No lines: Observations from a pilot project to re-imagine, design and implement a flexible student-centred approach to study mode selection

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Abstract

Upon enrolling in a university course, students typically commit to a predetermined study mode: on-campus, online, or a hybrid/blended study mode. The education provider typically predetermines which study mode/s are available for each course. In this paper, the authors address the challenges of designing and trialling a new "StudyFlex" student-centred study mode at La Trobe University. By re-imagining the concept of flexibility in study mode selection, StudyFlex does away with bright line distinctions between online, blended and on-campus offerings and empowers students to self-select and adjust their preferred study mode pathway within their subject and throughout their course. This paper exposes and acts as a primer for discussing the many challenges of designing, developing, and implementing such student-centred study mode innovations. Specifically, it outlines and expands upon the StudyFlex trial conducted across several subjects, its genesis and justification, with its central tenet of designing subjects which allow students freedom to move between on-campus and online modes of learning within a single offering. Discussion extends to similar trial findings, including the recent pilot by Southern Cross University of a "converged delivery" model which attempted to merge on-campus and online study modes into a single converged mode. Attention then turns to curriculum development and design challenges inherent in the StudyFlex proof of concept. Particular emphasis is placed upon the imperative and significant challenge of ensuring equivalence of learning experience, in terms of learning value and quality, irrespective of the bespoke study mode pathway chosen by students in the StudyFlex trial subjects. The discussion culminates in identifying and highlighting the need for further research to address the challenges posed by innovations like the StudyFlex pilot and its predecessors such as the Southern Cross University converged delivery pilot. These extend to administrative challenges posed for universities seeking to accommodate student-centred study mode flexibility and potential and current practical regulatory constraints affecting such innovations. Fundamental questions emerge concerning the gap between the vision of allowing students to complete self-determination insofar as selection of study mode and the pragmatic realities of the various constraints facing higher education providers in seeking to push the boundaries of curriculum development and design to realise that vision. At a local level, and as the model becomes more widely adopted, La Trobe University teachers will need to be well supported to ensure their practices adapt to a new teaching model, while the model itself will need ongoing concerted design attention to ensure that students experience quality learning regardless of their study mode choices.

Keywords
higher education, student-centred, flexible study mode, online learning, digital learning, innovation, curriculum design

Introduction

Upon enrolling in a university course, students typically commit to a predetermined study mode: on-campus, online, or a hybrid "blended" study mode. Typically, the education provider predetermines which study mode/s are available for each course. Even in blended offerings, there is often little study mode flexibility – the university tends to determine the mix of on-campus and online study activities. This traditional inflexibility in study mode choice is unsustainable. Differences between traditional on-campus and remote education offerings are becoming increasingly difficult to discern (Hanna 2007; Kirkwood 2014). Advanced technologies are increasingly eroding distinctions between modes. Students' daily physical interactions are increasingly seamlessly interwoven with technology which in turn influences their learning expectations (Kirkwood 2014).

Modern workplace expectations are also driving demand for new, more flexible learning and teaching models. For example, the 2018 NMC Horizon Report presents the difficult challenge of better aligning tertiary institutional structures with the practices of the 21st century workplace. The report highlights how universities are seeking new ways to incorporate "a variety of teaching and learning models and mediums… and offering more-flexible degree paths" (Adams Becker et al. 2018, p. 28). However, flexibility has multiple meanings and there are many possibilities for incorporating flexibility in post-secondary education (e.g. Wilmshurst 2005). Over the past 30 years, flexible learning has been described in various ways. According to Palmer (2011), flexible learning (or a synonym such as flexible education) has been in common usage in Australian higher education ever since a 1992 National Board of Employment report. This report steered a change away from a 1980s policy of several specialised distance education university providers, to allow each Australian university to "compete to provide education opportunities that best satisfy student needs" and espoused the benefits of flexible learning for all (NBEET 1992, in Palmer 2011 p. 4). Yet there is no standard definition despite its ultimate common usage in higher education (Palmer 2011) and early attempts for standardised definitions such as a government sponsored report of almost 20 years ago (Ling et al. 2001, p. 207), which offers in the glossary:

> *Flexible provision for learning/flexible provision: A mode of provision of higher education that provides learners with choice through the use of appropriate learning and teaching strategies and policies, [where]*
> *Mode of provision/provision: Broad approach to provision of learning, that is, on-campus attendance, external study, flexible provision.*

Upon collating a range of descriptions for flexible teaching and learning, Wilmshurst (2005) drew from the varying descriptions that "flexible teaching and learning therefore relates to student access to the learning environment – the what, when, where, how and pace" (p. 2). Notwithstanding, practical applications of flexible learning – at least as evidenced in the literature – do not seem to have embraced the student choice of "how" (or "mode") of learning as much as the "when" (or "anytime") and "where" (or "any place") elements.

In this paper, the authors take up the challenge of re-imagining the concept of flexibility specifically in the mode of learning. In particular, this paper identifies and discusses the challenges of designing and trialling a new student-centred study mode at La Trobe University, nominally referred to as "StudyFlex". The aim of the trial is to do away with distinctions between online, blended and on-campus offerings and empower students within the context of a single offering to self-select and adjust their preferred study mode pathway throughout their course and within their subjects.

