Designing Outdoor Education Units for the Block

Aaron Simson-Woods[a] and Craig Kappes[b]

Corresponding author: Aaron Simson-Woods (aaron.simson-woods@vu.edu.au)
[a]Education Coach, AVID Australia, First Year College, Victoria University, Melbourne, Victoria, Australia
[b]Teaching Focused Academic, First Year College, Victoria University, Melbourne, Victoria, Australia

Abstract

In 2018, Victoria University in Melbourne, Victoria, Australia implemented the VU Block Model® for the teaching of undergraduate degree programs. This was a radical shift from a traditional 12-week semester approach and required a complete overhaul of how outdoor education units would be taught moving forward. However, there is a lack of literature on the block mode delivery for outdoor education. The aim of this discussion paper is to identify the challenges of designing and delivering outdoor education in an intensive block mode. To explore this issue, the paper examines unit design and delivery practices undertaken in outdoor education curricula at an Australian university. A reflective practitioner case study research method was applied, with two units being evaluated. This approach was adopted due to the broad range of variables influencing program delivery and student engagement. The discussion is formed around the three years of experience that the authors have in designing, delivering, and reviewing the two units. The outcomes, observations and feedback presented in the discussion suggest that this process has improved the quality of teaching and learning and the student experience. Findings provide practical solutions for delivering and assessing tertiary curriculum outcomes consistent with a nationally recognised framework.

Keywords: Outdoor education, higher education, block model, unit design, constructive alignment

Introduction

This discussion paper will explore the context of outdoor education at Victoria University and identify some of the challenges of teaching outdoor education units in block mode. This is followed by a review of relevant literature about practices and principles which have informed curriculum design of outdoor education units taught by the First-Year College at Victoria University. Two case studies are used to explore how these practices have been successfully applied will be discussed. Outcomes, observations, and feedback will then be discussed to explore the impacts on student learning and improvements on course quality.

The Block Model at Victoria University

Victoria University is a metropolitan university in the western suburbs of Melbourne, Victoria, Australia. McCluskey et al. (2019) explain that by 2017, Victoria University was challenged to remain financially viable due to a lack of enrolments, a high attrition rate, a lack of engagement of students and low education quality ratings. In 2018, Victoria University revolutionised how undergraduate degree courses were delivered by adopting the block model. Within this framework, students build their degree program from one unit studied at a time in a sequential block. Units are

taught intensively over four weeks. This was a radical shift from a traditional 12-week semester approach.

The Context of Outdoor Education at Victoria University

Victoria University is currently one of two universities within Melbourne Metropolitan area that provide tertiary outdoor-related training. There is substantial competition in the outdoor training space within Victoria as several metropolitan Technical and Further Education (TAFE)/Polytechnique and one regional university also offer courses. Victoria University is the only university in Australia, however, to teach outdoor education in block mode.

Victoria University offers two specialist outdoor degrees including the Bachelor of Outdoor Leadership and the Bachelor of Outdoor Education and Environmental Science. Further, there are six undergraduate bachelor's degrees that have outdoor majors or minors. These include the majors for the Bachelor of Education (p -12), Bachelor of Education Studies, and Bachelor of Sports Management, as well as minors in the Bachelor of Fitness, Bachelor of Sports Science as well as the Bachelor of Sports Science (Human Movement)/Bachelor of Sports Management.

Outdoor education units are taught across two colleges at Victoria University. The First Year College is a cross-disciplinary college specialising in transitioning students from high school into university. The First Year College is responsible for seven (7) outdoor units including the two explored as case studies below. The College of Health, Sport, and Built Environment has a portfolio of twelve (12) outdoor units, which are taught to second and third-year students across the various program pathways.

Outdoor education units taught by the First Year College follows a similar structure. They are taught in block mode over four weeks. In the first week of a block students attend two half-day classes; this is then followed by field trips of eight days in which practical teaching takes place across week two and three of the block. Final assessment due in week four of the block. Most units contain four assessments which include theoretical and practical tasks.

Challenges of Teaching Outdoor Education in the Block Model

Teaching in the block model comes with its specific challenges. Ghapanchi (2022) explains that subjects can be rushed or intense due to the short duration of units taught in the block model. Learning designers and lecturers need to design a block subject in a way that maintains a reasonable pace throughout the block and avoids giving students the perception of working at an uncomfortable pace. This can be particularly challenging for outdoor education subjects because teachers need to cover content as well as teach in the field.

These issues are compounded by the challenge of adequately preparing students for their time away. Further problems include the designing units to meet Victoria Universities' block unit design principles, as well as ensuring that assessments, rubrics, and teaching and learning content align with unit learning outcomes. Other challenges include selecting adventure activities which suit the unit outcome and support the skill progression for a holistic range of outdoor skills which are spread across the three years of the degree program. A final challenge is building performance-based assessment tasks which are compliant with appropriate standards, and which promote higher-order thinking.

Literature review

A review of relevant literature found limited information on curriculum design for the block model (Ambler et al., 2021; Kelly & Lock, 2019; McClusky et al., 2019; Li et al., 2018; Samarawickrema & Cleary, 2021; Weldon, 2022) or outdoor education in a higher education context (Harper & Robinson, 2007; Martin et al., 2017; Polly and Thomas, 2017; Priest and Gass, 2018; Sutherland et al., 2014; Sutherland & Stuhr, 2014; Thomas et al. 2019; Yokus, 2020). This highlights that there is a gap in knowledge in curriculum design for outdoor education units in the block model. Therefore, this literature review explores the learning theories and unit design principles that inform the curriculum design of Outdoor Education units at Victoria University.

Victoria University Block Model Principles

In rolling out the Block, Victoria University identified a set of principles that provides a framework for unit convenors and learning designers to follow for curriculum design. Victoria University Block Model Principles (Victoria University, 2022) stipulate that each block will contain three half-day teaching sessions per week. However, this is modified for outdoor units which contain field trips.

