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Future-Focused:

Educating in an Era of Continuous Change

Industry-integrated approach: Mastering BPM threshold concepts

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This paper presents an innovative pedagogical approach designed to address critical challenges in Business Process Management (BPM) education, specifically supporting students in mastering complex Threshold Concepts (TCs). Employing First Principles of Instruction and structured around the BPM lifecycle, the course integrates authentic, staged industry case studies to bridge theoretical understanding with practical application. Active collaboration with industry partners, alongside innovative digital tools like process mining, enhances students' analytical skills and professional competencies. This structured approach promotes transformational learning, demonstrating clear improvements in student engagement, comprehension, and preparedness for digital-era organisations. The framework's portability and scalability offer educators a robust, adaptable model that contributes meaningfully to ongoing discussions on curriculum innovation in BPM education.

Keywords: Business process management, threshold concepts, authentic assessment, transformational learning, collaboration futures

Introduction

Business Process Management (BPM) plays a critical role in enabling organisations to deliver strategic value by optimising processes. However, BPM education presents substantial learning challenges due to its conceptual complexity and the required shift from traditional functional views of organisations to a process-oriented perspective. These challenges align closely with the theory of Threshold Concepts (TCs), which describes key ideas that are transformative yet difficult for learners to grasp (Burch et al., 2015; Meyer & Land, 2006). To effectively address these challenges, BPM education must extend beyond the mere transmission of knowledge, to adopt structured and experience-rich pedagogies. This paper reports on the design and implementation of a BPM course (cohort size ~350 students) at a large higher education institution, employing Merrill's (2017) First Principles of Instruction as its foundational approach. The course design integrates industry-informed case studies and systematically supports students in mastering BPM TCs through scaffolded learning activities aligned explicitly with the BPM lifecycle.

Rationale and design approach

Effective BPM education requires students to transition from traditional hierarchical views of organisations to a holistic, process-oriented perspective. This shift involves mastering critical TCs, which are essential yet challenging for students to grasp. These concepts include:

- Adopting a process-centric view of organisations.
- Understanding how organisational strategies are operationalised through processes.
- Understanding the link between organisational strategies and processes.
- Modelling and measuring process efficiency and effectiveness.
- Facilitating continuous improvement and digital transformation.

Without structured instructional support, these TCs can become significant barriers, causing student to feel overwhelmed and disengage. Therefore, the course addresses two primary educational challenges: effectively scaffolding TCs for deep understanding, and aligning teaching practices with contemporary BPM methodologies through active industry engagement and authentic assessment. To address these challenges, the course uses the established BPM lifecycle (see *Figure 1*) as its central framework. This lifecycle consists of distinct phases: Identification, discovery, analysis, redesign, implementation, monitoring, and control; each

systematically building upon the previous phase to support progressive student learning and skill development. The BPM lifecycle sequences cognition from recognition to transfer: identification builds a process lens; discovery externalises tacit knowledge via models; analysis develops measurement literacy; redesign elicits design reasoning and heuristics; implementation/monitoring cultivate reflection and improvement. This sequencing supports cognitive apprenticeship (modelling → coaching → fading), providing progressive scaffolds and deliberate practice aligned to threshold concepts and professional practice.

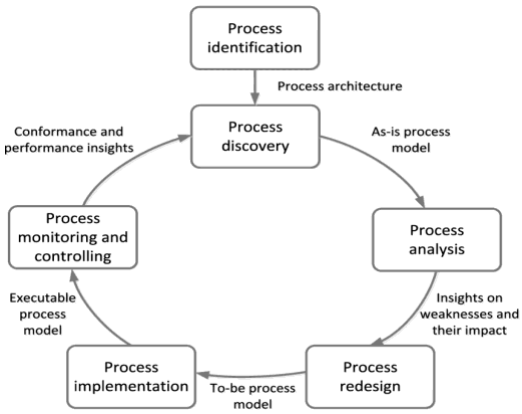

*Figure 1***.** The BPM Lifecycle (Dumas et al., 2018)

The BPM lifecycle structure serves several key educational purposes: 1) it clearly identifies and integrates BPM TCs, 2) it bridges theoretical knowledge and practical industry application, and 3) it provides a coherent progression of learning activities aligned with professional practice. To operationalise this lifecycle effectively, Merrill's (2017) instructional principles were integrated into the course design:

- Activation: Engaging students' prior knowledge as a foundation for new learning.
- Demonstration: Explicitly showcasing new concepts through practical examples.
- Application: Guiding students to apply new knowledge in structured practice scenarios.
- Integration: Encouraging students to internalise learning through connections to personal and professional contexts.
- Problem-centred Learning: Utilising authentic, real-world tasks to deepen engagement and understanding.

