



Re/Connecting university teachers with digital teaching tools for “jobs to be done”

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Although constructive alignment is well understood within university teaching practices, technology does not always feature explicitly within this conceptual model. When educators seek digital technologies to assist them in their teaching, how do they find out both what is available to them within their higher education institution and, more importantly, which tools might make a good pedagogical “fit” within their unit of study? One university in Australia recently designed and developed a *Teaching and Learning Tools Guide* to assist their teachers to determine which educational technologies are available for their various educational purposes. This new resource offers guided navigation to assist teacher choice of tool to align to their intended pedagogical strategy. As an open-source resource, the guide is also offered widely to the higher education community. This paper recommends that this or a similar resource is used to support digital tool choice within the constructive alignment process.

Keywords: Constructive alignment; Digital technology; University teachers; Higher education

Introduction

Any instructional strategy can be supported by a number of contrasting technologies—old and new—just as any given technology might support different instructional strategies. For any given instructional strategy, however, some technologies are better than others. (Caplan & Graham, 2008, p. 250)

Constructive alignment is understood within higher education curriculum design, development, and teaching to involve intentionally designing teaching and learning activities and assessment tasks to not only align to the intended learning outcomes but to provide a facilitated pathway for students to build or construct their way towards their new knowledge or other outcomes (Biggs & Tang, 2011). The role of constructive alignment continues to be considered core to instructional and teaching practices (e.g., Paskevicius, 2017), albeit should be viewed as a non-linear and complex process without denying other elements, such as unplanned creatively or unexpected directions taken by the students (Bellamy, 2018a; Fawns, 2022b). However, when constructive alignment is represented as an equation, the complexities that technological tools add do not always feature significantly or as particular entities that need considered attention. This might be implied in design discussions in higher education, such as when noting “experience with and awareness of alignment between technology, content and concepts being taught” as a factor within “mediat[ing] teaching and learning processes” (Green, 2022, p. 96). We anticipate that this—the explicit recognition of digital tools adding further complexity to the constructive alignment model—may soon be addressed given Biggs and Tang are joined by Kennedy to write a fifth edition of *Teaching for Quality Learning at University* (Biggs et al., in press), expected for release in November 2022. Nonetheless, when choosing technologies for use in teaching, educators should consider on a baseline level how these align or do not align with the intended learning outcomes, the teaching and learning activities, and the assessment tasks, and what other purposes might be enabled or inadvertently disabled by incorporating digital tools. Such consideration can take place at the planning stage when constructively aligning a subject or unit of study but also at the more granular level when designing activities and assessments, and then at a further level of granularity when actively practicing in the teaching and learning settings and responding to various needs as exposed during student engagement opportunities.

When teachers (or students) bring new digital technologies into educational settings, the planned alignment might be influenced in unexpected ways. Digital tools as a collective are unstable due to their rapidly evolving status, their opaque nature (i.e., their function may not be as immediately obvious as compared to physical, non-digital tools in a classroom), and their capacity to be applied in a variety of ways (Paskevicius, 2017). Barry et

al. (2015, p. 209) noted that previous instances of “well-designed, constructively aligned curriculum may have remained constant” for some time, but with continually increasing access to and availability of both educational and social technologies, we now have more fluid educational environments, with “a continuous need to reflect on and consider students’ learning and teaching needs with regard to their socio-technological world[s]”. However, they added that this need not be seen as a burden but rather “an opportunity for teachers to refresh curriculum for new delivery modes, methods and techniques appropriate for the technology (and learners) of the times” (Barry et al., 2015, p. 209). Moreover, Fawns (2022a) elucidated the complex nature of an entangled pedagogy, which features interdependent elements (such as teaching methods; technology; and teacher and student purposes, values, and contexts) and iterative negotiations between these elements. Within this complexity of intertwined factors, the intended learning outcomes may be inadequate to represent emergent, unpredictable learning achievements (Fawns, 2022a).

At the start of the current COVID-19 pandemic, many higher education institutions around the globe rapidly moved their teaching and learning to online mode (e.g., IAU, 2020; Mascolo, 2020), meaning educators had to quickly adapt to teaching in online environments. Many institutions focused on “transitioning content to an online environment, and not necessarily on online pedagogy” and faced challenges resulting from this rapid change (Crawford, et al., 2020, p. 10). After the initial rapid response, concerted effort is being directed towards formulating a continuing response. Higher education institutes are reconsidering teaching and learning, with many mindful of the roles that digital technologies have in this new paradigm to support both increasing online and decreasing face-to-face learning in comparison to pre-pandemic contexts. Digital teaching skills factor in this. In a recent overview of systematic reviews, Peters et al. (2022) drew several factors from 13 reviews that influence university teachers’ digital competency, including the increasing demands on faculty due to fast-paced changes in the digital teaching ecology, the institution meeting their responsibilities for training and provision of infrastructure, and a focus on teaching practice roles involving thinking critically about technology use including pedagogical aspects.