McCluskey et al. (2019) summaries the design and delivery principles. The design principles stipulate that each block will utilise a blended learning environment. Each unit will have a clear beginning and end, and all learning outcomes need to be achieved in the four weeks. The block principles guide assessment design. Units require a variety of assessment tasks to demonstrate learning outcomes. All assessment tasks need to be completed within the unit schedule and all feedback needs to be returned to the student before the commencement of the next block. Assessment tasks need to be supported by clear rubrics, and the range of tasks should include an opportunity for early success. Assessment tasks should be designed for knowledge exploration rather than demonstrating content retention. Further, assessments need to be explicit with easy-to-follow instructions and provide opportunities for peer feedback and collaboration.

The principles also inform unit convenors and learning designers on the types of pedagogy that can be used. Suggested pedagogy styles include active learning and inquiry-based learning. Therefore, classroom activities need to be student-centered, active, authentic, and engaging, as well as include opportunities for self-assessment. The principles also outline that each unit needs a digital learning space and the learning activities in theoretical workshops taught in the classroom should incorporate the use of digital technology. Some digital technology is utilised to support field-based teaching and learning. Whilst out in the field students and teaching staff can access the learner management system, through their personal mobile device, to reach academic readings or assessment task rubrics. Finally, units need to outline their relevance to the course and career outcome, as well as provide early and ongoing feedback.

Constructive Alignment

Constructive Alignment (CA) is an outcomes-based approach to teaching in which the learning outcomes and assessment tasks are explicit and intended to be student-centered (Biggs, 2014). Unit outcomes need to communicate what students will need to achieve and to what standard skills and knowledge will need to be executed. The intended learning outcome, teaching and learning

activities and assessment tasks are aligned (Biggs & Tang, 2011) to provide clear links between the intended outcomes, what is to be assessed, and what needs to be performed.

Central to constructivism is the notion that learners play an active role in 'constructing' their own meaning (Le Cornu & Peters, 2005). The teaching and learning environments are guided by constructivist theory as described in Shuell (1986, p. 429) "what the student does is more important in determining what is learned than what the teacher does". Students need to be enabled to apply learning activities that foster the construction of their knowledge, behaviour, and skills, as well as in assessing the outcomes they achieve (Biggs & Tang, 2011). The teaching and facilitation styles associated with constructive alignment also aim to engage students in learning environments where they must reflect on their own cognitive, attitudinal, affective, behavioural experiences, and practical knowledge (Dames, 2012). For example, participative learning in action may enable students to solve scientific and pragmatic problems (Biggs & Tang, 2011).

Constructive alignment is designed to foster practical knowledge and deep learning. Students become more progressive, while teachers act as mentors and facilitators of students and their learning environment (Biggs & Tang, 2011). It results in open-ended assessment tasks which allow for unintended, but desirable outcomes (Biggs & Tang, 2011).

Alignment in constructive alignment reflects that the learning activity in the intended outcomes, expressed as a verb, to be activated in the teaching of the outcome is to be achieved and in the assessment task to verify that the outcome is achieved (Biggs & Tang, 2011). The application of verb-directed intentional learning outcomes clarifies in which teaching and learning activities students should engage and what and how students need to perform in the assessment tasks (Dames, 2012).

Backwards Design

Backwards design is a framework for planning curriculum, instruction, and assessment first theorised by Wiggins and McTighe (1998). Bowen (2017) provides advice about how to apply backwards design in Higher Education. In practice, an educator starts by identifying the desired product, then determines the acceptable evidence for the summative assessment, before finally planning the learning experience and instruction.

Identifying the desired results for the unit focuses on determining what the students will understand, will know and be able to do. This requires the learning designer to interpret and select the relevant information and content for the unit, as well as determine enduring understanding, which is the concrete, specific learning goal that instructors want their students to achieve. In the next step, learning designers identify the assessment and performance tasks students will complete to demonstrate evidence of understanding and learning. Learning designers determine how to identify if students have achieved the desired result and what constitutes evidence of student understanding and proficiency, this then informs the assessment method and construction of the assessment rubric. In the final stage of the backwards design process, the learning designer considers how they will teach content. With the learning goals and assessment methods established the learning designer will have a clear idea of the instructional strategies and learning activities needed to guide the students to the desired outcome.

Reynolds and Kearns (2016) have shown that the application of backwards design in curriculum development improves teaching and learning quality in higher education. Graff (2011) explored the impact of Backwards Design when used by graduate teachers. Through a semi-structured focus group interview, Graff identified that Backwards Design made this group more prepared to plan, consider the assessment task in their planning and be more reflective. Paesani (2017) applied the Backwards Design approach to the redesign of an introductory French Curriculum. Data was collected from student evaluations, written exams, and instructor feedback. The results identified that the backwards design approach fine-tuned the curriculum, enhanced assessment practices, and informed instructors teaching.

Australian Qualifications Framework Levels

The Australian Qualifications Framework (AQF) forms a national policy for regulating qualifications delivered in the Australian education and training system (AQF, 2013). The AQF is comprised of ten (10) levels. Each of the ten levels is defined by criteria describing the level of complexity, depth of skills and knowledge, as well as the degree of autonomy required to demonstrate achievement (AQF, 2013). Level 1 marks the lowest level of complexity, while 10 represents the highest level. Undergraduate bachelor's degrees are defined by and equated to AQF level 7 criteria.

The AQF standards define the complexity knowledge, skills and the parameters defining their application are integral to Constructive Alignment and Backwards Design curriculum and facilitation models. By defining the complexity associated with each AQF level, intended learning outcomes, and assessment tasks can be aligned with the most appropriate AQF level. To support this process, verbs describing the application of the skills and knowledge have been generated for each AQF level by Cleary and Samarawickrema (2014). These verbs describe what and how students activate and verify their learning.

Cleary and Samarawickrema (2014) have created a document that provides learning outcome verbs based on their research findings investigating information sourced from relevant AQF levels and referenced authoritative sources and have been categorized according to cognitive, communication, creative and technical areas.

