The Capstone Journey: Exploring Design, Delivery and Evaluation in an Undergraduate Management Discipline Context

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Abstract

The focus of this paper is the development of a capstone management course and the application of educational action research through continual learning. In this article, we use the continual learning frame of plan, do, study, and act to underpin an educational action research design on the development of a capstone management course. As part of an Active Learning Trial, the development of the capstone experience has been captured in the embodiment of that experience. Our aim is to guide other academics in developing their own capstone course, particularly, within management with extension into other disciplines. Through continual improvement, we stress the importance of integrating the primary voice of the students, to emphasize the active learning and to optimize a meaningful experience in connecting theory to practice – the key to the capstone experience. Examples of how to gain feedback and integrate classroom improvements are given. To do this we present two cycles where we applied and practiced continual learning and educational action research to understand and evoke improvements within the course. These changes are evidenced through aggregated student feedback.

Keywords

Capstone, Management Education, Educational Action Research, Continual Learning, Active Learning

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Acknowledgements

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The focus of this paper is the development of a capstone management course and the application of educational action research through continual learning. In this article, we use the continual learning frame of plan, do, study, and act to underpin an educational action research design on the development of a capstone management course. As part of an Active Learning Trial, the development of the capstone experience has been captured in the embodiment of that experience. Our aim is to guide other academics in developing their own capstone course, particularly, within management with extension into other disciplines. Through continual improvement, we stress the importance of integrating the primary voice of the students, to emphasize the active learning and to optimize a meaningful experience in connecting theory to practice – the key to the capstone experience. Examples of how to gain feedback and integrate classroom improvements are given. To do this we present two cycles where we applied and practiced continual learning and educational action research to understand and evoke improvements within the course. These changes are evidenced through aggregated student feedback. Keywords: Capstone, Management Education, Educational Action Research, Continual Learning, Active Learning

Introduction

In this article we report on an active learning experience in developing an undergraduate management capstone course for a Bachelor of Business Undergraduate Management major. We employed educational action research (EAR) and continual learning to synthesize our approach. The subject topic, Management Problem Solving (MPS) has key learning outcomes of understanding, engaging, and reflecting on skills. Linking these learning outcomes while employing an ongoing and collective improvement practice leads to the research question: *how do we develop an active continual learning experience in an undergraduate management capstone course?* Creating a genuine and unique learning and teaching experience is vital in a capstone course, and specifically, with active learning as the mandate. Our purpose is to answer the research question through our experience. By doing this we will add to the learning and teaching "toolbox" in building a capstone undergraduate management course that will educate future managers who have the capacity to reflect on business decisions and optimize problem solving (Lilley, Barker, & Harris, 2014).

We begin with a background to active learning, then the concept of plan, do, study, and act (PDSA; Deming, 1994) is presented as the conceptual lens of continual learning that underpins our practice, teaching philosophy, and methodology. In the following section, two cycles of education action research are presented. These two cycles rely on the primary data source of the students' voice (Boivin & CohenMiller, 2018) in their reflective assessments, emails, social media interactions (Yammer), and online classes. As a meta-practice of our continual learning, we analyze each offering through the improvement cycle of PDSA. This

approach and course development were part of our institution's Active Learning Trial (ALT). Throughout the course transparency with students was emphasised as we relied on their firsthand experience for an authentic interpretation that optimized the course development

Active Learning, Capstone and Context

We began this EAR study with a shared motivation of raising the bar on active learning by engaging management students with the lofty goal of co-constructing the course through student input. Heather, the first author, is in the management discipline with a research and teaching philosophy grounded in continual and collaborative learning. Luke, the second author, is a senior academic, whose research, teaching and practice has been focused on management problem solving. Clare, the third author, joined us as a tutor in management problem solving and gave fresh insight through her practitioner-based strengths. Although, from diverse perspectives, we had the common interest of qualitative research with a conviction in actioning our espoused beliefs – in this case taking action learning into the continual improvements of the capstone course. Together, considerable effort was invested over more than two years with meetings, extending our understanding of capstone teaching, engaging with the students who often found the capstone experience a foreign concept and counter intuitive to their past educational understandings. In essence we were each other's champion in extending our ideas and pushing our pedagogical boundaries as we were committed to making a difference for the students through the capstone journey (connecting theory to practice).

As teaching scholars, creative engagement is needed to connect theory to practice and inspire students (Boyer, 1990). Active learning is "anything that involves students in doing things and thinking about the things they are doing" (Bonwell & Eison, 1991, p. 2). This broad definition of active learning can be narrowed down to meaningful learning activities, critical thinking, and reflection with the aim to engage students (Prince, 2004). Despite the many resources technology offers for this engagement, a balance is needed to ensure pedagogy and content is not overtaken by the shiny new bells and whistles of technology (Mishra & Kohler, 2009).