One University’s particular response to support university teachers in these changing contexts included an action to reconnect teachers with digital technologies in a meaningful way. The University supported the development of a new guide for teachers to use as a resource for selecting digital tools for teaching; to help them to explicitly select tools to suit their various and specific teaching and learning aims. This paper shares this new resource developed for teachers at Deakin University, Australia, in the form of a *Teaching and Learning Tools Guide* (Deakin University, 2021). As an open-source resource, teachers from any university can access and use this new guide to help in their choice of digital tools; to select tools to incorporate into their teaching practices to meet various teaching purposes. On one level, tools can be searched by name to access tool resources (e.g., for *H5P* or *Mentimeter*). However, at a pedagogical level, teachers are offered the option of navigating through a few steps to consider the purpose(s) for which they intend to use any particular tool, and to consider the teaching methods they might employ.

The pedagogical navigation option is overtly influenced by Laurillard’s (2012) framing of several “learning through . . .” activity types (e.g., “learning through practice”), and the layering within the guide is directly influenced by Goodyear’s (2005) model of educational design. However, in practice, the guide is intended to support university teachers’ achievement towards constructive alignment; teachers are encouraged to seek tools aligned to their teaching purpose(s). In straightforward (albeit hypothetical) terms, if the intended learning outcome is a practice focussed outcome to “Apply [X practical skills in Y contexts],” then teachers might go to the pedagogical tab titled “Practice” to view a range of digital tool options to support students in their on- or off-campus practice activities (e.g., on-campus experiment, off-campus internship). Further granular guidance is then offered in learning and assessment activity alignment, which is further detailed within this paper. By taking a multi-disciplinary team approach to design and create the new interactive web-based artefact, the digital tool guide reached beyond achieving the University brief to also address various “jobs to be done” that teachers and teaching support staff identified.

Analysing the requirements: Determining the jobs to be done

To create the Teaching and Learning Tools Guide, a needs analysis occurred iteratively during design ideation. Such a baseline “[n]eeds analysis is a core component” within a design-based approach for a learning technology or support tool (Phillips et al., 2012, p. 121). The central theme of the analysis was to determine what were the *Jobs to Be Done* by this new resource. This approach was inspired by Christensen et al. (2016), who highlighted that people effectively “hire” a product on offer (in this case, the anticipated tool guide) to do various jobs, and if it “does the job well, the next time we’re confronted with the same job, we tend to hire that product again” (p. 56).

The project brief from the University was to replace a pre-existing *Digital Learning Environments* guide in the form of a PDF resource, to uplift it to a next generation interactive web resource of digital tool mapping and teacher choice guidance. Beyond this brief, consultations were conducted with teachers to ask them what they had effectively “hired” the previous guide to do for them. The teachers were then shown iterative draft design mock-ups (initially in *PowerPoint* then via *Miro*’s online whiteboard) of a new interactive tool to ask what they might like to use it for, and to better understand the user experience.

Despite the continuing challenges of teaching during the pandemic in late 2021, coupled with end of year marking loads, several teachers agreed to participate in individual consultation sessions ($n=8$), as well as a range of teaching support/development personnel ($n=10$) who worked directly with a wide range of teachers across the four faculties. Additionally, various experts on specific digital tools (e.g., *FeedbackFruits*) and people with other specific expertise (e.g., accessibility, digital literacy) were consulted across the university to help refine specific tool and contextual detail ($n=11$). The key jobs to be done that emerged from this range of consultations coalesced around having one reliable place to access detail on:

- the range of available enterprise-supported digital teaching and learning tools
- information and weblinks for each tool accessible from within the one resource
- a quick search option, for when a teacher seeks detail on a known tool
- a comparative choice option, to view alternative choices to achieve similar or related outcomes
- an easy-to-use, pedagogically focussed navigation choice, with guidance indicators comprising keywords and short phrases.

(*Note*: no direct data is given in this paper. This was a teaching and learning project rather than a research project, with no formal data collection and ethics clearance, and with a focus on project product outcomes.)