The application of verb-directed intentional learning outcomes helps clarify which teaching and learning activities students should engage in and what and how students need to perform in the assessment tasks (Dames, 2012). Therefore, the verbs associated with each AQF level, or other recognised national curriculum policy may be used to assist with aligning a learning and assessment strategy aimed at a prescribed level of complexity. As an example, the AQF Level 6 and Level 7 verbs lists (Cleary & Samarawickrema, 2014) have been used to create the Safety in Natural Environments verb directed intended learning outcomes.

Authentic Assessment Design

A principal factor to consider in designing assessment for outdoor education units is ensuring that it is authentic. According to Villarroel et al. (2017), authentic assessment aims to replicate the tasks and performances typically found in the world of work. Authentic Assessment has a positive

impact on developing attributes and skills related to employment such as autonomy, motivation, self-regulation, and metacognition.

Wiggins (1989) makes a range of recommendations for the design of authentic assessments for practical subjects. Primarily assessments need to be designed to be representative of performance in the field. Attention needs to be paid to the teaching and learning of criteria to be used in the assessment. Self-assessment plays a larger role than conventional testing. Finally, students need to present work to demonstrate their proficiency is genuine. Eisner (1993), extrapolates on Wiggins's recommendations by adding that assessment should:

- Reveal how students solve problems, not the solution which they formulated.
- Reflect the values of the intellectual community from which the tasks are derived.
- Have curriculum relevance.
- Require students to display a sensitivity to the whole learning sequence, not just discrete elements.

In outdoor education authentic assessment takes the form of an assessment task where students apply their skills and knowledge in a real-life context. Moorcraft et al. (2000) explain that authentic assessment is particularly appropriate for outdoor education and recommends portfolios, performance assessments and scaffolded essays as tools that challenge students to apply their learning, particularly in the field.

Macdonald and Brooker (2000) recommend that educators consider the nature of their assessment task and move away from objective performance testing such as timed 100m in physical education, or in the context of outdoor education timed setting up of a top rope climbing system. Such an approach, when contrasted against authentic assessment guidelines, "is a poor measure of student learning and unjustly discriminatory" (Macdonald & Brooker, 2000, p. 87).

SueSee et al. (2018) offer further advice on assessment design in the physical domain. Their research focused on reviewing the 2004 Queensland Senior Physical Education Syllabus, in particular the use of physical performance as a summative assessment task. SunSee et al. (2018) highlight that student participation in any physical learning experience is unlikely to develop complex thinking skills. According to Maier (1933), higher-order thinking requires reasoning or productive behaviour; in contrast, lower-order thinking is learned behaviour and reproductive thinking. Analysis of the Taxonomy for Higher Order Thinking produced by Bloom et al. (1956) supports this. Higher-order thinking occurs when learners start to apply, analyse, evaluate, and create. SunSee et al. also note the difficulties associated with designing physical performance assessment tasks where students apply high levels of creativity and cognitive function in new situations. Most often, students only apply the knowledge that they have mastered by recalling knowledge from unconscious memory. Simply assessing recall is not appropriate in higher education. Attention must be paid to the design of practical assessment tasks, which capture student learning and show higher-order thinking. Therefore, practical assessment tasks need to be designed in a way that has students apply, analyse, evaluate, and create information.

Scaffolding

Scaffolding originates from Vygotsky's sociocultural theory and the concept of the zones of proximal development (Wass et al., 2009). From this has come social Scaffolding teaching, which

is a strategy that provides a support base for learning by building on prior knowledge. Scaffolding is a process that stimulates students' critical and independent orientation to the context of their disciplines and assists them to achieve well beyond their current capacity.

Wass et al. (2009) examined scaffolding in undergraduate bachelor's programs. They identified that second and third-year undergraduate students begin to accept responsibility for their own and peers' learning as they begin to practice industry skills. This is attributed to both curriculum experience and interpersonal factors such as relationships with their peers and teachers. In contrast, the foundation knowledge needed to be explicitly taught to first-year students. This highlights the importance of carefully considered curriculum design in first-year units.

Scaffolding is both planned and spontaneous. "Designed-in" scaffolding is planned and involves carefully sequenced and structured sub-tasks leading to the completion of a major task and is used when creating teaching and learning activities and unit programming (Wilson, 2014). In contrast, "Contingent" scaffolding is more spontaneous and occurs in the moment-to-moment interaction between teacher and student (Wilson, 2014). Both forms of scaffolding aid and assist students in developing critical, independent skills that contribute to and an appropriate response or application of skills and knowledge. As discussed by Mariani (1997), scaffolding is a required component in high challenge, high support learning environments.

Method

In view of the gap in the literature about block mode delivery or unit design for outdoor education, this paper aims to contribute to the body of knowledge in this area. The theories and practices discussed in the literature review have informed the design of multiple outdoor education units contained within the First Year College at Victoria University. This project aims to evaluate if the theories have been applied as was originally planned and examine the outcomes which these practices have produced.

As highlighted by Chau et al. (2022) case studies are the common way to explore this type of topic. It was determined that a discussion article based on the refection of the authors was the best research method to evaluate the application and outcomes of these theories. The discussion will explore two first year outdoor education units taught by the First Year College at Victoria University, Adventure Based Learning in Outdoor Environments and Safety in Natural Environments. Both authors have three years of experience in designing, delivering, and reviewing these units. Consequently, no Human Research Ethic Panel approval is needed.

Case Study 1 – Adventure Based Learning

For context, according to Cosgriff (2000), adventure-based learning is the planned sequencing of games, trust activities and problem-solving tasks to focus on the personal and social development of students. The unit contains four learning outcomes and four assessment tasks. The case study will explore the unit design for assessment tasks two and three.

Adventure Based Learning is only taught to the Bachelor of Outdoor Leadership students in the first year of their program. However, importantly in the second and third year of this degree, students have the option of doing a paid internship working as an outdoor educator with a third-

party industry partner. Therefore, appropriately preparing students to be ready to commence working as outdoor educators is of particular importance. To achieve this, backwards design, scaffolding, and authentic assessment was applied in combination to the curriculum development of the theoretical and practical assessments and learning sequence for the Adventure Based Learning in Outdoor Environment unit. To the best of our knowledge, this combined application of these three curriculum design practices at the same time is a novel first for a tertiary level outdoor education unit taught in block mode.