Overall, this paper exposes and acts as a primer for discussing the many challenges of developing, designing and implementing such student-centred study mode flexibility. The discussion commences with outlining and expanding upon the genesis and justification for the StudyFlex trial, with its central tenet of designing subjects which allow students freedom to move between on-campus and online modes of learning within a single offering and, thus, to create their own personalised study mode pathways. Discussion extends to similar trial findings, including the recent pilot by Southern Cross University of a converged delivery model which attempted to merge online and on-campus study modes into a single converged mode.

The particular curriculum development and design issues addressed in the trial are discussed at length – in particular, the multi-faceted challenge of ensuring equivalence of learning experiences of all students, irrespective of the study pathway they choose. A number of core guiding principles are also isolated and elaborated. Finally, attention turns to flagging the administrative challenges posed by initiatives such as StudyFlex and identifying the further work needed to address the various issues exposed by the La Trobe University StudyFlex trial in order to facilitate the emergence and evolution of similar initiatives in future. Finally, the six core principles ultimately approved for future StudyFlex offerings at La Trobe University are shared.

The StudyFlex trial

The genesis of the StudyFlex trial was a series of discussions at La Trobe University in early 2018 on the feasibility of developing a single subject instance where students can choose an on-campus (or blended learning) or online mode of study from week to week or topic to topic. These discussions were sparked by the articulated desire of the University's deputy vice-chancellor (academic) – later endorsed strategically – for "no-lines" between study modes:

> *We prefer "no-lines"; online, face-to-face, our students are not really seeing the line in between … Students say online doesn't give us on-campus opportunities. It is not "either/or", it's "and". – Professor Kerri-Lee Krause, Deputy Vice-Chancellor (Academic), La Trobe University, All Staff Briefing, Bundoora, 5 June 2018.*

Building upon this stated intent, discussions centred on how to design and administer a single offering which would allow enrolled online students the opportunity to occasionally opt for face-to-face learning experiences, and on-campus students to opt for online learning experiences if on-campus attendance becomes problematic for them. In essence, the goal was to find a way to move beyond a predetermined hard line between online and on-campus study, re-imagining university study as a "no-line" experience. This no-line study mode approach is consistent with the call of writers such as Wilmshurst who have advocated approaches to flexible learning that are "quite different from imposing a particular structure on students", such as an "appropriate combination of teaching methods to suit students" which may involve combining traditional on-campus elements with technologised resources and interactions such as online learning (2005, p. 2). The trial itself involved redeveloping several university subjects (described below) as a proof of concept and to inform the process of maturing and fully realising the ambitions of the StudyFlex no-line concept.

It was recognised from the outset that in order to enable students the freedom to move between on-campus and online modes of learning within a single offering, the online subject site in the learning management system (LMS) would need to be especially sophisticated and comprehensive. Specific design considerations would need to include a quality central spine or core online component. This spine would include detailed student guidance on how to navigate the subject. Navigation guidance would need to include interactive mapping features to assist with study choice decision making and

navigation in the LMS, and student advisory support for extra assistance for particular groups of students – such as online, on-campus, or international students (who may be limited in their online study options due to onshore study visa conditions).

The subject online spine would also include core materials and assessment details for all students. Perhaps most critically, it would also need to include clear choice-points for students to create their personalised study pathway by choosing either an on-campus or online option (which meet equivalence standards). This would extend to inclusion of advice as to clear consequences of study choices. Students would need to comprehend that some choices may need to be decided early and locked in (e.g. assessment related choices, group selection for group work activities, and choices with physical space booking implications). In terms of study choice points, it was recognised from the outset that absolute study mode flexibility across all University offerings was unlikely to be achievable or desirable. This has been recognised by others. For instance, Palmer, Holt and Farley (2010) contend that not all elements of flexibility will be of benefit to all instances of learning, and each require careful attention to possibilities and limits when designing flexible learning environments.

The authors also recognised from the outset that, by virtue of the online learning spine being the primary source of information and navigation for all enrolled students, the StudyFlex subjects provided an opportunity to address the oft-cited criticisms of online learning as a poor cousin to on-campus delivery, particularly where the former does not provide students with "the flexible and accessible learning that online education is purported to provide…" and/or applies "…policies and protocols that are designed for traditional on-campus students without adequate adaptation for the online learner" (Moore & Greenland in DET 2017, p. 26). Necessarily and consequently, the authors were keen to ensure equivalence between online and on-campus learning activities was maintained in the subject redesigns. Thus, each study choice would need to offer an equivalent standard in terms of all corresponding learning and assessment activities, including intended learning and workload effort required. We return to address the fundamental underpinning concept of equivalence later in this paper.

The authors were also cognisant of the need to ensure that core learning components were designed with social connection and engagement between all students in mind. Online social experiences would need to include specific tasks aimed at creating a sense of community and belonging in the subject, commencing with icebreaker activities, through to social constructivist learning opportunities via purposeful team learning activities (Colasante et al. 2018). (For an example of such activities adopted as part of the trial, see the discussion in 4.2 below.)