The resultant Teaching and Learning Tools Guide presents as an interactive web resource that allows teachers (and other users) to learn more about the suite of digital tools available at Deakin University for various teaching purposes. This is achieved through three key search functions (as indicated in Figure 1):

1. Routine site-wide search function: For those who know a specific tool for which they seek information (e.g., on a return visit to relocate tool detail), this navigation option allows keying in the name of the digital tool via a universally accepted method (upper-right search field denoted by a magnifying glass).
2. “Search by Tool”: For those who have a good idea of what tool they need for their particular teaching activity, this navigation option allows a direct pathway to a list of enterprise-supported tools, select one, then navigate to the tool detail and further resources.
3. “Search by Activity”: For those who are exploring digital tool options, this navigation option allows stepping through guided choices in relation to teaching and learning activities and other teaching functions, to reach specific tool detail and further resources. This option provides the most pedagogical guidance in terms of constructively aligning tools with teaching and learning purposes.

Specifying the design: Key theoretical influences

Beyond the key stakeholder influences noted above, two key theoretical influences stood out amongst multiple works that influenced the design of the new Teaching and Learning Tools Guide. One involved Goodyear’s (2005) model of “conceptualising the problem space of educational design” (p. 85). While we recognise that Goodyear has made significant contributions to teaching and learning theory and practice since publication of the 2005 paper (e.g., see <https://petergoodyear.net>), this model was a key influencer for the layering within the guide. Embedded within Goodyear’s model is the “pedagogical framework,” which represents a hierarchical unpacking of teaching practices or “concrete educational activity in real world setting[s]” (p. 85). Beginning at the upper level and moving down, the framework comprises the Pedagogical Philosophy (or one’s beliefs about teaching and learning, e.g., social constructivism); High-level Pedagogy (a pedagogical approach appropriate for the contexts, e.g., problem-based learning), Pedagogical Strategy (e.g., how we design, plan, action, and communicate teaching actions/activities/intentions), and Pedagogical Tactics (the granular detail enacted within the teaching methods that we employ in day-to-day educational settings) (Goodyear, 2005, pp. 86–88).

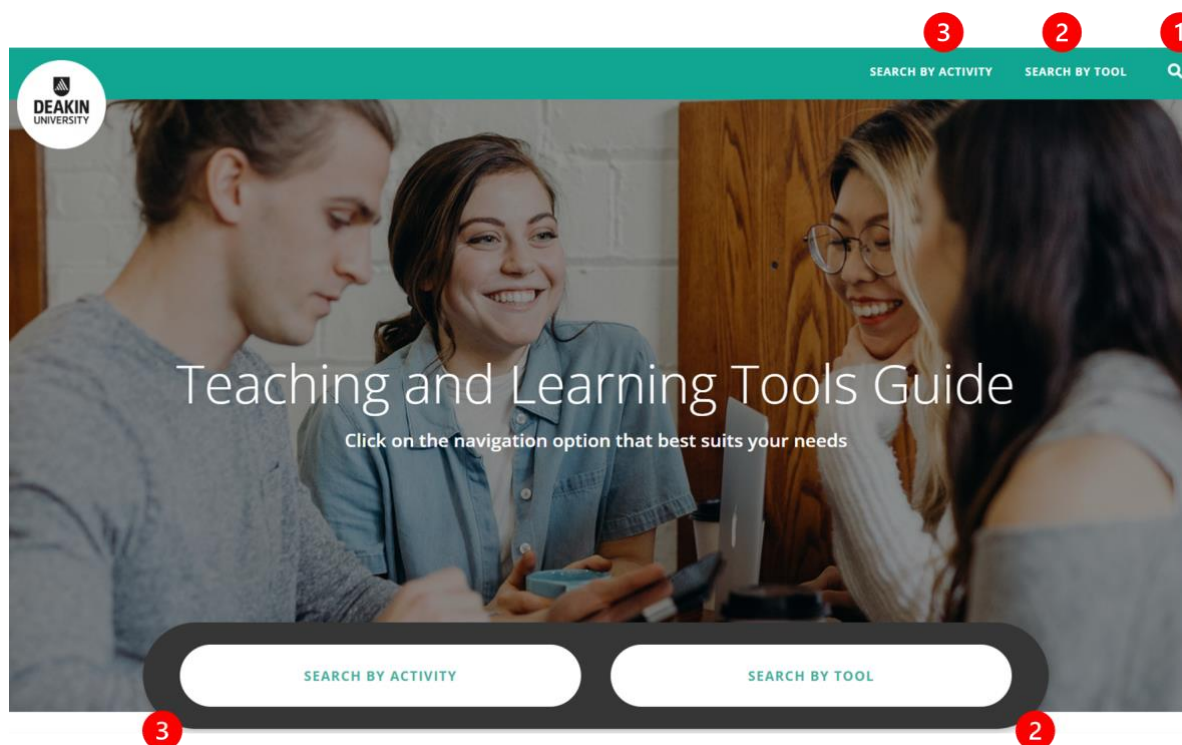


Figure 1: Home interface of Teaching and Learning Tool Guide (number annotations match above list)

A further influence within Goodyear's (2005) conceptual model is the explicit consideration of the educational environment, particularly the "digital environment within which learners work," and how this alongside the pedagogical framework, has a contributing role (together with tasks, physical environment, and people) to student activities leading to intended learning outcomes (p. 86). Goodyear acknowledged that while the environment (physical and/or digital) can constrain learning, tools are best used for active learning "activities" compared to less student-centred "tasks."