Table 1. Adventure Based learning in Outdoor Environments learning outcomes and assessment tasks

Adventure Based Learning in Outdoor Environments Unit Outcomes
• **Explain** the range of the range of theories and concepts utilised in adventure-based learning and adventure programming. • **Develop** adventure-based learning programs for a diverse range of user groups and natural environments • **Demonstrate** adventure based learning and technical skills to deliver adventure-based learning programs; & • **Apply** strategies to safely manage and lead groups in adventure-based learning program and challenge ropes courses
Assessment Tasks:
1. Report – Adventure Based Learning Theories, 20%, LO 1 2. Assignment – Develop an Adventure Based Learning Program, 20%, LO 1, 2 3. Field teaching 1 Practical Skills and Knowledge, 30%, LO 1, 2, 3, 4 4. Field Teaching 2 Practical Skills and Knowledge, 30%, LO 1, 2, 3, 4

Initially in the curriculum design process, an extensive literature review of relevant academic sources was conducted to determine what the students need to understand, know and be able to perform to be ready to enter their internship. This drew on key outdoor education literature to identify the industry ready skills and pedagogical content knowledge of early career outdoor educators (refer to table 2).

Table 2. The adventure-based learning literature review summary

Skills and pedagogical content knowledge of needed to be industry ready for early career outdoor educators	**Additional skills and pedagogical content knowledge of experienced outdoor educators**
• The KOLB experiential learning cycle • Tuckman's stages of group development • Facilitating activities • Debriefing • Transfer of learning • Learning outcome • Sequencing • Full value contracts • Challenge by choice • Initiative and teambuilding game	• Framing (fantasy, reality and contextual) • Frontloading • Freezing • Debriefing (unstructured, structured, funnelling, non-verbal) • Transfer (specific, non-specific, and metaphoric) • Challenge zone/growth zone

With an understanding of the essential skills and knowledge established the assessment tasks were then developed. As highlighted by Moorcraft et al. (2000) and Macdonald and Brooker (2000) these need to be authentic, which asks students to perform real-world tasks that meaningfully apply

the essential knowledge and skills from the unit. Typically, in the industry a group leader will facilitate a series of teambuilding games, initiatives, and full-value contracts to form their group at the start of an outdoor education program. Further, given that students are preparing for work placements later in their degree the assessment task needed to be authentic to what the students will be doing in their internship. Therefore, the major assessments in the unit are sequential whereby in task two, students develop a 1.5-hour adventure-based learning session in small groups. Then in the next assessment, each group practically delivers their sessions to their classmates.

Authentic assessment task needs an element of realism, cognitive challenge, and evaluative judgement (Villarroel et al., 2017). The cognitive challenge and evaluative judgement are achieved by giving each group different personal, interpersonal learning outcomes and target group demographic when designing their session. For example, one group may have grade 7 students working on building interpersonal relationships, whilst another group has an adult group working on developing teamwork. Assessment conditions require students to draw on a range of pedagogical content knowledge, facilitation techniques and learning theories. With the learning goals and assessment tasks and criteria established, the instructional strategies and learning activities needed to be prepared to guide the students to the desired outcomes.

The workshop learning activities are scaffolded to introduce these key theoretical concepts before students attend the field trip. In the classroom in week 1, students are introduced to pedagogical content knowledge, facilitation techniques and learning theories. The two workshops balance the amount of content, explicit teaching with active evidence-based teaching pedagogical strategies such as blended learning, group learning, experiential learning, flipped learning and jigsaw.

The delivery of the unit then moves into the field for two four-day field trips. These field trips are sequenced to build on the content first taught in classrooms. On the first field trip, students initially participate in games and initiative sessions facilitated by the teaching team to have practical experience from which they can build. This role modelling is also a form of assessment literacy, which allows the student to understand the purpose and process of the assessment task as well as the performance standards and criteria. Students then undertake workshops facilitated by teaching staff which build their knowledge and understanding of pedagogical content knowledge, facilitation techniques and learning theories. Students practically learn how to facilitate and use full value contracts, debrief methods, framing methods, challenge by choice, initiatives, and teambuilding games. During workshops, inquiry-based pedagogy is also used whereby students are presented with a range of resources and asked to identify potential activities they can use in their adventure-based learning sessions. Students are then asked to present the games they found to the rest of their group. This affords the student an opportunity to practice their delivery, learn how the games are set up, and managed. This also allows students to experiment and receive feedback before their summative assessment.

This provides suitable scaffolding to build foundational knowledge before consolidating and applying this knowledge in the creation of an adventure-based learning program for their summative assessment task. Between the field trips, students develop their activity plans in their project-based learning groups. Finally, on the second field trip, students present and facilitate their activity plan to their peers.

Case Study 2: Safety in Natural Environments

Constructive Alignment principles as described by Biggs (2014), Biggs and Tang (2011), and Dames (2012) have been utilised in the design and delivery of multiple outdoor education units contained within the First Year College at Victoria University. This discussion will focus on one of these units, Safety in Natural Environments, as it is an example demonstrating the process of constructive alignment to an outdoor education unit of study. Safety in Natural Environments is a core unit taught in the Bachelor of Outdoor Leadership, and Bachelor of Outdoor and Environmental Education, as well as an elective unit in outdoor education major found in the Bachelor of Education, Bachelor of Education Studies, and Bachelor of Sports Management. The unit contains four Intended Learning Outcomes (ILOs) as seen in Table 3. This unit has four Assessment Tasks (ATs), due to assessment task one addressing underpinning knowledge, this case study will explore the constructive alignment for assessment tasks two, three, and four.