Institutions operate in a dynamic and competitive market with rankings dominating the battle for world-class excellence in higher education (Hazelkorn, 2015). Capstone courses provide the opportunity for students to apply their acquired skills and experience from their degree program. In architectural terms, a capstone is the piece that synthesizes and brings the two sides together, and in higher education terms this is the connection of theory to practice (Bailey, van Acker, & Fyffe, 2012; French, Bailey, van Acker, & Wood, 2015; Inamdar & Roldan, 2013). It is in the capstone course that students can activate their management skills to gain relevance and transition into the working business environment (French et al., 2015; Inamdar & Roldan, 2013; Pelley, 2014). We draw on continual learning through PDSA to focus on the development of active learning in a new capstone course in the Bachelor of Business, Management major offered across two campuses. The pre-requisite courses include Management Concepts (Introduction to Management) in addition to Management Strategy and Decision Making; Quality Management; Organization Behavior; Business Ethics and Corporate Governance. Although there are the limitations of two cycles, the two years of development were recognized by senior management as part of the business school's ALT. The establishment of this capstone course is a meta-practice of continual learning that aims to synthesize our management students' university experience (Felten, 2013; Masika & Jones, 2016; Maxwell, 2012).

The capstone platform encourages "acquired knowledge, skills and learning" before entering the workforce (Bailey et al., 2012, p. 3; French et al., 2015). Active learning (see Ní Raghallaigh & Cunniffe, 2013 for example) aligns and supports the capstone mode where we

aim to transform students into "lifelong learners" who can "assume responsibility" in their problem solving (Pelley, 2014 p. 18). Initially, we had little knowledge of capstone criteria, so the task of developing a capstone course for the ALT was challenging, daunting, and exciting. For good practice, design and supported assessment, it was understood that a capstone course should be sustainable, constructively aligned, organized, holistic, and most importantly engage students (Bailey et al., 2012; Biggs, 1996; Boud, 2010). We sought to increase student's capabilities in difficult management situations, extend learning, as well as deal with complexities and problematic circumstances (Boud, 2010; Felten, 2013; Joham & Clarke, 2013). To do this we took a continual learning approach structured around learning outcomes, group formative and individual summative assessments based on 10 MPS topics (see Appendix A). With the struggle to make teaching more effective (Gabarre, Gabarre, & Rosseni, 2016), the goal of students connecting prior learning of theory to practice is about building confidence, capability, and to engage in reflection on themselves and how they create meaning (Cunliffe, 2016; 2017).

Continual learning - PDSA

In the development of MPS, students contributed to our understanding, and also applied reflection and critical thinking to become active learners and citizens beyond the classroom (Kahu, 2013; Schmidt-Wilk, 2010). The continual learning approach draws upon the iterative progressions of continual improvement within Deming's (1994) PDSA cycle. Depending on the situation this may be required several times (Gapp & Fisher, 2008; Stewart & Gapp, 2018). *Plan* is where the idea is conceptualized; *do* is when the idea is taken into a test mode or pilot study; the *study* phase is when there are reflections and reviews of the objectives achieved or what was surprising; lastly, *act* is about decisions on whether to adopt, abandon (start over) or adapt (Deming, 1994). Many of us conceptualize (plan) or do, yet often, this is where the learning stops. Reflection and review heighten the effectiveness of decision and sense-making that goes beyond what is done and builds on "how we do it" (Cunliffe, 2018, p. 12). At this point, transformation has started. The continual learning concept of PDSA synergizes the meta-practice of our approach to guide us in our EAR methodology.

Methodology

The continual learning cycles of PDSA connect EAR to go "from within practice traditions that inform and orient them" (Kemmis, 2011, p. 891). EAR is grounded in the praxis of educational professional development and learning in a social context (Dewey, 1938). The action learning sets and PDSA created the "living practice" within praxis that emphasized the formation and transformation of the individual, group, and organization (Kemmis, 2011, p. 894). PDSA framed our action learning sets to engage students, align the discipline, program, and institutional learning outcomes (Carr & Kemmis, 1986; Kember, 2002; Schmidt-Wilk, 2010). With the dual role of researcher and lecturer, we were cognizant of taking a non-judgmental position for ethical reasoning in addition to seeking students' authentic insights to optimize the course and the capstone experience (Gabarre et al., 2016). Collaboration, as in all action research, is essential hence the value of gaining authentic student experiences was indispensable (Brailas, et al., 2017; Gibbs et al., 2016). To build trustworthiness and credibility in our data collection, multiple sources and modalities were used (emails, voluntary forms, online discussion, aggregated data, and reflective assessments) that supported all decision making (Boivin & CohenMiller, 2018). The isomorphic nature of EAR produced substantial data (Brailas, et al., 2017) however to succinctly present a coherent story, students' final reflective assessments are used here.