Beyond Goodyear's (2005) work influencing the layering within the guide, the Teaching and Learning Tools Guide is overtly influenced by various categories which Laurillard (2012) uses within the *Teaching as a Design Science* book. That is, the structured analysis of the conversational framework offers various highly useful categories of "learning through..." acquisition/inquiry/discussion/practice/collaboration activity types, plus production. This evidence-informed framing provides highly applicable descriptors for teachers to choose activity and/or assessment types that might best relate to their high-level pedagogical approach (e.g., tools for learning through "inquiry" for an inquiry-based learning approach) yet avoids being prescriptive to better allow for teacher judgement (e.g., the tools aligned to an inquiry strategy might suit the pedagogical strategy; however, "discussion" might better suit a strategy for a discussion-based inquiry approach). Further granularity within activity types (or subcategories as depicted in Table 1 below) provides additional guidance (e.g., seeking digital tools to help scaffold an inquiry process, or for students to present evidence of their inquiry).

Bellamy (2018a; see also Bellamy, 2018b) reminded readers not to be too restrictive when designing a constructively aligned subject, asking for consideration of two sides of the argument: Biggs' early advice around establishing a mechanism for consistency in a holistic curriculum design approach, versus Nelson's concern to avoid stifling curiosity or creativity through an overly rigid or industrious teaching design processing (Biggs, 2003, Nelson, 2018, as cited in Bellamy, 2018a). It is intended that the Teaching and Learning Tools Guide facilitates pedagogical decisions towards constructive alignment yet retains some flexibility to allow for educators to ultimately foster student-centred active learning and creativity.

Significantly, the works of both Laurillard (2012) and Goodyear (2005) directly influenced the theming and layering of the pedagogical choices in the "Search by activity" navigation option of the guide, as further discussed next.

Granular structure of the guide

The “Search by activity” navigation option in the Teaching and Learning Tools Guide provides more pedagogical guidance for teacher choice of digital tools than the alternative navigation options. This facilitates consideration of teaching purposes for the tool as constructively aligned to the pedagogical aspects of the intended learning outcome/s under focus and related learning and/or assessment task(s). Within this mode, teachers can navigate between two sections, “Learning and Assessment Activity” (represented in Table 1), or the more functional “Accessibility, Administration, and Support” area (see Table 2 to follow).

Table 1: Learning and Assessment Activity (Learning and/or assessment engagement strategy)

Navigation Tab*	Subcategories	Example digital tools
<i>Pedagogical (learning and/or assessment engagement) strategy and activity types</i>		
Knowledge Acquisition Digital tools to build discipline content knowledge	<ul style="list-style-type: none"> • Create unit content • Curate third-party study materials • Interactivity with study materials • Schedule synchronous sessions • Support knowledge demonstration 	<ul style="list-style-type: none"> • Microsoft Sway • Talis Aspire: library reading list • FeedbackFruits: Interactive Docs • Zoom • H5P
Inquiry Digital tools to investigate key ideas	<ul style="list-style-type: none"> • Guide dialogic inquiry • Interactivity with key ideas • Scaffold an inquiry process • Present evidence (of inquiry) 	<ul style="list-style-type: none"> • LMS (CloudDeakin) Discussion • Padlet • Microsoft Forms • DeakinAir (Kaltura video)
Discussion Digital tools to discuss topics and ideas	<ul style="list-style-type: none"> • Any time asynchronous discussion • Scheduled synchronous discussion • Artefact-centred discussion 	<ul style="list-style-type: none"> • Microsoft Teams • Zoom • FeedbackFruits: Peer Review
Collaboration Digital tools for collaboration between students	<ul style="list-style-type: none"> • Collaborative communication environment • Project processes (e.g., ideation, planning, management) • Design or create collaboratively 	<ul style="list-style-type: none"> • FeedbackFruits: Interactive Study Material (Video, Audio, Docs) • Mural • WordPress
Production Digital tools for student-generated products	<ul style="list-style-type: none"> • Generate digital artefacts • Record product development processes • Evidence product outcomes 	<ul style="list-style-type: none"> • Microsoft OneNote • Microsoft Planner • Pebblepad (Portfolio)
Practice Digital tools for on- or off-campus practice	<ul style="list-style-type: none"> • Demonstrate techniques, procedures, or skills • Support practice (communication and feedback) • Reflect in and on practice • Evidence learning from practice 	<ul style="list-style-type: none"> • DeakinAir (Kaltura video) • Zoom • FeedbackFruit: Interactive Video • Pebblepad (Portfolio)

*Each tab represents a learning activity type inspired by Laurillard (2012) to promote consideration of an appropriate match to the educator’s pedagogical strategy, *sensu* Goodyear (2005).