Table 3. Safety in Natural Environment learning outcomes

Safety in Natural Environments Unit Intended Learning Outcomes
• **Identifying** and **assessing** risk in natural environments • **Demonstrating** safe practices during outdoor adventure activities • **Enacting** appropriate responses to incidents in remote areas • **Respond** to policies and best practice for outdoor adventure activities

The intended learning outcomes for this unit include one or two verbs that identify what students should be able to do after engaging with the curriculum and program delivery (refer to Table 3). As described in Biggs (2014), Biggs and Tang (2011), and Dames (2012), these verbs are used in the Intended Learning Outcome guide the Teaching and Learning Activities and inform the Assessment Tasks for the unit. This consistency between the intended learning outcomes, teaching and learning activities and assessments task define the process of Constructive Alignment. The application of verb-directed intended learning outcomes helps clarify teaching and learning activities students are likely to encounter while identifying the "what" and "how" that need to be performed in the assessment tasks (Dames, 2012). The aim is that applying practical skills and knowledge within an integrated practicum setting will help students make personal connections with the subject matter directly relatable to the Assessment Tasks.

The Safety in Natural Environments unit Intended Learning Outcomes, (as seen in Table 3), are aimed at identifying and responding to hazards and risks in natural environments in the context of outdoor adventure activities. The teaching and learning activities are scaffolded sessions that address hazards and risks identification and assessment in natural environments in the context of engaging in outdoor adventure activities. The curriculum also targets relevant policies, laws, and industry practices used to inform an appropriate response in this context. The Teaching and Learning Activities and Assessments Tasks have been aligned with the Intended Learning Outcomes to support a student-centered curriculum consistent with Victoria Universities Block Principles (McCluskey et al., 2019).

Significant to the adventure activity practicum programs associated with this unit are the aligned Teaching and Learning Activities and Assessment Tasks to an appropriate level of complexity consistent with the Australian Quality Framework. As mentioned earlier in this paper, the Australian Quality Framework standards define the complexity of knowledge, skills, and the

parameters defining their application. Safety in Natural Environments is a core unit of study delivered as part of various bachelor's degrees. According to Australian Qualification Framework Level Guidelines (AQF, 2013), graduates of a bachelor's degree should fall within an AQF Level 7. Because Safety in Natural Environments is a first-year unit building student capabilities, it may be seen as appropriate that the curriculum also includes some outcomes associated with Australian Qualification Framework Level 6 to provide some provision to scaffold Teaching and Learning Activities and Assessment Tasks to attain Australian Qualification Framework Level 7.

Traditionally, outdoor adventure education programs have been focused on the acquisition of technical skills or personal development (Berry, 2011). However, by aligning the unit verb-directed intended learning outcomes to relevant Teaching and Learning Activities and Assessment Tasks the Safety in Natural Environments adventure activities practicum programming can assume an appropriate level of complexity. Teaching and Learning Activities and Assessment Tasks can address specific measurable verb-directed skills and knowledge outcomes that may extend many traditional outdoor adventure programming outcomes. The alignment of the Safety in Natural Environments to Intended Learning Outcomes to Assessment Tasks (observed in tables 4 and 5).

Central to constructivism is the notion that learners play an active role in 'constructing' their own meaning (Le Cornu & Peters, 2005). The teaching and learning environments are guided by Constructivist theory as described in Shuell (1986, p. 429) "what the student does is more important in determining what is learned than what the teacher does". Students need to be enabled to apply learning activities that foster the construction of their knowledge, behaviour, and skills, as well as in assessing its outcomes (Biggs & Tang, 2011). The teaching and facilitation styles associated with constructive alignment also aim to engage students in learning environments where they must reflect on their own cognitive, attitudinal, affective, behavioural experiences, and practical knowledge (Dames, 2012). For example, participative learning in action may enable students to solve scientific and pragmatic problems (Biggs & Tang, 2011).

Adventure education programming in natural environments is inherently complex and dynamic due to a wide variety of variables associated with environmental conditions, group management, and logistics to list a few considerations. This form of programming can be classified as a high challenge high support learning environment as described by Mariani (1997). Wilson's (2014) "Designed-in" and "Contingent" scaffolding (Wilson, 2014) has informed the sequencing and programming of the Safety in Natural Environments Teaching and Learning Activities and Assessment Tasks. The design and delivery structure aims to assist students' engagement with the curriculum to attain the unit outcomes and operate at an appropriate level of autonomy as defined by the Australian Qualification Framework (2013). As an example, scaffolding of Teaching and Learning Activities may begin in workshops where students are explicitly taught concepts, before then applying this knowledge to investigating a relevant scenario, these lessons and experiences can inform practicum field sessions where student can further develop and contextualise this knowledge in authentic teaching and learning activities and assessment tasks.

Assessment Task 2 Scenario/Presentation (as seen in Table 4) is a group presentation that gives students an opportunity to review an assigned scenario based on authentic events that are likely to be encountered as a professional facilitating an outdoor adventure activity in natural environments.

As seen in Table 4, the assessment criteria contain verbs aligned to those in the Intended Learning Outcomes for the unit (listed in Table 3).

Table 4. Constructive Alignment of Assessment Task 2

Constructive Alignment of Assessment Task 2	
ASSESSMENT Task 2 Scenario/Presentation Groups will need to make an initial assessment and provide some key points that guide a simple risk management response considering	
Assessment 2 Criteria	1. **Identification** of hazards and associated risks (people - instructor, participants, and members of the public; environmental, camp; equipment) 2. Groups will need to refer to the Victorian OH&S Act 2004 Act and **assess** laws associated with negligence, duty of care, equity and access to inform and guide **enact effective** responses to hazards and risks identified in their assigned scenario. 3. **Respond** to the hazards and risks by using the assigned or other industry accepted risk assessment tool; M (Mitigate), E (Eliminate), A (Accept), or T (Transfer). 4. Groups need to **demonstrate** a compliant solution that should be informed by one or more of the following: Australian Adventure Activity Standards (AAAS) Good Practice Guide, or peak body info industry partner recognized industry provider standard operating procedures.

Assessment Task 2 provides a scaffolded experience for students to apply the assessment criteria in a controlled setting. This assessment also creates an opportunity for students to work and communicate with their peers using requisite skills and knowledge that will be required during the field practicum experiences that also include assessment tasks 3 and 4.