With all of this in mind, the authors developed the following simple diagrammatic representation of a StudyFlex subject (see Figure 1).
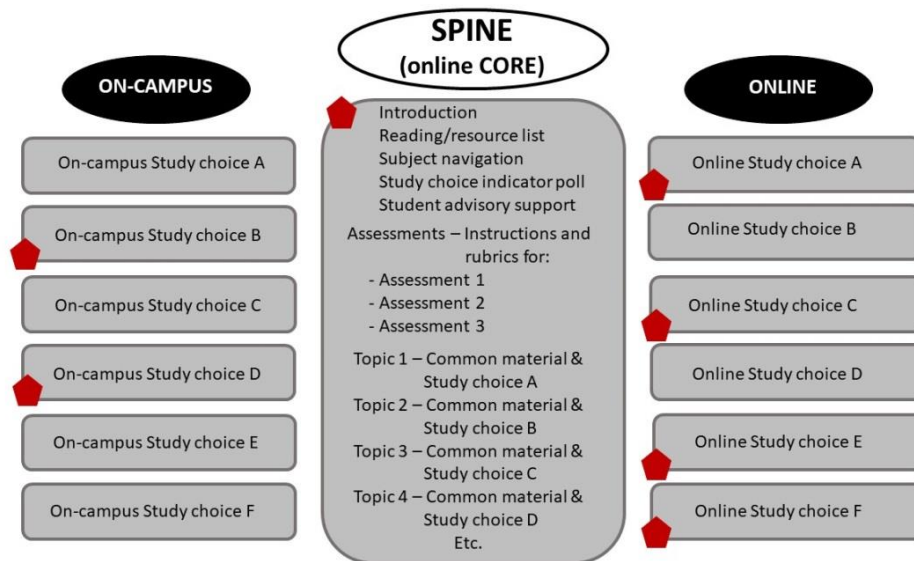
Figure 1: *Basic overview of a StudyFlex subject design (the pentagons indicate a potential personalised study pathway of largely online study with attendance to two on-campus sessions)*

Figure 2 below illustrates examples of changes in student study mode preferences accommodated in StudyFlex. Specifically, fictional Student A's pathway is illustrated by the stars. He indicated by poll at the start of the semester (which only he and his teaching team can view) that his intention was to attend all on-campus options, rather than take the online equivalent options. However, Student A becomes unwell and utilises two topics of online learning in the middle of the semester in order to catch up with his studies. A simple StudyFlex roll kept by the subject coordinator/lecturer in the LMS shows that he attended all on-campus sessions minus two, and the LMS learning analytics showed that he interacted with two fully online topics.

The diamonds in Figure 2 show an alternative pathway in the same subject. Student B indicated by poll at the start of the semester that her intention was to utilise all online options and not attend any on-campus sessions in order to avoid unnecessary travel. However, when Student B realised she would be in town during the industry representative's guest lecture for Topic 3, she updated her study choice preference via a simple poll (embedded in each topic) in order to attend in person.
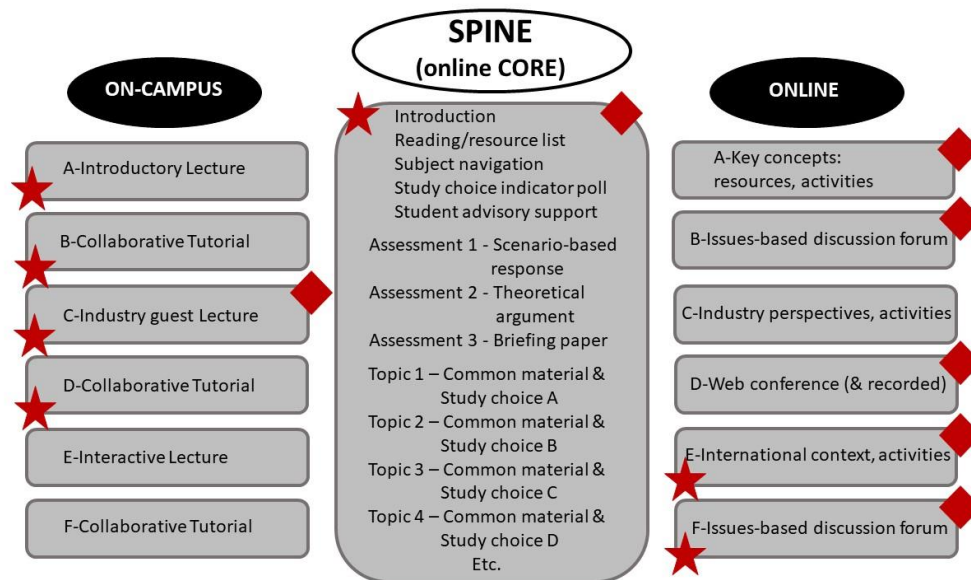
Figure 2: *Sample student StudyFlex pathways: the stars indicate the personalised pathway of Student A; the diamonds indicate Student B's choice.*

Pilot/trial subjects

Five subjects in total were involved in the StudyFlex trial (see Table 1). Four online subjects were nominated by college representatives for the trial, including three subjects with separately scheduled on-campus instances. These included two postgraduate computer science subjects, one postgraduate health research subject and one undergraduate health science subject. An additional online subject was selected upon consultation with online teaching coordinators to include a humanities subject in the trial, that of a postgraduate strategic communications subject. This subject, along with the undergraduate health science subject, were limited to subject design level in preparation for future StudyFlex potential. The remaining three subjects were designed, developed, and taught in the StudyFlex mode with students utilising signposted study choice points.