In the teaching function area (“Accessibility, Administration, and Support”, see Table 2), teachers can find tools to help organise and run their subject/unit, including setting up their LMS site, improving accessibility of their learning materials, monitoring student progress, and managing assessment and grading administrative processes. For example, if a teacher chooses the “Prepare & Monitor” tab, they will see a range of digital tools under various subcategories, such as “Prepare an icebreaker” where *Padlet* is one of the suggested tools.

Once a tool has been chosen for consideration (clicked on), whether found by specific tool search or via navigating through the “Search by activity” option, users navigate to a page that provides a suite of tool detail. Represented in a generic schematic of a tool page below (Figure 2), this includes tool name and image identifier (to help orient the user as they navigate between pages), a summary of what the tool does, both Deakin-specific and vendor resources for the tool, further resources and practice notes where relevant, various example uses, and navigation points to facilitate returning to search options to make alternative tool investigations.

Table 2: Accessibility, Administration, and Support (teaching functions/learning support)

Navigation Tab**	Subcategories	Example digital tools
Prepare & Monitor Digital tools to prepare unit and monitor learning	<ul style="list-style-type: none"> Organise unit site Prepare an icebreaker Setup unit-specific communications Monitor participation (learning analytics) Seek feedback from students 	<ul style="list-style-type: none"> LMS: Topics, Tools, Files, etc. Padlet LMS: Announcements LMS: Class Progress Microsoft Forms
Accessibility Digital tools to maximise student access to their learning	<ul style="list-style-type: none"> Check accessibility of content in LMS Improve accessibility of multimedia resources Consider accessibility of various technology 	<ul style="list-style-type: none"> BB Ally Kaltura Reach (for DeakinAir) Most tools have some accessibility features built in/ready to activate, e.g., Microsoft OneNote
Assessment Digital tools to manage assessment and feedback	<ul style="list-style-type: none"> Submissions and extensions Feedback Originality checking Online examination (design and security) 	<ul style="list-style-type: none"> Extension Tool (bespoke) Turnitin: GradeMark Turnitin: Feedback Studio Proctorio

