. Maidenhead: Society for Research into Higher Education and Open University Press.

Chang, H. (2005) 'Turning an undergraduate class into a professional research community'. *Teaching in Higher Education*, 10 (3), 387–94.

Chang, H. and Jackson, C. (eds) (2007) *An Element of Controversy: The life of chlorine in science, medicine, technology and war*. London: British Society for the History of Science.

Chiras, D.D. (2016) *Environmental Science*. 10th ed. Burlington, MA: Jones and Bartlett Learning.

Daniels, H. (ed.) (2005) *An Introduction to Vygotsky*. 2nd ed. London: Routledge.

Dewey, J. (1916) *Democracy and Education: An introduction to the philosophy of education*. New York: Macmillan.

Fairfield, P. (ed.) (2012) *Education, Dialogue and Hermeneutics*. London: Continuum.

Fraser, G. (2014) 'Big pharma has an interest in rich people being sick'. *The Guardian*, 17 October. Online. www.theguardian.com/commentisfree/belief/2014/oct/17/big-pharma-interest-rich-people-sick (accessed 13 March 2018).

Fung, D. (2017) *A Connected Curriculum for Higher Education*. London: UCL Press.

Gadamer, H.-G. (2004) *Truth and Method*. 2nd rev. ed. Trans. Weinsheimer, J. and Marshall, D.G. London: Continuum.

Gibbs, G. (1988) *Learning by Doing: A guide to teaching and learning methods*. London: Further Eucation Unit.

Herndon, J. (1971) *How to Survive in Your Native Land*. New York: Simon and Schuster.

Holt, J.C. (1984) *How Children Fail*. Harmondsworth: Penguin.

Land, R. (2016) 'Toil and trouble: Threshold concepts as a pedagogy of uncertainty'. In Land, R., Meyer, J.H.F. and Flanagan, M.T. (eds) *Threshold Concepts in Practice*. Rotterdam: Sense Publishers, 11–24.

Lave, J. and Wenger, E. (1991) *Situated Learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.

Pitt, E. and Norton, L. (2017) '"Now that's the feedback I want!": Students' reactions to feedback on graded work and what they do with it'. *Assessment and Evaluation in Higher Education*, 42 (4), 499–516.

Yasnitsky, A., van der Veer, R. and Ferrari, M. (eds) (2014) *The Cambridge Handbook of Cultural-Historical Psychology* (Cambridge Handbooks in Psychology). Cambridge: Cambridge University Press.