Table 1: Participating subjects in the StudyFlex trial

Subject	UG/PG	Discipline	Existing mode/s	Intervention
Penetration Testing Principles	PG	Computer Science	- On-campus Semester - Online 6 week intensive	Designed, developed, and taught in a single StudyFlex mode
The Blockchain & Cryptocurrencies	PG	Computer Science	- On-campus Semester - Online 6 week intensive	
Qualitative Methods in Health Research	PG	Health Sciences	- On-campus Winter intensive - Online Winter intensive	
Infection and Immunity	UG	Health Sciences	- Online only	Continued as per existing mode/s;
Issues Management in Strategic Communication	PG	Humanities	- On-campus Semester - Online 6 week intensive	Design work for StudyFlex options

The authors found little difficulty in recruiting subjects for inclusion in the trial. This appears counterintuitive taking into account the views of authors such as Kirkwood that when it comes to new technologically-enhanced educational approaches, university policy-makers and practitioners tend to lack "the vision, imagination and drive to realise… [the potential benefits for] their students; too many constrain themselves with models of teaching and learning that are no longer sufficient or appropriate" (Kirkwood 2014, p. 217).

It could be speculated that one of the reasons for the relative enthusiasm for StudyFlex is the potential efficiencies for academics to offer a single subject in the place of multiple subject offerings which are near identical save for the mode of delivery. This may be a happy coincidence but it also serves as a cautionary note to ensure that any StudyFlex offering is only deployed where it will not compromise the overall student learning experience.

Relatable work at other Australian universities

Before embarking on the trial the authors conducted an initial desktop literature search to find that relatable work had occurred at Southern Cross University (Taylor & Newton 2013). During the trial, the authors were supported by the university library to conduct a customised search of the literature across several databases. The search strategy involved

- universities that have offered online, on-campus and flexible delivery options at the same time;
- higher/university education only;
- 2000 onwards;
- Australian and international;
- all languages; and
- databases ERIC (Proquest), Proquest Education Journals, Informit A+ Education, and Informit Social Sciences.

This strategy resulted in a large number of records (452 once duplicates were removed). Many of these were clearly outside the scope of our focus, so the authors used the EndNote search and group features to prioritise records for review. Only a small number of highly relatable works were uncovered which could usefully inform the trial. These publications were relatable in terms of dealing with student flexibility insofar as in-subject choice of the "how" or mode of learning was concerned. Despite the international inclusion in the search, such work was largely found in other Australian universities. However, further random unstructured searches conducted since indicate relatable activity elsewhere (e.g. Beatty 2014).

There is no readily available evidence to suggest that the relatable Australian initiatives were sustained beyond their pilot projects. The most recent and arguably relatable case occurred several years ago as a large pilot involving a converged delivery model. Southern Cross University (SCU) attempted to join or collapse external and internal enrolments into a single mode involving multiple academic schools (Taylor & Newton 2013). A potential precursor paper (Day & Walo 2010) indicates a dedication of several years by SCU toward achieving a flexible approach to not just when students choose to study but also how they would like to study.

Other identified cases, which occurred up to ten years prior to the SCU pilot, involved redesign of individual subjects to enable student study mode choice regardless of whether enrolled in on-campus or off-campus mode. These latter cases will be discussed briefly prior to discussion of the SCU pilot, in particular the advice offered from their respective findings.

In two universities, and notably prior to their access to the affordances of a contemporary LMS, students were offered in-subject choices of learning on-campus or via distance education (DE) materials. These students were enrolled in single introductory subjects of biomedical science at University of Sydney (UoS) (Lee, Weerakoon & Lingard 2003) and IT at Flinders University (Goodwin & Williams 2004). In a third unnamed Australian university (De George-Walker & Keeffe 2010), students who were enrolled in a first year human development/education subject had access to the affordances of an LMS online learning site.

One of the themes to emerge from these studies includes capacity for students to manage their learning when choice is offered. The UoS study (Lee et al. 2003) concluded that some students need more structure to stay on track, and that students who are relatively fresh to university study may not be ready to take on such flexibility in learning choices. Lee and colleagues purport "that the ability to choose between learning methods, the responsibilities that go with those choices, and an understanding of the implications of those choices are not automatic, and that many students will need to be prepared academically for these challenges" (2003, p. 411). This is not dissimilar to aptitudes recognised for learning successfully in online environments, as regards to independent learning skills such as capacity for self-regulation/self-directed learning (Colasante & Hall-van Elsen 2017; Fahy 2008). While the De George-Walker and Keeffe (2010) study found some students may have been overwhelmed by the choice and required ongoing support, in the main the students expressed a more determined outlook. Student feedback indicated some students seized the opportunity (e.g. determined to continue learning despite missing a tutorial), and those who came to the realisation of the responsibility required for self-direction (e.g. resources are available to assist us to succeed so use them) did not realise the effort required, but once they started to engage with resources they found them excellent) (De George-Walker & Keeffe 2010, p. 11).

Another theme to emerge from these studies includes the staff effort required to prepare such flexible subjects. De George-Walker and Keeffe (2010) discuss their detailed pedagogical subject redesign and online subject structure, comprising a range of key components for all students as well as self-selection activities to "select at least one learning activity from each of the three phases (A, B and C) for each module" (p. 5). The staff in the UoS pilot (Lee et al. 2003) were able to utilise DE materials already developed and proven useful for previous off-campus cohorts, while the Flinders study concludes that additional effort required by staff to prepare "materials in a number of different formats is worthwhile" for student choice and also to realise efficiencies in reusability across the teaching modes (Goodwin & Williams 2004, p. 82).