The field practicum for Safety in Natural Environments is run as an eight-day adventure activity program. The program includes two different adventure activity contexts. The choices of adventure activities programmed to facilitate the teaching and learning activities and assessment tasks for this unit were carefully chosen by considering intended learning outcomes, opportunities for students to assume a degree of autonomy in the application of identifiable skills and knowledge and provide a need to apply obvious adventure industry standards. The two adventure activities were selected to provide real-world and relevant teaching and learning activities and assessment tasks experiences that include:

- contexts of how hazards and risks are identified in natural environments while undertaking an adventure activity;
- opportunities to enact industry practices that guide appropriate responses;
- demonstrate effective industry recognised good or best practice; and
- refer to policies and laws used to inform these practices.

Both adventure activity practicum experiences provide students with opportunities to make informed decisions, create a context for active learning, and place students in the role of a practitioner (Boud, 2022). Assessment Tasks 3 and 4 purpose and criteria measures are represented (in Table 5) and are also aligned with the unit outcomes listed (in Table 3).

Table 5. Constructive Alignment of practicum assessment and rubrics for Tasks 3 and 4

Constructive Alignment of Assessment Tasks 3 and 4	
Assessment Task 3 and 4 Adventure Activity Practicum Rock Climbing/Abseiling and Bushwalking Students will be required to work independently in groups to achieve the following; **Identify** and **assess** potential risks to individuals and groups in a range of outdoor activities; **Enact** effective responses to varied incidents in remote areas; **Demonstrate** safe practice of outdoor education/recreation activities	
Assessments 3 and 4 Criteria	1. **Apply** correct recognized skills and techniques based on field classes skill sessions, industry standards and experience to Demonstrate safe and effective practice 2. **Apply** correct recognized skills and techniques based on field classes skill sessions, industry standards and experience to assess the People, Environment, and Equipment to Demonstrate safe group management 3. **Assess** people, Environment and equipment using the IMEAT Hazard and Risk Assessment Tool Enact effective responses to identified hazards, risks, and legal requirements 4. **Apply** correct recognized skills and techniques based on field camp craft skill sessions, industry standards and experience to guide effective responses to manage self and guide industry recognized "best practice" during the duration of the field classes and practicum

Assessment Task 3 Adventure Activity Practicum Introduction to Rock Climbing and Abseiling on Natural Surfaces.

Rock Climbing and Abseiling were chosen as adventure activities for Safety in Natural Environments due to the obvious hazards and risks associated with people, equipment, and the environment to students. The relatable consequences of the hazards and risks found in this context and environment are apparent and immediate. Cliffs create complex space for teaching and learning. The alignment of the teaching and learning activities and assessment tasks to the intended learning outcomes helps focus teachers and students on the relevant key skills and knowledge throughout the scaffolded adventure program. The practicum teaching and learning activities and adventure programming are reliant on "designed-in" and "contingent" scaffolding (Wilson, 2014) to ensure that students can make connections between the intended learning outcomes and required skills and knowledge before progressing more demanding levels of application like working from height or managing others at height or "on belay".

Assessment Task 4 Adventure Activity Practicum Bushwalking

Though the same principles have been used to design both the scaffold Teaching and Learning Activities and Assessment Tasks for the Bushwalking program. This section of the adventure programing contains different and unique applications of the Safety in Natural Environment unit skills and knowledge in contrast to climbing and abseiling.

The students must apply the 4 assessment criteria to bushwalking in a remote or wilderness setting. There are many hazards and risks that differentiate this practicum experience from the previous climbing practicum. Due to the continuous nature of this adventure activity and the degree of remoteness, hazards and risk include more logistics and long-term issues. This adventure activity

proves a separate opportunity for students to adapt and deploy key skills and knowledge to meet the unit outcomes.

Preparation and planning for this activity also differ from the climbing program. Students need to pack and carry all their food and equipment for the duration of the multi-day bushwalk. This journey-based experience provides an excellent additional context for Safety in Natural Environments while teaching and Learning Activities require greater involvement from the students in the preparation phase of this adventure activity. It also does provide additional scaffolded experiences that support student skills and knowledge for later units that contains a longer more demanding bushwalk as a practicum experience.

The aligned intended learning outcomes and teaching and learning activities associated with Assessment Tasks 3 and 4 enable students to apply critical and independent thought to making judgments and generating meaning while applying industry-recognized "good practice" in an adventure activity context. The four assessment criteria (listed in Table 5), provide descriptions of how the unit skills and knowledge are to be deployed. The intended learning outcome outcomes and the verbs contained within them are aligned with the teaching and learning activities and assessment tasks and are consistent with appropriate Australian Qualification Framework standards.

Discussion

By contrasting the case studies against the theories and practices presented in the literature review, it is apparent that the unit Adventure-Based Learning has successfully applied backwards design, scaffolding and authentic assessment in the curriculum design. Likewise, the unit Safety in Natural Environment has successfully applied constructive alignment, meeting appropriate Australian Qualification Framework standards and authentic assessment design. This confirms that these practices are applicable to the curriculum design of outdoor education units which are taught in block mode.

The outcomes and results of backward design, constructive alignment, scaffolding, and authentic assessment are observable and supported through feedback. In the field, both backward design and constructive alignment have elevated the practical assessment task to an appropriate Australian Qualifications Framework level and challenged students to apply higher order thinking to a practical assessment task. The practicum field experiences, and assessment of the subject is authentic and holistically prepares students to transfer and apply their learning and experiences to other outdoor adventure experiences and real-world settings.

It has been observed that the backwards design process applied to the Adventure Based Learning unit has enhanced content delivery to students, improved student experience in lectures, made students more actively engaged, and provided them with more frequent feedback on comprehension. The curriculum is now evidence based and teaches the latest best practice. The scaffolding of the teaching and learning activities develops foundation knowledge and gradually transitions the students to become independent learners. The feedback from the third-party industry

partner is that students are more prepared for their internship as they have experience facilitating groups and understand the job expectations when commencing their work placement.