The PDSA practice was lived through Cycle One (2014) and Cycle Two (2015), with the pre-semester preparation embedded in the *planning* stage. The *do* stage appraised what happened during the semester. Although the PDSA stages are not necessarily sequential, generally the *study* stage is next. In this case, the primary data source was the final reflections (1000 words). Due to the substantial data and the teacher-student relationships developed over the semester, the use of the qualitative data analysis program, Leximancer, presented a non-judgmental platform to analyze the de-identified data (see www.leximancer.com; Cretchley, Rooney & Gallois, 2010; Gabarre et al., 2016; Gapp & Stewart, 2015). Like a manual analysis, words that travel together throughout the text build a thesaurus that is distilled into themes and concepts (Leximancer, 2011). The analysis stage is detailed in the first cycle, as the final phase, *act* was central to the continual improvement and learning. Rigor through a reflexive interpretation on how we improve (Cunliffe, 2017) informed cycle two improvements and changes. The progression of co-constructed moments aligned with the continual learning philosophy of working with students optimized the ideas for enhancement of the students' active learning in the capstone context throughout the two offerings over the 2014 (52 students) and 2015 (115 students) trial period (Boivin & CohenMiller, 2018).

Cycle One – 2014: Flying by the seat of our pants

Creating an active learning experience can be messy with time and skills exhausted (Allen, 2018). PDSA framed and evidenced the action learning set for levels of learning that produced and generalized the concept (Gapp & Fisher, 2008; Stewart & Gapp, 2018). As we engaged in EAR, it was evident that our previous experience using this method was going through a steep learning curve that stimulated our learning community through the semesters (Brailas, et al., 2017). The lenses of PDSA (action learning set) and EAR provided academic assurance (Deming, 1994; Kemmis, 2011). Using this frame enhanced the trustworthiness and the equity between the relational complexities of researcher/lecturer, lecturer/participant, and researcher/participant (Boivin & CohenMiller, 2018).

Plan: We planned and built up the learning management resources with readings, videos, and recordings (Bailey et al., 2012; van Acker et al., 2014). Students were directed to the substantial resources and weekly topics that replaced the focus of a textbook (see Table 1). In preparation, weekly online resources were posted and included for example big data issues; video and movie clips such as "How Wolves Change Rivers"; a 10-15-minute recording that introduced the topic along with scholarly readings including Ackoff (1978) and Houghton and Metcalfe (2010). Each week a topic was presented and linked to support the formative assessments and shape the summative assessments (Dunlosky, 2013). To start each week, an announcement was posted to highlight the topic, the content, readings, and what would be happening in class. The Creative Synthesis (30%) was completed during six workshops where the environment allowed students to interact with the topic, construct knowledge, and increase understanding through collaboration with the teaching team and peers. As part of the assessed Creative Synthesis, a five-minute "pitch" presentation was peer-reviewed and moderated by the teaching team. The summative assessments comprised a group report (40%) on a case study and a final reflective essay assessment (30%).

Table 1: Example of the weekly content and resources for the MPS topics.

Topic 10: Systems Thinking		
Online content (videos, readings etc.)	**Seminar**	**Workshop**
Videos: Systems Thinking Introduction (13 mins – PowerPoints supplied for download) How Wolves Change Rivers (4.34 mins) TedEx – Making Systems Thinking Sexy (Eli Stefanski – 17:45 mins) Peter Senge - Navigating Webs of Interdependence *Reading:* Overview of Systems Thinking (Daniel Aronson)	We went over a brief introduction to Systems Thinking. Students worked in groups re their experience at the university. They were asked to think, write, and discuss all the systems they interact with at university. How they interact with them? What could they change, what they could not change?	*Creative Synthesis:* MPS Pitch was on the overcrowding of prisons

Do: This first cohort included over 50% international students. Most students were in their final year of their Bachelor of Business with majors in management but also human resources and marketing. Communication with the students was fundamental, as students needed to go beyond their comfort zone, however, a conscious effort was made to prepare them. Group activities such as "how many ways to use a paperclip" were used in the first weeks for familiarization and to negotiate the differences. In week one we set the scene with group exercises incorporating a brainstorming session on "what is MPS?" The brainstorming session had multiple benefits that were explicitly linked to set the tone and signposted the reflective and collective responsibility of gaining diverse viewpoints for MPS in the implicit active learning environment (Pelley, 2014).
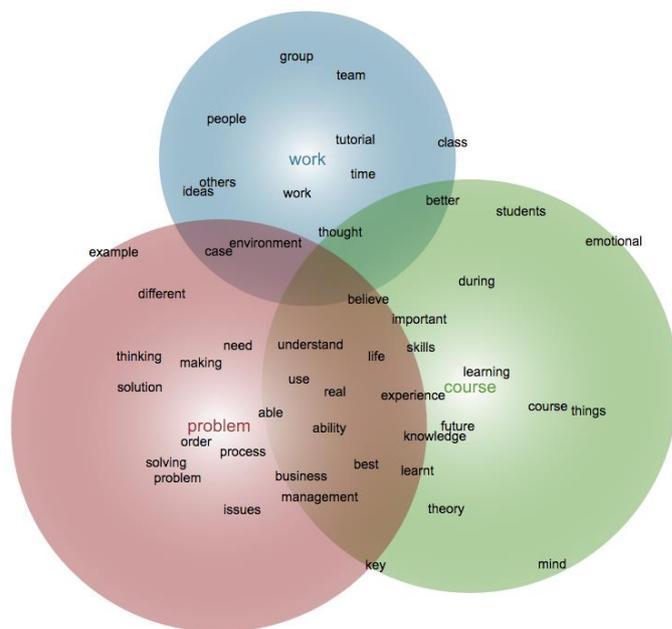
We sought students' feedback through conversations and observations in class. Changes were made in response to feedback which was integral to the continual and active learning to improve students learning (Groves, Leflay, Smith, Bowd, & Barber, 2013; Pelley, 2014). One change was when students opted to form random groups for the six formative tutorial pitches (Creative Synthesis) which demonstrated the teaching team's aim at transparency and trustworthiness (Brailas, et al., 2017).