These instructional principles were consistently embedded across all course activities, including pre-lecture modules, interactive workshops, industry-based case studies, and reflective tasks. Additionally, the instructional approach was aligned with the Understanding by Design (UbD) framework (Wiggins & McTighe, 2005), to ensure that learning outcomes and assessments were clearly interconnected, and to increase student motivation and engagement. Students actively engaged as professional process analysts; they collaborated directly with industry representatives throughout the course. This immersive industry interaction aims to encourage a deeper understanding of the BPM lifecycle and promote a creative and explorative mindset which is essential for innovation and adaptability in contemporary business environments (Ciborra, 2002).

Integrating threshold concepts into course delivery

Industry case sequence and roles

To effectively engage students with the BPM lifecycle and facilitate mastery of TCs, a structured, three-case-study approach was implemented. Each case study was designed to achieve specific pedagogical objectives and progressively deepen student engagement with BPM concepts through authentic industry interactions.

- Pharmak Case Study (Lecture Demonstrations): This case, based on a large pharmacy business operating over 200 branches, introduced foundational BPM concepts. It provided tangible and

relatable examples within a realistic organisational context. The case served as the foundation by demonstrating practical BPM scenarios and bridging theoretical concepts and real-world applications.

- Bank Global (BG) Case Study (Tutorials/Workshops): Used extensively in interactive tutorial sessions and workshops, the BG case involved a scenario focused on a credit card application process. It allowed students to apply theoretical knowledge in a controlled, supportive environment, emphasising practical skill development. The case specifically targeted skills critical to BPM proficiency, such as process analysis, problem-solving, effective communication, and strategic process improvement.
- Simple Hardware Case Study (Industry Collaboration): Acting as the primary team-based assignment, the Simple Hardware case provided students with an immersive, authentic learning experience. Developed collaboratively by educators and senior executives at Simple Hardware—a medium-sized hardware store business in Australia—the case closely mirrored real-world industry challenges. Presented in two structured segments, the scenario required student teams to independently engage with industry stakeholders in four iterative sessions throughout the term.

Industry representatives from Simple Hardware actively participated as stakeholders. They presented initial briefings, supplied additional contextual information, and facilitated structured question-and-answer sessions with students. Crucially and to ground the learning experience firmly within professional practice, the executives offered continuous feedback on students' analytical approaches and proposed solutions. Simple Hardware executives attended lectures twice during the term, specifically to answer student questions. In the second-last week, they joined all tutorial classes, meeting individually with each student group to discuss proposed solutions. Furthermore, they attended final pitch presentations at the term's end, where they actively engaged with students by posing critical questions and providing constructive feedback.

The learning design framework

To effectively integrate the three structured case studies into the course and maintain student engagement, Merrill's (2017) principles of instruction were operationalised through four interconnected and sequential weekly learning activities: online content modules, lectures, workshops (in tutorial classes), and industry-based collaborative assessments. Each activity was carefully aligned with Merrill's instructional phases as follows:

- Tell: Online Modules (Activation) introduced TCs each week, activating prior student knowledge and presenting foundational theories and principles through clear examples and conceptual explanations. Although this instructional step primarily served informational purposes, it established an essential foundation for deeper engagement.
- Show: Lectures (Demonstration) employed the Pharmak case study as a central pedagogical resource to visually demonstrate BPM concepts. Through facilitator-led modelling, students observed practical applications of theoretical concepts, clearly connecting knowledge with real-world scenarios.
- Do: Interactive Tutorials and Workshops (Application) utilised the BG case study, providing students with a safe and supportive environment to practice newly acquired BPM skills. These sessions served as rehearsals, allowing students to experiment, make errors, and receive constructive feedback, facilitating continuous improvement and skills refinement.
- Consolidate: Industry-based Case Study (Integration and Problem-Centred Learning): The consolidation phase extended the 'Do' stage by embedding student teams within an authentic, industry-based scenario using the Simple Hardware case study. Here, students directly applied their acquired skills in realistic, professional contexts, supported by continuous feedback from industry advisors. Students evaluated their progress through iterative cycles of application, reflection, and adjustment, to ensure practical integration of their learning into genuine business scenarios.

Constructive alignment across outcomes, threshold concepts, BPM lifecycle phases, activities (Tell/Show/Do/Consolidate) and assessments is summarised in Table 1 below.