**These tabs represent various teaching functions across a teaching cycle (e.g., semester or trimester cycle)

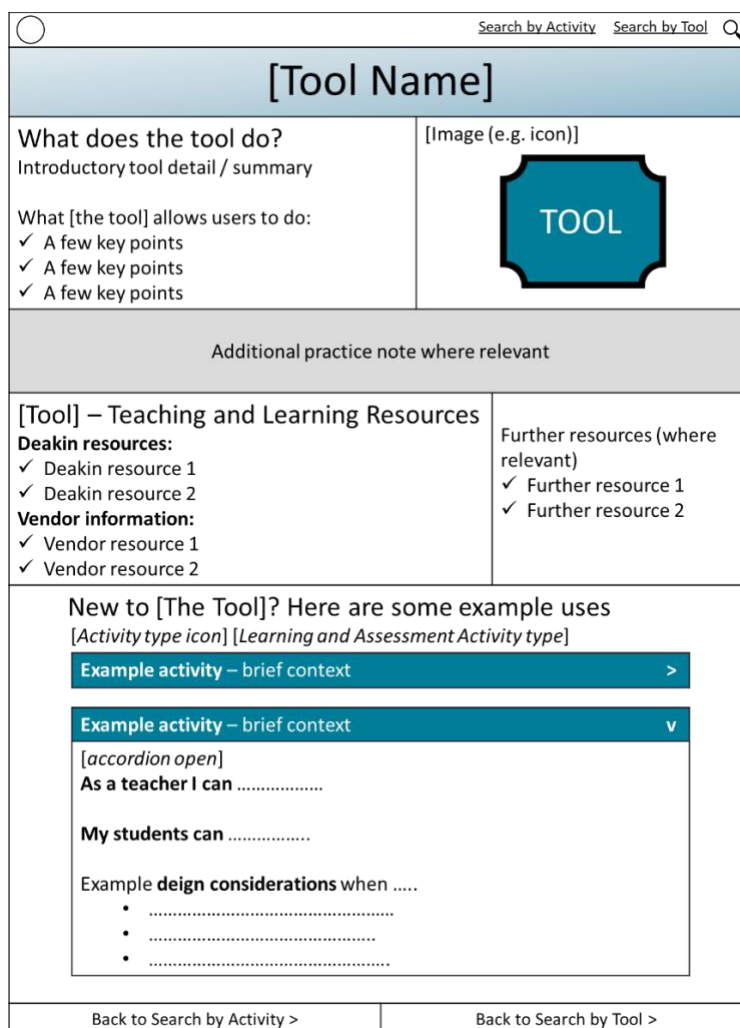


Figure 2: Schematic of the common structure of each tool page

Additional detail is provided via the various example uses for each tool, particularly for those who might be unsure whether they have selected the right tool (e.g., to match or foster teaching method) or for those who just

want to read ideas on how the tool is used for various comparable teaching purposes. The example uses given on each tool page align to Goodyear's (2005) pedagogical tactics, providing finer detail of specific day-to-day uses in practice, from both a teacher and student perspective, and providing several practical design considerations.

While constructive alignment is discussed in more detail in the next section, we make an explicit link here with a brief illustration with the guide. For example, a teacher may have under focus an intended learning outcome aligned to a discipline knowledge graduate attribute, perhaps beginning with a verb such as “explain” or “summarise”. They might orient to the “Knowledge Acquisition” tab in the “Search by activity” navigation option to seek digital tools for students to build discipline content knowledge. If their teaching method within this is related to offering synchronous sessions (e.g., to introduce, present, or discuss content related to what their students need to explain or summarise), the educator might select *Zoom* from the range of tools suggested, where they will be directed to the Zoom tool page, and where they can refer to the example uses aligned to knowledge acquisition to review various pedagogical tactics (see Figure 3).

New to Zoom? Here are some example uses

Knowledge Acquisition

Scheduled classes or seminars - offer synchronous (set time) online sessions to introduce, present, and discuss content

As a teacher I want to present new content or discuss core concepts at scheduled times, promote student interaction with their new knowledge, promote interaction with and between students, and build a sense of connection during the session.

My students can see and hear their teacher while following the presentation, interact with activities to help understand core concepts, raise their hands to ask questions, post responses to questions in the chat area, and benefit from their peers also asking questions.

Example design considerations when presenting new content using Zoom:

- Think about how you will check in with your students, i.e. are they keeping up with and can they understand the new content presented. For example:
 - pose direct questions and seek student responses
 - guide students to ask/answer questions via hand raising and/or chat
 - use reactions/emoticons as a class check-in mechanism.
- Design activities for student active engagement with content, such as:
 - use interactive Zoom polls and interactive whiteboards
 - prepare presentation slides using another interactive tool such as Mentimeter
 - use Zoom breakout rooms for student group discussions around core concepts, to then return to the main room and share outcomes and/or ask key questions from each group.
- Record scheduled Zoom sessions so that students can review the content (or catch up if they missed the session). Zoom is integrated with CloudDeakin so recorded sessions will automatically be uploaded to the unit site.

Example activity: Online classes or seminars - Present new content or discuss core concepts at scheduled times, promote student interaction with and between students, and build a sense of connection during the session.

Example tactics: Think about how you will check in with your students, i.e. are they keeping up with and can they understand the new content presented. For example:

- pose direct questions and seek student responses
- guide students to ask/answer questions via hand raising and/or chat
- use reactions/emoticons as a class check-in mechanism.

Figure 3: Example pedagogical tactics for using Zoom within a knowledge acquisition strategy

Using the *Teaching and Learning Tools Guide* in constructive alignment

Constructive alignment is an established conceptual model in contemporary higher education curriculum design and teaching practice, as noted in the introduction – coupled with a caution to not restrict the otherwise complex nature of teaching design and extended possibilities in learning. Drawn from constructivist learning theory, constructive alignment utilises the notion of students being actively engaged in the learning process to construct new knowledge and associated outcomes. The teacher, in a constructive alignment context, is positioned as facilitator or “broker” between the student and a learning environment that supports the appropriate learning activities” (Biggs & Tang, 2011, p. 100), where we now understand this environment to include both physical and digital components. Drawn from curriculum theory, alignment means that the active verbs in the intended learning outcomes (written as demonstrable action statements) are activated by students in both the teaching and learning activities and the assessment tasks in relation to the context (Biggs & Tang, 2011).