The six Creative Synthesis pitches were weighted at five marks (30%). Teams of four to six students were encouraged to embrace diversity through a change in group members each week. Students had 20 minutes to engage and discuss the task and all students acted as the "leader" at one point in the semester. In the "Lateral Thinking" topic, activities began with "how many ways can a paper clip be used" that was followed by the problem of overcrowded prisons which was supported with online resources, such as videos, brain games and an Edward de Bono (1971) reading. This diverse student cohort (Australian, Chinese, Canadian, American, Norwegian, Swedish, Croatian, Mexican) cultivated rich and animated discussions. One student shared the confronting experience of being in a refugee camp prior to immigrating to Australia which was in contrast with the Scandinavian students' understandings of prisoners having private rooms fitted out with televisions in their home country.

The MPS stimulation transitioned into the summative assessments of a report and individual reflection. The group report was focused on a local case study. Collaboration with peers and the teaching team were encouraged, with students assuming a consultant role. The final assessment was a 1000-word reflective essay that aligned the reflective thinking, learning, and writing topics to embed continual learning (Biggs & Tang, 2011; Cunliffe, 2016) and teaching (EAR) of the course development (Kemmis, 2011). Reflective examples and resources supported students in the quest for conscious reflection on their learning and for us to understand what was working (or not) in the course.

Study: The plan and do phases were exciting but also gave way to feelings of naivety. Our sense of "flying by the seat of our pants" reflected this. The formal student evaluation of

the course (3.7/5) and teaching (4.1/5) verified room for improvement. With the words and phrases from the reflective assessment lexically analyzed as the primary unit of analysis, student's thoughts and feelings were revealed to go beyond the simple reading of text to synthesize the students' voice (Boivin & CohenMiller, 2018; Yin, 2011). Considering the personal connection and amount of data (approximately 52000 words), Leximancer (Version 4) provided a way to minimize bias, take a non-judgmental view and gain rigor in the analysis (Gabarre, et al., 2016). In Leximancer, words and phrases built a thesaurus to generate the higher-level themes of *problem, course, work,* and *mind* (Figure 1). Concepts that appear together in the same piece of text attract one another to gauge strength thus settle near one another in the lexical map. Leximancer themes are heat-mapped by importance with red the strongest theme. The neighboring concepts generated themes to synthesize the analysis. It remained our responsibility to backtrack and review the process to add value as the themes and concepts are meaningless without the intimate sense-making of the researcher to understand and improve (Harwood, Gapp & Stewart, 2015). With 46 concepts identified, further investigation and reduction of the concepts strengthened the association of connectivity (see Figure 1). This reduction distilled the weaker concepts into the primary themes of *problem*, *course,* and *work*. To explore and present the themes, we focused on the core themes, starting with the primary theme of *problem* (denoted by the red circle) to the declining theme strengths of *course* and *work*.

Theme	Connectivity	Underlying concepts
Problem	100%	Problem: solving, management, use, solution, different, thinking, understand, need, process, business, able, real, making, issues, ability, example, order, experience*, case, environment, believe, life, best, learnt, knowledge*
Course	61%	Course: learning, theory, skills, important, students, learnt, experience, life, knowledge, future, best, during, believe, emotional, things, key, mind, *understand, use, able, real, ability, business management, better, thought*
Work	38%	Work: group, ideas, tutorial, time, people, class, case, team, better, others, thought, environment

Figure 1: Lexical map of cycle 1, 2014 with table capturing relative concepts and connectivity. Italicised concepts highlighted in analysis.

The proximity of concepts on the Leximancer map is the output "equivalent to reading the document (data) and looking for meaning a thousand times if done manually" (Harwood et al., 2015). The primary theme *problem* (shown by the red circle), overlapped the concepts of *solving* and *management* that evidenced the connectivity and subject integration. This was a logical linkage with the course name of MPS. Despite this affirmation, there was a need to put continual learning into practice, therefore, reflect and understand the underlying concepts to improve the course. From here, the concepts of *use, solution, different, thinking, understand,* and *need* brought an interesting perspective relative to MPS and our aims of students not leaping into solutions but exploring and analyzing their identified problem; how the course is meant to be *different* and the need for *thinking* that brought greater *understanding*. The *thinking* seemed counterintuitive for many students; however, new ideas were evolving which can result in more effective ways (Houghton & Stewart, 2017). The *process* was to create a *business* feel to the course by *making* it a *real experience* through *examples (case)* so students were *able* to have a strong sense of connecting theory to practice through an iterative method of looking at the *issues*. A core learning outcome was to connect theory to practice with students seeing and feeling this difference through the method applied to assessments. In *order* to do this, students demonstrated the *ability* as evidenced in students' reflection quotes (de-identified with random allocation of letter for campus and number for student):

> **A10:** The assessment items that were involved in the Management Problem Solving course I thought were fantastic and was a very good method of applying our problem-solving skillset and knowledge.