The much larger pilot by SCU, to converge external and internal enrolments for 39 subjects across eight academic schools, is of significant relevance compared to the above examples given its emphasis on online learning and administrative considerations. Despite occasional conflation of the terms blended and converged (and some wriggle room on whether all subjects allowed for complete study mode flexibility), Taylor and Newton (2013) report on an extension of blended learning to allow for in-subject flexibility via choice of mode selection as based on principles such as providing "core learning experiences that can be accessed and used by both on- and off-campus students… [and] provid[ing] all students with opportunities to make informed decisions about their enrolment and study options" (p. 58).

Taylor and Newton (2013) gathered feedback from various staff and over 400 students (out of 3,000 involved in the SCU pilot) via surveys, interviews and comments in online forums. A range of their findings are summarised and tabled below, adapted into themes of enablers, barriers, and what staff or students desire as aligned to feature-based themes; e.g. technology (see Table 2 and 3).

Table 2: Example student feedback grouped into themes (adapted from Taylor & Newton, 2013)

Theme	Enablers/positives	Barriers/negatives	Students want
Online site	Well-structured subject and good availability of study materials. Short mini lectures to present key concepts.	Confusing navigation. Too much information/ content to be able to focus on core learning.	Subject concept maps of topics and activities. Guide on how online and on-campus learning integrated "what do I need to do, and what are the alternatives" (p. 56).
Technology	Majority had no issues.	Minority felt alienated, overwhelmed, felt lost in the technology Difficulties downloading recordings.	Technological orientation detail for students with low digital literacy skills, including quite basic detail, such as if headphones required for web conferencing sessions. Practice sessions using technology.
Teacher/student -to-student support	Responsive teacher, available, contactable, supportive.	Did not know how to contact other students.	

Table 3: Example staff feedback grouped into themes (adapted from Taylor & Newton, 2013)

Theme	Enablers/positives	Barriers/negatives	Staff want
Time		Provision of adequate time to devote to design and develop new skills.	
Technology		Teachers needed technological advice/ support. Overlap in roles (roles could have been defined at start of project).	Consistent detail and support on how to create, edit, distribute, etc. multimedia learning materials. Space to explore technological options for teaching.
Team approach	Curriculum teams created strong links between curriculum design and technology support staff.	Some found the team approach more time consuming than working on their own.	Teachers need better support about range of teaching approaches.

SCU staff feedback also highlighted the need for university-wide implementation and support processes. This included clarity for what the new model means for students and staff at the University, supported by definitional work and creation of principles (which the SCU authors subsequently created with support from University management), to enable effective communications with common understandings (Taylor & Newton 2013, pp. 57, 59). Staff identified a stumbling block regarding how enrolment categories can adversely affect student expectations of their types of learning experiences. Indeed, Taylor and Newton (2013) reported that the key barrier to achieving the full SCU converged delivery vision was the Australian Government funding policy, which did not support a single/converged mode. Despite this, they progressed in their university goal of "equitable learning experiences for students enrolled across modes" (p. 59).

Many of the issues raised in the relatable work above align to quality online curriculum design and development factors. Within this, there is particular emphasis on developing student capacity to effectively navigate their choice of study mode and comprehend the learning responsibility associated with their study choices, and developing staff capacity to practice effectively in the complexity of a subject design model that allows flexible student movement between modes. In the next section, such issues are grouped together as aligned to the overarching principle of equivalence of learning experience between the modes.

Designing StudyFlex – the challenge of equivalence

Having set the basic definitional parameters of the StudyFlex trial and scanned the literature for lessons and insights, attention in this section turns to curriculum development and design challenges encountered during the StudyFlex trial. As flagged earlier in this paper, the fundamental challenge to be addressed is the task of ensuring equivalence of learning experience. Specifically, the concern is to ensure equivalence of learning value and quality, irrespective of the bespoke study mode pathway chosen by students in the StudyFlex trial subjects. Part of this equation also involves students' ability to easily exercise and take on the responsibility of their subject mode choice as well as their teacher's ability to facilitate a StudyFlex subject. As the discussion that follows illustrates, equivalence is a multifaceted and complex task.

The concept of equivalence regarding alternate modes of study

While the rise of technological infrastructure enables multiple modes of delivery, and student-centred innovations such as StudyFlex, MacKeogh and Fox (2009) caution us to ensure the pedagogy is sound and offers "flexible modular frameworks [and] innovative pedagogical approaches", but "most crucially, commitment to equivalence of access for students on and off-campus" (p. 149). This is a particular challenge in the StudyFlex context when offerings must be designed to ensure equivalence is maintained, notwithstanding a number of possible combinations and permutations of student-driven study mode choices which lie at the heart of the StudyFlex philosophy. For definitional purposes, we refer to the term equivalence as:

> *offering higher education student experiences that are equivalent in learning value via curriculum opportunities ... [irrespective of] access mode and as tailored to best suit specific access modes. That is, comparable learning opportunities are provided to students in distance and "home" provisions when designing or reviewing courses, whereby one group of students is not disadvantaged compared to another as a result of the resources they do/do not have access to (Bevacqua & Colasante 2018, p. 4).*