Observation and review of the constructive alignment process applied to Safety in Natural Environments unit has identified that higher order learning outcomes are aligned and can be delivered in real-world adventure activity contexts. Relevant Teaching and Learning Activities are aligned with unit outcomes and Assessment Tasks and provide clear links between skills and knowledge. Upon successful completion of this unit, students are better prepared for more advanced wilderness experiences that they will encounter later in the degree, while also having a greater capacity to assess and elicit an appropriate response to hazards and risks in other complex remote and wilderness settings.

Case studies were used to evaluate both outdoor education units. One limitation is the discussion-based evaluation. The evidence presented is subjective, based on the first-hand experiences and observations of the authors from teaching these units across multiple deliveries over a three-year period. Further research into block curriculum design, teaching, and assessment of outdoor education is necessary to verify findings associated with this study. This should aim to measure more effectively each of these variables independently to further validate these initial findings. This project also highlights other areas for further investigations. This includes examining authentic performance-based assessment design and construction in higher education, as well as how to prepare students for field trips for outdoor education units taught in block mode.

Conclusion

Backwards Design and Constructive Alignment curriculum design principles have been successfully applied to the units addressed in these two case studies, as well as other outdoor education units delivered within the School of Outdoor Leadership at Victoria University. The outcomes, observations and feedback based on the reflection of two qualified instructors who have three years of experience implementing the case study units, suggest that this process has improved the quality of teaching and learning, and the student experience. Additionally, this paper has identified that programming of outdoor adventure education delivered in Block Mode can successfully target higher-order outcomes that are consistent with standards set by a national quality framework. The importance of carefully planned and scaffolded learning activities to support student-centered learning due to time constraints and the complexity of outdoor adventure programming curriculum is also apparent.

Disclosures

No conflicts of interest, financial or otherwise, are declared by the authors.

References

Ambler, T., Solomonides, I., & Smallridge, A. (2021). Students' experiences of a first-year block model curriculum in higher education. *The Curriculum Journal, 32,* 533 - 558. https://doi.org/10.1002/curj.103

Ambrose, S., Bridges, M., DiPietro, M., Lovett, M., & Norman, M. (2010). *How Learning Works: 7 Research-Based Principles for Smart Teaching.* John Wiley and Sons.

https://books.google.com.au/books?id=VJKoEAAAQBAJ&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false

Australian Qualification Framework. (2013). *Australian Quality Framework*. www.aqf.edu.au

Biggs, J. (2014). Constructive alignment in university teaching. *Higher Education Research and Development Society of Australasia, Vol. 1*(July), 5 - 22. https://www.herdsa.org.au/herdsa-review-higher-education-vol-1/5-22

Biggs, J., & Tang, C. (2011). *Teaching for Quality Learning at University*. McGraw-Hill Education. https://books.google.com.au/books?id=XhjRBrDAESkC

Bloom, B., Engellhart, M., Furst, E., Will, W., & Krathwolh, D. (1956). *Taxonomy of educational objectives: The classification of educational goals.* David McKay Company.

Boud, D. (2022). *Assessment Futures.* University of Technology Sydney. https://www.uts.edu.au/research-and-teaching/learning-and-teaching/assessment-futures

Bowen, R. (2017). *Understanding by Design.* Vanderbilt University Center for Teaching. https://cft.vanderbilt.edu/guides-sub-pages/understanding-by-design/#overview

Chau, H., Jamei, E., & Li, M. (2022). Block mode delivery for studio design teaching in higher education. *Innovations in Education and Teaching International.* https://doi.org/10.1080/14703297.2022.2062031

Cleary, K., & Samarawickrema, G. (2014). *Learning Outcomes Verbs for AQF Levels 4 – 10.* Centre for Collaborative Learning and Teaching Victoria University. https://connected.vu.edu.au/wp-content/uploads/2019/05/Learning-outcome-verbs-for-AQF-levels-4-10.pdf

Cosgriff, M. (2000). Walking Our Talk: Adventure Based Learning and Physical Education. *Journal of Physical Education New Zealand, 33*(2), 89 - 98. https://eurekamag.com/research/003/611/003611606.php

Dames, G. E. (2012). Enhancing of Teaching and Learning through Constructive Alignment. *Acta Theologica, 32*(1), 35-53. http://dx.doi.org/10.4314/actat.v32i2.3

Eisner, E. (1993). Reshaping assessment in education: Some criteria in search of practice. *Journal of Curriculum Studies, 25,* 219 – 233. https://doi.org/10.1080/0022027930250302

Ghapanchi, A. (2022, July 15). *Five pitfalls of adopting the block mode of teaching, and strategies to overcome them: opinion.* Campus Review. https://www.campusreview.com.au/2022/07/five-pitfalls-of-adopting-the-block-mode-of-teaching-and-strategies-to-overcome-them-opinion/

Graff, N. (2011). "An Effective and Agonizing Way to Learn": Backwards Design and New Teacher Preparations for Planning Curriculum. *Teacher Education Quarterly, 38* (3), 151 - 168. http://www.jstor.org/stable/23479622

Harper, N., & Robinson, D. (2005). Outdoor adventure risk management: Curriculum design principles from industry and educational experts. *Journal of Adventure Education and Outdoor Learning, 5*(2), 145 - 158. https://doi.org/10.1080/14729670585200671

Hodgson, C. & Berry, M. (2011). *Adventure Education an Introduction* (1st Edition ed.). Routledge. https://books.google.com.au/books?hl=en&lr=&id=f5XwYrNTwyAC&oi=fnd&pg=PP1&dq=Adventure+Education+An+Introduction&ots=OmMHckHwta&sig=RYcUBPF_H3P7Mr9ddxwd8nyNVIo#v=onepage&q=Adventure%20Education%20An%20Introduction&f=false

Kelly, K., & Loch, E. (2019, June 19 - 22). *Constructing a Career Mindset in Frist Year Students: The Building Blocks for Curriculum Design.* [Paper Presentation]. 5th International Conference on Higher Education Advances, Valencia, Spain. https://doi.org/10.4995/HEAD19.2019.9240

Le Cornu, R., & Peters, J. (2005). Towards constructivist classrooms: the role of the reflective teacher. *Journal of Educational Enquiry, 6*(1), 50 – 64. https://ojs.unisa.edu.au/index.php/EDEQ/article/view/501

Li, C., Wang, L., Zhang, Y., Li, C., Xu, Y., Shang, L., & Xia, J. (2018). Assessment of a block curriculum design on medical postgraduates' perceptions towards biostatistics: a cohort study. *BMC Medical Education, 18,* 144. https://doi.org/10.1186/s12909-018-1232-0

Macdonald, D., & Brooker, R. (2000). Assessment issues in a performance-based subject: A case study of Physical Education. *Studies in Education Evaluation, 23*(1), 83 – 102. https://doi.org/10.1016/s0191-491x(97)00006-0

Maier, N. (1933). An aspect of human reasoning. *British Journal of Phycology, 24,* 144 – 155.