> **B32:** The key things that I had learnt about problem-solving by doing this *course* were the different methods and approaches that could be used to evaluate *problems* and establish effective solutions.

Despite students' reflective assessment giving us insights into what was working, we wanted to know how to make the *course* better. The *course* theme showed how *students'* (were) *learning* through the application of *theory* and *skills*. Drawing upon *key things* including prior *knowledge* of what was *learnt during* their degree program as well as *experience* and *life* created the *best* possible solutions. In the Creative Synthesis pitches, the understanding of the *problem-solving* process optimized what was happening. Several students saw *emotional* intelligence as *important* in skill development. *During* the *course, key* beliefs (*believe*) were challenged and *minds* were transformed for *future* managing problem solving:

> **A7**: This (the course) will be so beneficial to me towards my future and upcoming business life ahead.

The Creative Synthesis is evidenced in the *work* theme with self-managed student *group*s (4-6 members) *work*ing with a given *case* such as a real business issue for 20 minutes in the *tutorial*. Students formed ideas then one student would present the synthesized ideas in a three to five-minute "pitch." We stressed that students take their time during the *class* and to *work* as a *team,* however, as one student stated, "I found it to be a disorganized scramble to get as many *ideas* out on the table as possible." This *time* issue was reinforced by *other's* reflections which was contrary to our aims. We were not embedding the *environment* to explore the problem: "I had to learn how to deal with quick decision making" and "We were forced to collaborate with others in an attempt to solve problems in a 15-minute period." We wanted the students (*people*) to develop their *thought*s; to deepen their understanding and to talk to each other to craft *better* solutions. The intended *environment* was to tease apart the problem from many perspectives

and views within their diverse *group* and utilize the "many different *people*, which led to many different results being considered." The themes of the analysis gave us mixed messages in the success levels achieved.

    Act: Although the Creative Synthesis was "practical and very exciting" with one student reflecting that "the seminar pitches in particular were my favorite," our own reflections of the analysis sought ways to enhance the student experience. The insightful and introspective comments of students directed us in improvements: "Sometimes that (the short preparation time) resulted in other ideas and techniques being ignored" with constructive direction given: "I would suggest maybe giving the cases being studied to the students prior to class." In the students' reflections, the *work* theme and the *group* concept were of interest as we had tasked the students with significant group work in both formative and summative assessments (70%). Getting the right balance was important.

    Through our analysis, we gained understanding as to what was working, and more importantly, what was not. There were two key areas for improvement. First, the timeliness of the problem scenario delivery for the Creative Synthesis pitches. The pitches needed to be amended but not lose the essence of diversity with the group creating and synthesizing ideas to view and understand the problem. Second, group work in the business report needed modification to enable students to showcase their capabilities in tackling MPS. Changing the report to an individual assessment would decrease the student sentiments of others who were less engaged as "free riding" and "social loafing" yet received the same mark.

Cycle Two – 2015: Practicing what we preach

    The second stage of development continued with action learning practice at the individual (students and teaching team), group (course development) and organizational (school – Active Learning Trial) level. We continued with the EAR using the PDSA framework applying an open mind to adapt to the unexpected (Gabarre et al., 2016).

    Plan: The 2014 MPS experience guided the improvement for the 2015 offering. First, the Creative Synthesis was popular with students, however, amending the random group allocation and the availability of the "case" was necessary to address the 2014 students' critique. Second, the use of group work for both the Creative Synthesis and the Report breached university policy (unbeknown to us at the time) and did not allow students to demonstrate their distinct MPS competencies.

    The weekly topics continued as the backbone to the course, however, we decided to increase the capstone environment through the four essential pathways of management: Organizational Behavior, Corporate Social Responsibility (CSR), Strategy, and Process. These four pathways represent essential courses in the management program; thus, competency is expected in each of these areas. This strategy would promote the capstone alignment with active learning through a management pathway of the students' choice. The pathways were introduced in the first weeks of the semester to encourage students to start using their chosen lens. Resources were provided for each pathway and goals were positioned to reflect a client (teaching team) employing and tasking a consultant (students). In the CSR pathway, the task was to approach the case from a sustainable view. Videos and readings on Freeman's (2010) Stakeholder Theory, Elkington's (1998) Triple Bottom Line, and Carroll's (1991, 2016) Pyramid were included to refresh students' theoretical positions. Also, the case was amended to a current news story on a hospitality management problem.

