

*Teaching Tip*  
**Threaded Case-Studies to Deepen Engagement in  
Foundation Business Analytics Courses**

**Reza Kachouie, Stephen Williams, and Harsh Suri**

**Recommended Citation:** Kachouie, R., Williams, S., & Suri, H. (2024). Teaching Tip: Threaded Case-Studies to Deepen Engagement in Foundation Business Analytics Courses. *Journal of Information Systems Education*, 35(2), 112-121. <https://doi.org/10.62273/PZAN1114>

**Article Link:** <https://jise.org/Volume35/n2/JISE2024v35n2pp112-121.html>

Received: December 9, 2022  
First Decision: February 9, 2023  
Accepted: May 30, 2023  
Published: June 15, 2024

Find archived papers, submission instructions, terms of use, and much more at the JISE website:  
<https://jise.org>

ISSN: 2574-3872 (Online) 1055-3096 (Print)

---

# **Teaching Tip**

## **Threaded Case-Studies to Deepen Engagement in Foundation Business Analytics Courses**

**Reza Kachouie**

**Stephen Williams**

Deakin Business School

Deakin University

Geelong, Victoria, Australia

[reza.kachouie@deakin.edu.au](mailto:reza.kachouie@deakin.edu.au), [stephen.williams@deakin.edu.au](mailto:stephen.williams@deakin.edu.au)

**Harsh Suri**

Deakin Learning Futures

Deakin University

Geelong, Victoria, Australia

[harsh.suri@deakin.edu.au](mailto:harsh.suri@deakin.edu.au)

### **ABSTRACT**

In today's data-centric world, knowledge and skills in business analytics (BA) have become critical for business professionals to the extent that Foundation BA courses are increasingly being recognised globally as the core component of business programs. However, these courses are characterised by large cohorts of students from diverse backgrounds where deep engagement among students is hard to achieve. This article presents the design and implementation of Threaded Case Studies premised on the Community of Inquiry model to deepen engagement in a Foundation BA course with large and diverse cohorts of students enrolled in online and hybrid modes. The cases were developed with a focus on the social presence, cognitive presence, and teaching presence. The quantitative and qualitative data indicated that the Threaded Case Study approach not only increased learners' pass rate and overall satisfaction with the course, but also increased enthusiasm for the course and optimised their learning by engaging them in authentic case studies while minimising intrinsic cognitive loads. In short, there was a substantial and measurable improvement in student performance, student retention, and student satisfaction. Teaching suggestions are provided for practitioners who intend to maximise learner engagement in similar contexts.

**Keywords:** Case-based learning, Threaded case studies, Business analytics, Student engagement, Online learning

### **1. INTRODUCTION**

In today's data-centric world, knowledge and skills in business analytics (BA) have become critical for business professionals (Zhang et al., 2020) so much so that *Foundation BA* courses are increasingly being recognised as the core and enabling components of the business programs globally. Traditionally, introductory BA course designs in undergraduate programs tended to be premised on the Year-12 level of knowledge and skills in math, business processes, and the English language. However, to improve access and participation, especially from various equity groups, many Australian business schools have waived the pre-requisite requirement of Year 12 math or business subjects for entry into undergraduate programs. As a result of the relaxation or removal of enrolment caps, there has been an exponential increase in the number of students with diverse learning experiences, work-study configurations, and professional aspirations in the first-year core courses of

undergraduate business programs. They are also progressively choosing online or hybrid modes of learning which adds another layer of complexity since effective online courses often require more input from educators (Spector, 2005). The increase in the number of students coupled with their lack of the required background knowledge and choosing online classes poses a considerable challenge in fostering engagement between students and their peers, instructional treatments, and instructors, and therefore hinders deep learning (Trigwell & Prosser, 2020).

Business schools around the world are constantly researching how educational outcomes can be linked and applied to real-world practical situations (Bhattacharya & Kumar, 2022). In doing so, they are shifting towards problem-based approaches that induce and augment students' engagement, since higher student engagement can catalyse learning processes and enhance learning outcomes (Albert & Grzeda, 2015; Bakhru, 2018). One such way is employing the

case method approach which not only encourages learner engagement, but also enables long-term retention of knowledge (Konst & Kairisto-Mertanen, 2020). This method has rarely changed over the last century, so the common practice is implementing individual, brief cases on which students work in each session (Theroux et al., 2004). However, drawing upon the Cognitive Load Theory (Sweller, 2010), we argue that the introduction of a new case in each session may impinge on learners' limited background knowledge, thus taxing their limited working memory in the face of new information and overloading their cognitive resources. To reap the benefits of the case study approach, while minimising the cognitive load on students, we designed and implemented the "Threaded Case Study" approach by designing the entire course around a large case, a particular aspect of which is used for analysis, discussion, and assessment within each session.