Mariani, L. (1997). Teacher support and teacher challenge in promoting learner autonomy. . *Learning Paths.* http://www.learningpaths.org/papers/papersupport.htm

Martin, B., Breunig, M., Wagstaff, M., & Goldenberg, M. (2017). *Outdoor Leadership: Theory and Practice.* Human Kinetics. http://doi.org/10.5040/9781492595670

McClusky, T., Weldon, J., & Smallridge, A. (2019). Rebuilding the first year experience, one block at a time. *Student Success, 10* (1), 1 - 15. https://doi.org/10.5204/ssj.v10i1.1048

Moorcraft, T., Desmarais, K., Hogan, K., & Berkowitz, A. (2000). Authentic assessment in the informal setting: How it can work for you. *The Journal of Environmental Education, 31*(3), 20 - 24.

Paesani, K. (2017). Redesigning an Introductory Language Curriculum: A Backwards Design Approach. *L2 Journal, 9*(1). http://dx.doi.org/10.5070/L29130408 Retrieved from https://escholarship.org/uc/item/8ht6q019

Polley, S., & Thomas, G., (2017). What are the capabilities of graduates who study outdoor education in Australian universities? The case for a threshold concept framework. *Journal of Outdoor and Environmental Education, 20*(1), 55 – 63. https://doi.org/10.1007/BF03401003

Preist, S., & Gass, M. (2018). *Effective leadership in Adventure Programming,* Human Kinetics.

Reynolds, H., & Kearns, K. D. (2016). A Planning Tool for Incorporating Backwards Design, Active learning and Authentic Assessment in the College Classroom. *College Teaching, 65*(1), 17-27. https://doi.org/10.1080/87567555.2016.1222575

Sutherland, S., Stuhr, P, T., & Ayvazo. (2014). Learning to teach: pedagogical content knowledge in adventure based learning. *Physical Education and Sports Pedagogy, 21 (3),* 233 – 248, DOI: 10.1080/17408989.2014.931365

Sutherland, S., & Stuhr, P. T. (2014). Reaction to implementing adventure-based learning in physical education, *Sport, Education and Society, 19 (4),* 489 – 506, DOI: 10.1080/13573322.2012.688807

Samarawickrema, G., & Cleary, K. (2021). Block Mode Study: Opportunities and Challenges for a New Generation of Learners in an Australian University. *Student Success Journal, 12*(1), 13 -23. https://doi.org/10.5204/ssj.1579

Samarawickrema, G. C., Male, K, S. & McCluskey, T. (2022). *'Assessment in Intensive Modes of Study', Designing Learning for Intensive Modes of Study*. Hammondville, NSW: Higher Education Research and Development Society of Australasia. https://vuir.vu.edu.au/id/eprint/43965

Shuell, T. J. (1986). Cognitive Conceptions of Learning. *Review of Educational Research, 56*(4), 411–436. https://doi.org/10.3102/00346543056004411

SueSee, B., Pill, S., & Edwards, K. (2018). Interrogating Assumption of a Curriculum: Queensland Senior Physical Education Syllabus. *The Physical Educator, 75*(5), 850 – 879. https://doi.org/10.18666/TPE-2018-V75-I5-8283

Thomas, G., Grenon, H., Morse, M., Allen-Craig, S., Mangelsdorf, A., & Polley, S. (2019). Threshold concepts for Australian university outdoor education programs; findings from a Delphi research study. *Journal of Outdoor and Environmental Education, 22,* 169 – 186. https://doi.org/10.1007/s42322-019-00039-1

Victoria University. (2022). *VU Block Model Principles.* https://www.vu.edu.au/learning-teaching/block-model-principles

Villarroel, V., Bloxham, S., Bruna, D., Bruna, C. & Herrera-Seda, C. (2017). Authentic assessment: creating a blueprint for course design. *Assessment & Evaluation in Higher Education, 43*(5), 840 - 854. https://doi.org/10.1080/02602938.2017.1412396

Wass, R., Harland, T., & Mercer, A. (2009). Scaffolding critical thinking in the zone of proximal development. *Higher Education Research & Development, 30,* 317 - 328. https://doi.org/10.1080/07294360.2010.489237

Weldon, J. (2022, April 29). *Block teaching: what it is, how to do it and why.* Times Higher Education. https://www.timeshighereducation.com/campus/block-teaching-what-it-how-do-it-and-why

Wiggins, G., & McTighe, J. (1998). What is Backwards Design? In Wiggins, G., & McTighe, J. *Understanding by Design* (pp 13 - 34). ASCD.

Wiggins, G. (1989). Teaching to the (authentic) test. *Educational Leadership, 46*(7), 41 – 47. https://files.eric.ed.gov/fulltext/ED332166.pdf#page=356

Wilson, K., Devereux, L. (2014). Scaffolding theory: High challenge, high support in Academic Language and Learning (ALL) contexts. *Journal of Academic Language and Learning, 3(8*), A91-A100. https://journal.aall.org.au/index.php/jall/article/view/353

Yokus, G. (2020). Integrated outdoor school learning into formal curriculum: Designing outdoor learning experiences and developing outdoor learning frameworks for pre-service teachers. *International Journal of Education Technology and Scientific Researches, 5*(13), 1330 - 1388. https://doi.org/10.35826/ijetsar.276