The principle that learning designs in any mode, physical or virtual in nature, need to enable sufficient opportunities for learning by doing/constructing and participation/interaction (Lomas & Oblinger 2006) is particularly pertinent to initiatives such as StudyFlex. This is because incorporating both on-campus and online learning opportunities in the one offering provides an opportunity to utilise positive affordances of each mode, such as "discussions in class and online [that] incorporate more critical thinking and analysis, and students working collaboratively [to] produce more sophisticated work" (Glazer 2012, p. 127). Various "constructivist and social constructivist processes have long been promoted to foster deep learning opportunities for students as active contributors to their learning" (Colasante et al. 2018, p. 324).

However, building in equivalence through sophisticated and collaborative learning activities is not enough if students are ill-equipped to fully immerse themselves in these activities. The StudyFlex team were conscious of the need for caution akin to that advocated by Gibbings, Lidstone and Bruce (2015) in reminding educational practitioners to determine how students experience technologised/virtual learning spaces. Through such understanding, activities can be better designed and students better facilitated to achieve familiarity with how to learn in various modes, particularly for deeper learning experiences (Gibbings et al. 2015).

Students must also be equipped and supported to utilise the technologies and learning approaches necessary to ensure such learning experiences. As Conole (2013) has observed, many students require modelling or assistance on how to effectively use advanced learning environments. This was considered particularly important by the design team, given that students will likely never have encountered a subject with the type of flexibility and structure of a StudyFlex subject. (Note: for examples of how the principles discussed above are adopted within the trial subjects, see the discussion in 4.2 below.)

Equivalence also extends to ensuring workload equivalence. At La Trobe University, students enrolled full-time (four subjects per semester) on campus are typically expected to spend approximately 12 to 15 hours in scheduled on-campus sessions. This aligns with a conventional Carnegie approach:

> *...the amount of learning time in any college course should meet the guideline of the Carnegie unit, a total of 45 hours for one semester credit (in conventional classroom education this breaks down into 15 hours of instruction plus 30 hours of student work/study out of class.) (New York State Department of Higher Education 2013, in Starenko 2017).*

While these guidelines remain largely relevant for students choosing to take up all subject-related opportunities on campus, they don't necessarily take into account the flexibility of mixed-mode learning such as blended learning options or, further, that envisaged in StudyFlex. However, they were used by the StudyFlex project team to provide a guide for a maximum on-campus/online flexible component of 3 to 4 hours per week of study choice options in the semester-long trial subjects, while appropriately condensed for intensive subjects.

Ensuring equivalence also requires teaching staff to grasp the particular challenges of teaching in an innovative learning context such as a StudyFlex subject. For some teachers a StudyFlex subject will be a first foray into shifting teaching focus from content delivery to collaboration and teaching in online and on-campus learning environments concurrently. The challenges will be significant for some. For example, consistent with a no-lines concept when referring to blurring of boundaries between physical and virtual learning modes, Graetz (2006) highlights the need to accept virtual spaces as actual classrooms that require the same levels of attention and decision making to support learning. Others such as Kirkwood remind us to consider the application of technology toward supporting equivalence when he highlights that "if it has been demonstrated that a technology can add value to one particular educational context, it cannot be assumed that it can be applied with similar success in others". He asks how strategies, cultures and practices can "be adjusted to optimise learning activities associated with particular technologies or tools" within the various contexts (2014, p. 207). These are questions that will need to be addressed by those delivering StudyFlex subjects to ensure equivalent high-quality learning experiences for all of their students.

Design challenges and examples from StudyFlex trial subjects

In section 4.1 we discussed equivalence in terms of quality concepts such as social connection and engagement, constructivist and social constructivist learning opportunities, and technological supports to enable students to engage with these experiences and successfully navigate their journey through the subject. Presented below are examples to illustrate how we designed subjects to help meet these challenges.

To foster social connection and engagement between students (also highlighted as a need by Taylor and Newton, 2013), subjects began with an icebreaker activity as a core learning component. For example, to promote a sense of community and belonging early in the subject of Issues Management in Strategic Communication, the icebreaker tasks students to create a media message for a non-serious/humorous issue. They video record a self-introduction along with their media message (e.g. via smartphone) and upload the video to the dedicated "Introductions" discussion forum. In the forum, they watch each others' videos and post reply greetings.

Social constructivist learning opportunities, to continue a sense of community building throughout the subjects, include purposeful group learning activities. For a basic discussion-based activity dedicated to building knowledge, Topic 2 of the Blockchain and Cryptocurrencies subject tasks all students to view a Blockchain Basics video and formulate responses to ascribed discussion questions. For the on-campus attendees, this is in preparation for a class discussion in their lecture. Online participants read and interact with additional online content, ready to engage with other students in a dedicated discussion forum moderated by teaching staff.