Do: The 2015 student cohort had doubled in numbers with a more balanced representation of international and domestic students. Most students were management majors with a higher number of students doing double degrees including human resources and management; finance and management; supply chain/logistics and management; law and management. When the semester started, we emphasized the "differences" of the course and the strong need for engagement. This "difference" became a mantra for the course with students using the term in conversations and emails: "For the reflection, could I possibly explain and state the 'different' things I learned from each week's pitch" (student email correspondence).

Creative Synthesis groups were allocated in the first workshop of the semester, however, due to the increase in student numbers it was important to adapt and target team cohesion, so group norm development became part of the first session. Prior to each Creative Synthesis, the scenario/case was released the week before and groups were encouraged to meet outside of class to develop ideas. Students who took advantage of the preparation time demonstrated better group cohesion and depth of problem navigating in their pitches. The Report, now an individual assessment, was introduced with specific details (progressive problem information, resources, and specific tasks) for each "pathway" option. These changes paralleled authentic situations that strengthened the connection of theory to practice, and a platform for students to demonstrate their understanding (French et al., 2015).

Study: From the analysis of the students' reflections, the themes of *course* and *problem* were distilled (Figure 2). Although these themes had similarities to cycle one, the distinctions were in the strength of the connectivity *course* (primary theme) and *problem* that proved difficult to differentiate (100% and 98% respectively – see Figure 2).

Theme	Connectivity	Underlying concepts
Course	100%	Course: learning, skills, use, students, reflection, future, knowledge, experience, learnt, provide, *take, better, ability, ways,* environment, *effective, information, others, semester, course, change, academic*
Problem	98%	Problem: different, solutions, thinking, management, creative, important, approach, issues, *need, able, better, ability, case, best,* situation*, real, business, world*
Group	65%	Group: work, pitch, ideas, time, members, team, people, *class, felt, others, effective, environment, order, ways, need, example, ideas*
Lecture	10%	Lecture, *assignment, work, felt, class*

Figure 2: Lexical map of cycle 2, 2015 with table capturing relative concepts and connectivity. Italicised concepts highlighted in analysis.

The primary theme: *course* indicated the learning outcomes of taking the *students' learning, experience,* and *skills* into the practical – in use theory (Argyris & Schön, 1974). Through the capstone course and the connection of theory to practice, students' *knowledge* transitioned from their undergraduate studies to the *future* (workplace) (Bailey et al., 2012; Levy & Cannon, 2016). What *students learnt* at university needed to *provide* them with value *(learning, skills, experience, use, knowledge)* and to be of *use(d)* as global citizens in the business world. Commentaries in the students' *reflection*s gave evidence of the transformation (Argyris, 1997):

> **B28**: The major benefit of this *course* was the manner in which it equipped me to apply the *knowledge* and theories *learnt* throughout my degree. The practical *skills* I've developed have proven invaluable in helping me direct my flair for the logical and methodical. I've never been able to approach a *course* with whole-hearted abandon before; Management Problem-Solving created an environment in which I could collaborate and communicate in groups (which I have previous found very daunting) with enough confidence to express my ideas and perspectives.

The *problem*, the alternative primary theme was sustained by the concepts including *different, solutions, thinking, management, creative, important, approach,* and *issues.* The emphasis taken to ensure the *difference* of MPS was evident and it was reassuring to see how *solutions, management,* and *thinking* come into this context. The intent was for students to look at problem-solving differently, not jump into *solutions* but take the *approach* of using depth with *issues* surrounding the *problem;* similarly, being *creative,* but *thinking* and connecting to *management* was *important* in optimizing *solutions* and ultimately success in the course. In students' reflective writing many discussed how they *felt* with the applied approaches of MPS in their group experiences. The *thinking* and bein*g creative* was important to the connection of theory to practice and the application of *management* problem solving to *issues* and optimizing potential *solutions*. An exemplary of this reflection:

> **A29**: The individual *differences* and understandings among the *group* represented a difficulty at the beginning of the assessments as we tend to argue upon *solutions* from our own cultural world (*environment*). But this turned out to be a strength as we learned from one another, expanding our knowledge and view of other's perspective. With every presentation, we discussed the *problem*, globalizing it and finding many innovative solutions to it.

Similar to the 2014 cohort, the *group* experience of the *pitch* dominated the students' reflection. The concepts in the group theme reflected *work, time, ideas,* and *teamwork* that linked to the *situation* with *group members* in presenting the *pitches.* With the release of the problem before class, the students (*people*) could opt to meet prior to the workshop. This resulted in some students commenting on how they enjoyed this and it gave them time to prepare for the presentation which helped in terms of confidence, thinking about win-win approaches, creativity and connection of skills in linking theory to practice. Although in 2014 – Cycle One, there was more group work, the Cycle Two Creative Synthesis *pitch* generated richer student reflections on *group* work with explicit links to resources and theory evidenced:

> **A9:** For me this course has been my favorite so far. The fact it didn't feel like a university course and more like a *group* of *people* who all had a similar interest – to learn to better their future careers made it very worthwhile….