A typical linear representative model of constructive alignment comprises the three components of intended learning outcomes, teaching/learning activities, and assessment tasks. For example, Hoidn (2017, p. 79, as adapted from Biggs, 1999) provided a diagrammatic representation employing these three components, while elsewhere noting the role of technology as “not essential” in a learning environment (p. 9), a point which might be increasingly debated in contemporary higher education settings. Hoidn went on to discuss cases where student feedback was more positive in teaching contexts where constructive alignment was well-established and complemented by, for example, “technology use to facilitate communication and deepen understanding, and helpful and timely feedback on course assignments” (2017, p. 252). Such case examples tend to imply the role of technology in constructive alignment, while not necessarily updating the representation/model of constructive alignment to render this further complexity explicit.

Figure 4 centrally embeds Biggs and Tang’s (2011) core componentry of intended learning outcomes, teaching/learning activities, and assessment tasks, plus, to the left and right, explicitly incorporates the broader course/degree graduate outcomes and the rubric criteria. Both latter components are clearly included in Biggs

and Tang’s text, yet they are somehow not always directly reproduced into constructive alignment models and/or practice. The course-wide graduate learning outcomes are acknowledged for their importance during horizontal course-wide mapping and vertical subject/unit alignment, to ensure a mapped coherence that culminates in a qualification where students have achieved the graduate capabilities scaffolded progressively over their years of study. Graduate learning outcomes are distinct from other learning outcomes. They require a “programmatic framework” to map out their meaningful inclusion in the curriculum, to ensure alignment of these upper-level outcomes with subject level outcomes and assessments (Matthews & Mercer-Mapstone, 2018). Yet these graduate outcomes are also not finished with at the mapping stage and should continue to affect teacher planning and design choices such as digital tool selection (e.g., a communication focussed graduate learning outcome leading to considerations for incorporating a student-centred digital communication tool).

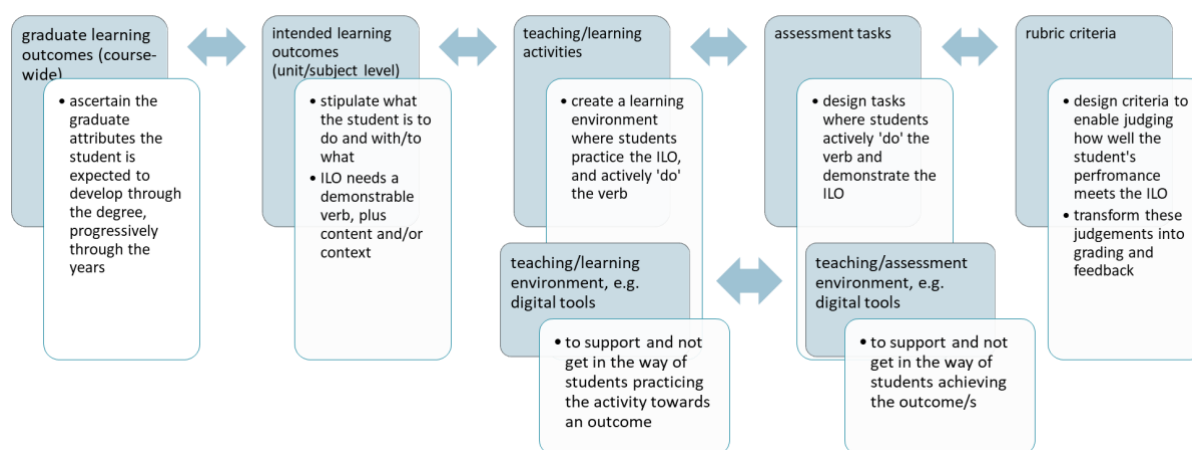


Figure 4: Constructive alignment with further complexity incorporated (e.g., digital tools)

Additionally, the educational environment (including digital tools, see lower boxes in Figure 4 schematic above) is explicitly included in this more complex model of constructive alignment. This builds upon both Biggs and Tang’s (2011) recognition of a supportive learning environment and Goodyear’s (2005) use of physical and digital learning environments in the conceptual model of educational design. With respect to Hoidn’s (2017) note that technology is not always essential in an educational environment, the inclusion of digital tools is given by way of a conscious example. However, by explicitly adding “teaching/learning environment” including digital tools to the constructive alignment model, there is express recognition that digital tool selection can influence (e.g., interrupt or facilitate) the practice and achievement of outcomes through the activities and assessments. Additionally, Jones (2007) directly discussed incorporating ICT into the constructive alignment model. Jones stated that “web-based applications...may occur in either or both [components of] the TLAs [teaching and learning activities] and the form of student assessment...to ensure that their [tool] inclusion is purposeful and reflects an alignment between the intended outcomes and the teaching and assessment methods” (p. 461). Aligned to others in adding a caution not to include technology for mere reasons of enthusiasm (e.g., Selwyn, 2007), Jones (2007) advocated for using technology to contribute to an activity or assessment and aiding the students in their achievement of the intended learning outcomes. Nonetheless, digital tools should also be considered for the inverse, that is, whether they might inhibit students in their creativity or their potential for achievement beyond the intended learning outcomes (*sensu* Bellamy, 2018a; Fawns, 2022b).