In Session 2 of the subject Qualitative Methods in Health Research, all students reflect on a concept introduced in the previous session of the 5Ws (What, Why, Who, Where and When) of a research idea. They then use this detail to create a pitch on their own research idea. A wide range of example thesis ideas is offered via a specific Twitter account, where students read ideas represented in one to two sentences. The on-campus attendees then participate in an interactive session, "Choosing your research topic", to learn how to further develop research questions, receive feedback from others, and participate in a debriefing. Online participants work through an activity to delve deeply into the 5Ws. They draft a "What" specific Tweet to post to the class discussion forum, then read others' posts, and give constructive feedback to two others. Finally, the online students work through an activity to reflect on the difficulty of the task and read closing advice on the 5Ws. These activity sets are equivalent in learning preparation for Session 3, regardless of the mode in which students choose to study the next session.

Other constructivist activities, to learn by doing with or without an explicit social element, occurred within the subjects. An example of an activity designed for the first year undergraduate subject Infection and Immunity involved laboratory exercises either on-campus or online simulated. On-campus attendees conduct two simple microbiology experiments with their lab supervisor. Online participants conduct the experiments vicariously, working through step-wise video segments of the lab exercises, with questions to answer (in quiz style) prior to release of subsequent video instalments. All students face a "predict the outcome" activity before the second experiment, plus write progressively more advanced reports for each experiment, building infection and immunity knowledge.

The range of random example activities above hint at the scaffolding and constructive alignment that is present within the subjects. This not only involves building of discipline-based skills and knowledge, but also building digital capacity for students to successfully complete their subjects. For example, the icebreaker in Issues Management in Strategic Communication mentioned above requires students to create and upload a simple video and greet each other in the discussion forum.

This is completed in a non-pressured environment with technological supports and time to seek assistance, before they need to use these skills again in their first assessment (a video presentation analysing a real issue or crisis). The lecturer posts her own simple icebreaker video and greets others in order to model the expectations.

Specific technological supports are required for the subject Penetration Testing Principles. Computer laboratory sessions can be completed on-campus utilising University computers and face-to-face teaching staff support, or online utilising own computer and online teaching staff support. Any student who completes one or more labs online will need to install a bespoke Virtual Machine (VM) on their own computer (following step-by-step instructions), which simulates a variety of penetration testing online environments. Clear reminders are given early and within the subject of this requirement, and a specific Forum for Lab Queries discussion space is monitored by teaching staff where queries related to the installation of the VM are encouraged and promptly answered.

Additionally, students are supported to navigate their flexible journey through the subject by specific study choice technologies and guides. This involves textual and diagrammatic guides in the Start Here section while maintaining a thread of consistent messaging and supports at each study choice point. Within this, the provision of technological prompts encourages students to earnestly consider their choices, whilst also acting as a communication tool with their teaching staff of their study mode intentions. For example, and supported by Figure 3, Student B (from Figure 2) may have indicated in the Your Study Choice Path questionnaire at the start of the subject that she intended to complete all online study options. When she decided to attend the Topic 3 on-campus session, there was a simple Changing Your Study Choice questionnaire option at the end of Topic 2 to simply indicate her change of mind.
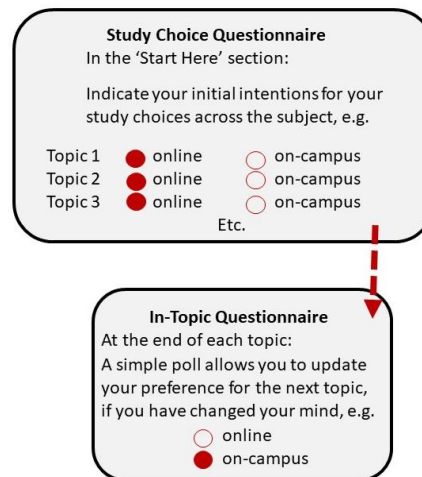

Figure 3: Example of diagrammatic support for how to indicate study mode preferences.

Re-imagining administrative structures to accommodate flexibility

Almost two decades ago, a report sponsored by the Australian Government (Ling et al. 2001) made recommendations to achieve "effective and cost effective flexible provision of higher education", including advising universities to "seek opportunities to make use of tuition materials for both on-campus and off-campus tuition and combinations of the two in order to make provision economical

and to make provision flexible in terms of… [various] preferences of students" (from the recommendations in the preface, p. xx). Notwithstanding, substantial administrative challenges remain for universities seeking to accommodate student-centred study mode flexibility. Similarly, a number of practical regulatory constraints have potential to limit such innovations. It is beyond the scope of this paper to deal comprehensively with all of these, but the SCU converged delivery trial discussed in part 3 gives sufficient cause for caution to ensure these matters are not ignored.

As reported by Taylor and Newton, the major barrier to success for the SCU converged delivery vision was the Australian Government funding policy:

> *Australian university funding is provided for students enrolled in different modes: "internal", "external" and "multi-mode". The University [SCU] received no guarantee from the Government that a move to a single enrolment mode would not affect institutional funding. This meant that the full vision of a single mode could not be implemented. (Taylor & Newton 2013, p. 59)*

While there is minimal detail provided, in order to obviate the regulatory problems encountered by SCU, the authors considered ways to characterise and accommodate StudyFlex within the context of existing recognised modalities. In essence, the subjects could simply be characterised as a bespoke form of mixed-mode delivery as defined in the current *Commonwealth Grant Scheme Guidelines 2012*. These define multi-modal study as study undertaken partially in an internal and external mode. Internal means a mode of attendance for a unit of study whereby the student must attend classes at the provider's facilities on a regular basis. External offerings do not require the student to attend on-campus classes on a regular basis.