Table 1
Constructive alignment map

Learning Outcome (LO)	Threshold Concept(s)	BPM Lifecycle Phase(s)	Learning Activities (Tell/Show/Do/Consolidate)	Evidence & Assessment
LO1: Adopt a process view of organisations	Process-centric perspective	Identification	Tell: online module; Show: Pharmak demo	Quiz items on process vs function
LO2: Model processes in BPMN 2.0	Modelling as shared language	Discovery	Show: worked examples; Do: BG modelling workshop	BPMN artefact checklist
LO3: Analyse & measure processes	Measurement & evidence	Analysis	Do: BG metrics; Consolidate: mining in Simple Hardware	Analysis memo; dashboard screenshot
LO4: Propose redesign w/ heuristics & DT	Design heuristics & feasibility	Redesign	Do: redesign studio; Consolidate: stakeholder critique	Team report (redesign rationale)
LO5: Communicate to stakeholders	Professional communication	All	Consolidate: client Q&A & pitch	Presentation rubric; peer & client feedback

Integrating process mining for innovative learning and research alignment

A distinctive innovation in the course was the integration of process mining (Grisold et al., 2024). We used SAP Signavio Process Intelligence and Celonis EMS via their academic alliance programs. Both cloud-based platforms provided an intuitive web interface, event-log ingestion from CSV, automated process discovery, conformance checking, and performance analytics. We selected Signavio and Celonis because of their strong industry adoption, comprehensive teaching resources, and alignment with graduate employment pathways; Signavio also integrates closely with BPMN modelling/repositories used in the course, while Celonis offers advanced performance dashboards and action flows that align with the Analysis and Monitoring stages of the BPM lifecycle. Students worked hands-on with these tools, and learned to visualise, measure, and analyse real event logs; this has deepened insight into efficiency, conformance, and bottlenecks, and thereby directly connecting theory to authentic digital-transformation practice.

Methodology

We adopted an interpretivist, qualitative descriptive case study to examine how the industry-integrated learning design shaped students' experience of BPM Threshold Concepts. Data were gathered via two voluntary online surveys administered to the whole cohort at mid-term and end-of-term, each containing open-ended prompts about (a) understanding of TCs, (b) the value of BPM-lifecycle scaffolding, (c) usefulness of activities, and (d) the impact of industry engagement. Responses were anonymised and analysed using thematic analysis (familiarisation, coding, theme development, review, and reporting) following Braun and Clarke's approach (Braun & Clarke, 2006).

Qualitative outcomes and lessons learnt

We report qualitative findings from two waves of open-ended student surveys (mid-term and end-of-term) analysed using reflexive thematic analysis. Students described improved understanding of BPM threshold concepts and the lifecycle, and greater confidence applying ideas in practice. Three themes recurred: making the process lens click (a shift to process-centric thinking and clearer links between strategy and process); practising with guardrails (the Tell/Show/Do/Consolidate sequence and workshops enabled safe rehearsal of modelling and analysis before the industry case); and authenticity drives commitment (industry interactions and process-mining tools increased relevance, confidence and persistence). By end-of-term, comments moved from definitions to design rationales and feasibility trade-offs, signalling liminal progression towards transformative understanding and stronger professional readiness.

The lessons learnt were to align each case study tightly with the learning outcomes and the Tell/Show/Do/Consolidate sequence, brief industry partners on objectives and the feedback sought, and iteratively refine activities using student and partner input to sustain relevance and effectiveness.

Discussion: Portability, scalability, and future directions

The industry-integrated learning design is portable and scalable: its clear sequencing (Tell/Show/Do/Consolidate), alignment to the BPM lifecycle, and use of widely available process-mining platforms enable adaptation across institutions and delivery modes. Pedagogically, it operationalises threshold concepts as lifecycle-anchored micro-TCs, showing how scaffolded activities and structured client critique support liminal movement from troublesome knowledge to transformative understanding, consistent with cognitive apprenticeship and constructive alignment. To implement at scale, institutions should (1) sustain industry partnerships to secure authentic problems and feedback; (2) develop flexible, reusable case packs (with real, public, or fictionalised data) to suit different contexts; and (3) provide concise implementation guides for educators to tailor activities and assessments locally.

Future work will run cross-institutional qualitative replications to test adaptability across cohorts and delivery modes, using common prompts, and artefact audits. A 6–12-month longitudinal follow-up (student and employer/client interviews) will examine sustained impacts on professional preparedness and early career trajectories.

Conclusion

This paper introduced a practical, theory-driven approach to BPM education, designed explicitly to facilitate students' mastery of complex TCs. By aligning Merrill's First Principles of Instruction with the BPM lifecycle and incorporating authentic, staged industry case studies, the course effectively bridges theoretical knowledge with practical applications. This integration enables transformational learning experiences and provides students with essential skills for digital-era organisations. Furthermore, the approach emphasises portability and scalability by offering educators a structured, adaptable model that responds directly to ongoing discussions about renewing education in a dynamic, rapidly evolving educational landscape.

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