It was encouraging to see the course structure, content and assessment emerge in the analysis. Interestingly, the final theme of *lecture* was contrary to the Active Learning Trial terminology shift from traditional terms. We used the term "seminar" versus lecture and "workshop" instead of tutorial, yet, the theme of *lecture* emerged as students had not embraced this change. Students' insights on the *lecture* encompassed the online resources and the level of interaction in the seminar. The perennial problem of some students engaged and some not was an issue (Allen, 2018) as many struggled with self-management and came to seminars unprepared.

> **B34:** In particular, I would have wanted to have the online content that was directly from a lecture class, to be presented in person in the *lecture*. That format could have been more directly inviting for questions and discussions around the topic, …. Maybe the case was that some students watched the online content and some did not.

Although, we gauged our success through student feedback and the increased student numbers (several students told us they had enrolled after talking to 2014 students), in this study stage, the formal student evaluation of the course (4.1/5) and teaching (5/5) demonstrated significant improvements. The anonymous and voluntary feedback of the official evaluations provided institutional quantitative data for decision making and was important for the course as part of the Active Learning Trial. In Cycle Two, student comments indicated the interaction with content, their peers, and the teaching team was challenging. This challenge manifested in requests for more information on how to do pitches, yet, this was the focus of the first topic. Students also asked for less repetition of the online content, yet, in seminars and workshops they indicated they had not looked at the online content. Further reflection by the teaching team on how we can be more explicit in directing students to course resources and reinforcing these were the next steps.

Act: The results of the two-year trial ensured the future for MPS at the course and institutional levels. At the individual level of the teaching team, we moved on to other commitments that included further development of MPS as a course and the development of the Bachelor of Business program. The MPS course has become the flagship capstone course for the Bachelor of Business program and was key to the Active Learning Trial that supported the introduction of trimesters (moving to a three-semester academic year versus the past mode of two semesters). All business management courses are now offered with online content and workshops. This has replaced the two-hour lecture, one-hour tutorial format that has existed for decades. As MPS was formatted for active learning, it was an easy transition and has attracted more students. Further success has been in the rollout of MPS in other modes: online offering, offshore, and Open University. The continual improvement and learning through PDSA was instrumental in transforming ideas into reality.

Practice within Practice Reflections

Analysis and reflection enhance scholarly teaching and learning (Masika & Jones, 2016). The cycles of 2014 and 2015 as action learning sets underscored the Active Learning Trial (see Figure 3). The cyclical method with institutional support was fundamental to the continual learning experience for the teaching team (Gapp & Fisher, 2008) with the opportunity to extend our EAR practice. Despite the challenges and the inherent surprises of working with students it has been and exciting, insightful and fulfilling experience (Allen, 2018). We encouraged students to be critical and test their practical creative problem solving, analysis, and communication (Levy & Cannon, 2016) in a safe and professional learning environment.

The continual learning for students moved through formative to summative assessments with most students indicating a meaningful and practical experience.

The power position of a lecturer relative to the student could bias students' feedback. We felt this was diminished on several levels including reliance on the students for genuine insights, the decreased hierarchy of the capstone philosophy in addition to the active learning focus. In fact, at times, the dual roles of lecture and researcher, felt like we were mad scientists experimenting with our students, however, this experience was positively affirmed through our institution's Active Learning Trial data. The independent and flexible learning mode allowed students to work at their own pace, place, and time that was noted as a better fit for busy lifestyles. Seventy percent of students were "excited about the innovative learning format." The active learning challenged students as they interacted and learned from peers which was analogous to the "real world" as they assumed self-direction and responsibility (Pelley, 2014). Students were seen to value the collaboration and interaction with the teaching team and felt that they benefitted from our knowledge and experiences. For the teaching team, we expanded our teaching through the PDSA approach, and the applied reflexive method taken from Cycle One, then onto Cycle Two (Figure 3).
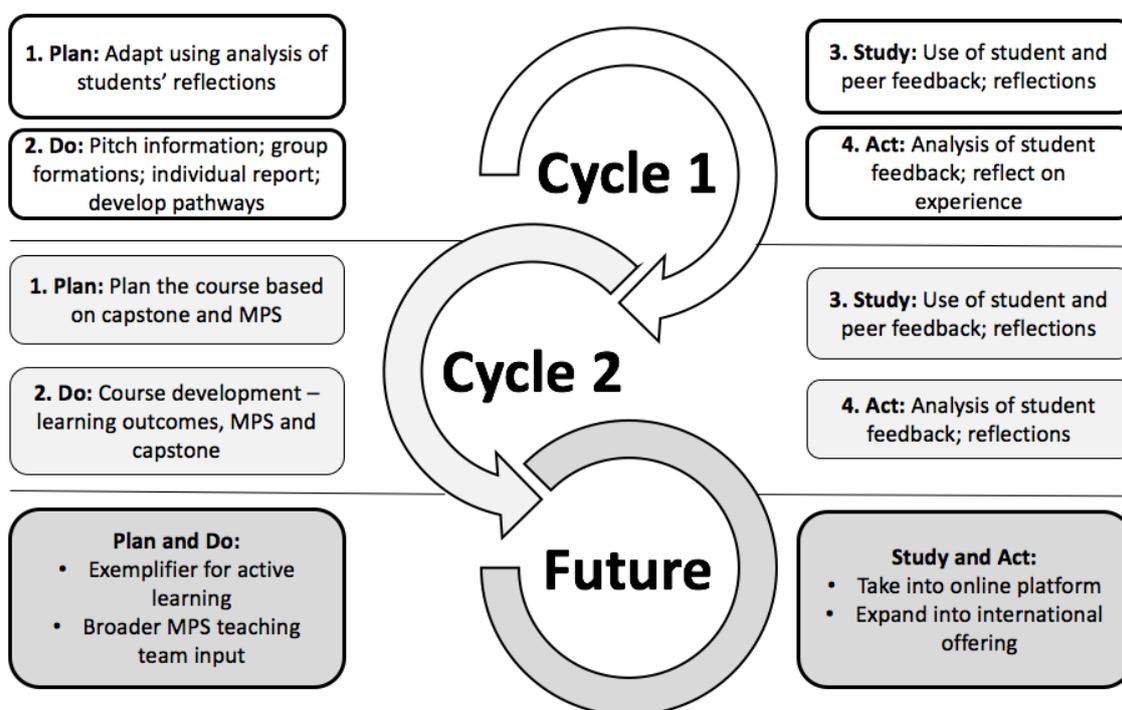