Whilst these definitions, prima facie, do not appear to pose challenges to initiatives such as StudyFlex, potential problems might arise if a university were to adopt single StudyFlex course offerings wholesale, in place of existing external and internal offerings. For government reporting purposes, it would be impossible for the university to accurately determine numbers of internal, external or multi-mode students, except retrospectively through examining their actual attendances. As part of the trial evaluation, learning analytics are included in the data collection range to help further tease out these issues in post-delivery data analysis activities.

Even if the regulatory hurdles can be overcome, traditional university structures and administrative systems will be challenged by initiatives like StudyFlex. For example, there are questions surrounding appropriate charging of student amenity fees chargeable under the *Higher Education Support Act 2003* (Cth). Universities sometimes vary the quantum of these fees depending on whether students are enrolled as internal, external or multi-mode students, given the differential likelihood of utilisation of on-campus facilities and services. Allowing students to switch between online and on-campus learning activities within a single unit offering creates an obvious dilemma. Are all students to be charged these fees? Or none of them? Any other option would require students to lock in their study mode intentions from the outset which would significantly erode the student-centred study-mode flexibility underpinning of initiatives such as StudyFlex. Timetabling of physical university facilities such as lecture rooms pose a similar problem. There is a trade-off between universities having certainty as to physical classroom requirements and allowing students flexibility as to whether to attend on-campus activities as part of a StudyFlex offering. Of course, presently, classrooms are scheduled based on an expectation that all students will physically attend. This is not necessarily the reality. In essence, StudyFlex offerings acknowledge this reality, but may still require universities to schedule classrooms on the expectation that the entire student cohort may need to be accommodated. For example, this issue was pre-empted as a considerable challenge for

the Infection and Immunity subject in regards to the learning activities based on experiments, given limits to student numbers in microbiology laboratory sessions and the associated number of demonstrators or related lab materials preparation required. There are likely to be many similar administrative challenges posed by initiatives such as StudyFlex.

The authors consider that one of the best ways to deal with some of these challenges is to ensure that detailed student activity analytics are embedded in any StudyFlex offerings. Such analytics should be aimed at providing insights into student intended study mode preferences and actual attendance movements and trends. The two computer science subjects had student choice indicator polls enabled for their student cohorts prior to semester commencement and the teachers were requested to keep on-campus attendance rolls. These measures, along with activity analytics in the LMS gathered post-delivery for each of the delivered/taught subjects will help inform the sufficiency of such analytics for these purposes. Considered longitudinally, such information can be used to predict physical class requirements; allow for more accurate assessments of student demands for on-campus support and facilities; and predict numbers of internal, external or multi-mode students for funding purposes. Notwithstanding, there is much more work to be done to fully explore and resolve the administrative and regulatory challenges posed by initiatives aimed at embedding student-centred study mode flexibility.

Finally, in the latter stages of the trial the following principles were developed, which were ultimately endorsed by the Project Steering Committee:

For any StudyFlex offering to be developed according to the following six core principles:

1. StudyFlex offering development should initially be restricted to entire course developments or redevelopments rather than individual subjects.
2. StudyFlex offerings should have no compulsory on-campus attendance requirements (i.e. can be completed entirely online) and must include some optional on-campus activities.
3. StudyFlex offerings are not to include compulsory synchronous class attendance requirements unless pedagogically warranted. Any synchronous classes are to be recorded for asynchronous consumption by students unable to participate at the designated time.
4. StudyFlex offerings are to include data collection and analysis tools to record and monitor student study preferences to enable the continuous improvement and long-term success of StudyFlex offerings.
5. StudyFlex offerings will be built entirely in the current University LMS (Moodle) and delivered entirely in existing on-campus study periods.
6. StudyFlex nomenclature must only be applied to offerings which have been developed and quality checked by LTLT to ensure they meet minimum quality standards and these StudyFlex principles.

Conclusion and next steps

Whilst the trial phase of the StudyFlex project is largely complete, it is clear that much work remains to test the feasibility and limits of the ability to accommodate student-centred study mode flexibility. Concurrently, collection and evaluation of student and staff feedback and various learning analytics on the trial subjects is also underway. Early reading of the interview data suggests that students

appreciate the ability to choose their own mode of learning periodically within a subject, even where they do not exercise this choice, and that navigation through their online subject was well sign-posted regarding the study choice points. Teachers are generally excited by the overall concept, but note caution for the workload of facilitating student learning across two modes simultaneously as compared to separate or overlapping study periods. As part of the next phase of the project, pilot course selection has now commenced for course-wide design and development in the StudyFlex model.

Emerging from this work are likely to be a range of more nuanced insights to advance the broader discussion; in particular to address fundamental questions concerning the current gap between the vision of allowing students complete self-determination insofar as selection of study mode and the pragmatic realities of the various constraints facing higher education providers in seeking to push the boundaries of curriculum development and design to realise that vision. At a more local level, La Trobe University teachers will need to be well supported to ensure their practices adapt to a new teaching model. The model itself will need ongoing concerted design attention to ensure that students experience quality learning, and that they are guided and seamlessly supported by the online LMS environment, regardless of whether they study online, on campus, or move periodically in-subject between the two as per their needs or preferences.

Acknowledgements

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