The arrows in the more complex constructive alignment model (in Figure 4) are deliberately double headed to highlight the iterative nature of constructive alignment. The process is not typically a neat linear process; it may commence at any component and involves some messy movement between constitutive components during teaching design and planning activities. This signals a recognition of the complexity of the relationships between various elements, such as between purpose, pedagogy, and technology, and the need to repeatedly revisit these relationships during teaching design and practice (Fawns, 2022a).

Notably, there is also a double-headed arrow between the two “environment” components related to “teaching/learning” and “teaching/assessment”. This symbolises the opportunity to scaffold student use of and familiarity with a digital (or other) tool within a subject/unit of study. Published cases help to illustrate such scaffolding of tool use between learning and assessment activities. In two postgraduate case examples offered by Colasante, et al. (2018), each subject uses “a collaborative online icebreaker activity” beyond socialisation and early engagement with introductory discipline concepts to also “encourage practice with subject relevant technology” (p. 326). In a Law subject (pp. 326–327), an icebreaker activity with online discussion encourages

early engagement within the forum, which also aids students' technological preparation for a subsequent "issues-based discussion" assessment. In a Humanities subject (pp. 327–328), planning for the introduction of a video presentation assessment highlighted the need to provide a purposefully preparatory icebreaker activity that asks students to post a video, enabling technological preparation for the subsequent assessment task. Each case allows for student familiarity with a digital tool and digital competency building prior to their higher stakes use of the same tool to demonstrate achievement of intended outcomes in an assessment task.

Whether the Teaching and Learning Tools Guide has successfully met all the academic-inspired jobs to be done and wider expectations is yet to be formally determined. Iterative, formative evaluation examined whether the guide was consistent with the needs that surfaced in the baseline needs analysis, whether it worked as intended, and judgements were made for improvements (Phillips et al., 2012). Formal, summative evaluation of the guide is earmarked for a future date, where it will be necessary to re-examine these aspects. In a broader sense, the new guide does align to some factors that are understood to contribute to successful technology integration in higher education teaching contexts, such as a pedagogical "focus on teaching and learning" (Bates & Sangrà, 2011, p. 110) and providing one ongoing support mechanism for flexibility and adaptability for decisions on appropriate tools (Bates & Sangrà, 2011, p. 128). Other factors of success also need to be considered. This includes the successful management of ongoing maintenance of the guide, which is designed to expand and contract as new tools are added and others are removed from the enterprise suite of tools or otherwise decommissioned; to thus cater for the continually changing face of the higher education digital ecosystem (Bates & Sangrà, 2011; Peters, et al., 2022). Indeed, some editing of various tool detail has already occurred by the owning team (Digital Learning) since launch of the guide in early 2022. Another factor of success will involve using the new resource in university teacher training and academic development, to build teacher competence in integrating digital tools into their teaching practices (Bates & Sangrà, 2011; Caplan & Graham, 2008).

Conclusion

The "reconnect" theme of the 2022 ASCILITE conference speaks to "Reconnecting relationships through technology" during and post turbulent times. This paper shares an open-source tool created in late 2021 to reconnect university teachers with a range of digital teaching tools, to select from these for various pedagogical purposes, and to consider using technologies that are constructively aligned to various teaching purposes. This project arose out of the need for the University to respond to supporting their teachers who were pivoting to online teaching at scale, and associated capacity-building. It was a project driven by a central unit, resulting in a guide that catered for the whole of the University. The new guide illustrates a support resource initiated by one institution to help university teachers to navigate their way within this ever-changing ecosystem, yet it was made open source for others in the higher education sector to access. It is intended that other tertiary education stakeholders might use this new resource to help make meaningful connections with technology. Evaluation of this guide is underway at Deakin University including planning for future improvements. The link to access the Deakin Teaching and Learning Tools Guide is provided in the reference list.

Finally, the reconnect theme has the power to not only reach forward but to also connect back. Inspired by the reconnect theme, discussions within this paper intentionally reconnect back to some prior and recent examples of ASCILITE events/publications (Bellamy, 2018a; Colasante et al., 2018; Fawns, 2022b; Jones, 2007) to illustrate various contributions from within the ASCILITE community as related to the paper's theme.

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