Figure 3: Visualization of the EAR approach over the two offerings. Arrows show the iterative and layered PDSA application.

Due to students' ability to incorporate MPS in their study plan and the "word of mouth" factor, Cycle Two cohort doubled in size. Although anecdotal, this informal feedback indicated our ideas were working. From the smaller Cycle One cohort we gained insight into what worked well and what did not. This allowed us to go into Cycle Two with some clarity and confidence in crafting improvements. The inclusion of students' insights required a leap of faith that increased the success of Cycle Two with the formative pitch and summative report noted. It was exciting to see this improvement as the synthesis of our teaching ideas transformed into students learning and evidenced in students' reflective writing - they were starting to fly (Biggs & Tang, 2011):

> **B10**: Writing a reflective piece is a good way to think back on the things that I learned, identify my strengths and weaknesses and understand how I learn best and what I need to work on, and continue practicing to bring to the workforce
> **A15**: I've never been able to approach a course with whole-hearted abandon before; Management Problem-Solving created an environment in which I could collaborate and communicate in groups (which I have previous found very daunting) with enough confidence to express my ideas and perspectives.

As depicted in Figure 4, the cyclical nature of the PDSA (Deming 1994; Stewart & Gapp, 2018) model conceptually underpinned our collaborative and continuous improvement strategy. Too often the excitement of implementing something new gets trapped in the euphoric early stages of the idea and implementing it (*plan* and *do*). Ensuring an idea is evergreen needs an iterative approach and this is where the overlaying of the PDSA stages align with the reflective nature of EAR (Deming, 1994) to embody continual learning through action learning sets. Ongoing scans, reflection, and feedback are needed for improvement and this took time and effort which was necessary to our espoused values transforming into actions (Argyris, 1997). "Learning can be messy" and persistence is required for continual learning as often ideas cannot be implemented due to costs, effectiveness, efficiencies, technology, or pedagogical challenges (Allen, 2018 p. 309). Gaining continual feedback meant that at points there would be criticisms that were hard to take. Students can be brutal in their feedback.

In reflection of the EAR experience and continual learning, we believe that this approach has affirmed our philosophical approach to education. In practice, EAR requires commitment and determination. It would be easy to do one cycle and then rest on the achievements, however to optimise the outcomes, several cycles are necessary, and this is emphasised in the learning and teaching context with developments such as the progress and innovations of technology continue to emerge. In the higher education environment, continual learning aligned with our style and we were fortunate in having institutional support. The institutional support was not financially based but allowed us to follow through with several iterations which was fundamental to the improvement but is not always possible given changing workloads, program allocation and leadership. The reflective, open, and evidence-based learning within MPS and more broadly the Bachelor of Business program has led to innovations, changes, and enhancements of practice. With the call for improved engagement and constructive alignment in capstone courses (Bailey et al., 2012; Biggs, 1996; Boud, 2010; French et al., 2015) this project has extended the methodology for structuring and learning in the management discipline. This approach has enabled students to develop as active citizens in and beyond the classroom (Kahu, 2013; Masika & Jones, 2016).

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Appendix A

Learning Outcomes:		
1. Understand management problem solving 2. Develop skills in engaging management problems 3. Reflect on the use of ideas to solve management problems		
Topics:	*Assessments:*	
What is problem solving? • What is a pitch? Engagement model	**Creative Synthesis** (30%) 6 x 5% - in class Group work	Informal pitch (presentation) of working with a given problem
Critical analysis Wicked problems Creative problem solving Reflective thinking and learning	**Individual Report** (30%)	Building on the creative synthesis to present a business report based on a contemporary management news story.
Meditating on a problem Lateral thinking Systems thinking . Non-routine problems	**Individual Reflection** (40%)	Reflection on experience, learning and understanding. Emphasis on being constructive about their individual experience.

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