In foundation courses with large cohorts, it is also important to pay attention to the emotional and social aspects of learning, especially in online classes. The *Community of Inquiry* (CoI) model (Garrison et al., 2010) has been found to be particularly effective in enhancing engagement among large and diverse cohorts of students, especially in online classes, by paying attention to the cognitive, social, and emotional aspects of learning (Caskurlu et al., 2021). To maintain student engagement within our large cohort of students with diverse prior learning experiences, knowledge and skills, we drew upon the CoI model in planning the practical implementation of our threaded case study approach. In this approach, pedagogical practices are guided by and built on the analyses, discussions, and assessments of the cases implemented in the preceding sessions, all of which are parts of a single, large case. Further, social and affective aspects of teaching and learning are taken into account to further facilitate learner engagement.

In this *Teaching Tip*, we present our insights from designing, implementing, and evaluating Threaded Case Studies as an effective strategy to deepen engagement among large and diverse cohorts of students in a Foundation BA course. The learning objectives of Foundation BA courses prioritize the utilization of data-driven approaches to solve business challenges and communicate results effectively to stakeholders. Specifically, the objectives focus on developing quantitative reasoning skills required to analyze business problems, generate data-driven solutions for complex scenarios, and proficiently communicate findings and solutions for business problems. We begin by discussing the theoretical rationale for our approach followed by a description of its implementation in practice. Evidence related to its impact is discussed and followed by teaching suggestions related to its adoption. We conclude by briefly summarising the practical implications of this paper for Information Systems education.

## 2. BACKGROUND AND CONCEPTUAL DESIGN

Learner engagement, defined as "the quality of effort students themselves devote to educationally purposeful activities that contribute directly to desired outcomes" (Hu & Kuh, 2002, p. 555), has turned into an important variable in the quality of education. It is a multidimensional construct that entails students' emotions, behaviour, and cognition, and has the potential to enhance learning outcomes (Redmond et al., 2018). Although some researchers contend that engagement is a context-free construct, its dimensions are highly context-bound

in that they do not occur in a vacuum (Martin & Borup, 2022). Therefore, there might be several aspects of educational settings that pose challenges to fostering learner engagement.

In Foundation BA courses, several factors have been found to reduce learner engagement. First, students enter the course with varied prior learning experiences and hence little can be assumed in terms of their prior knowledge and skills for scaffolding further learning. Drawing upon the notion of the transition pedagogy (Kift, 2015), it is important to provide relevant resources and opportunities for developing the foundational learning blocks rather than presuming that students come with these skills. Second, the numerical nature of BA courses can trigger math anxiety in some students. Any intervention must support student learning in the cognitive domain as well as the affective domain (Suri & Jones, 1998). Third, many students, at the outset, find quantitative analysis skills very abstract and are not able to see their relevance to business decisions. Fourth, even after students understand the relevance of quantitative analysis skills and are given sufficient resources to scaffold their learning, many of them are not able to devote sufficient time to studying. This becomes particularly challenging for students with insufficient English language skills or mathematical skills. Fifth, many students are increasingly opting for online or hybrid modes of learning, which require more input from educators than face-to-face teaching (Caskurlu et al., 2021; Spector, 2005).

In the face of these challenges, educators are turning to problem-based learning, an approach that deploys problems to engage the learners in the learning process (Song et al., 2022; Yew & Goh, 2016). One of the most beneficial problem-based approaches is the case method approach which links teaching materials to real-world situations, facilitates theory-building, and fosters meaningful discussion and learner engagement (Pilz & Zenner, 2018; Song et al., 2022). In business courses adopting the case study approach, traditionally a new case is discussed each week for teaching the relevant concept where learners reflect on certain problems, collaborate to find and discuss a solution for it, and finally, evaluate the consequences of the suggested solutions. Despite its general efficiency, the case method approach may fall short in fostering meaningful engagement among students who lack certain levels of pre-requisite knowledge and skills. For instance, in Foundation BA courses where students lack adequate levels of prior knowledge and skills in English, business processes and quantitative skills, adopting the case study approach can strain learners' cognitive capacities and hinder their engagement and learning. This view is in line with the Cognitive Load Theory (Sweller et al., 2019).

Cognitive Load Theory (Sweller et al., 2019) builds on human cognitive architecture such as the characteristics of and the relationships between working memory and long-term memory to increase the effectiveness of instruction. It entails three types of cognitive load: intrinsic cognitive load (natural complexity of the content), extraneous cognitive load (the demand caused by inappropriate instructional design), and germane cognitive load (working memory resources devoted to processing intrinsic cognitive load). The cognitive load most relevant to implementing the case method approach is the intrinsic cognitive load. More specifically, new cases that are introduced in each session include high element interactivity, the number of novel and interrelated elements in a case, which may exceed learners' cognitive capacities due to the learners' limited prior knowledge of the course. To take advantage of the

case method approach in fostering deep engagement among our large and diverse cohorts of students while minimizing the intrinsic cognitive load, we redesigned our Foundation BA course by drawing upon the Community of Inquiry (CoI) model (Garrison et al., 2010).

The CoI model, which is premised on Dewey's pragmatist epistemology and holistic emphasis on making the curriculum relevant for learners, identifies the elements crucial to successful higher education, especially when it occurs in an online environment (Garrison et al., 1999). Paying attention to cognitive as well as affective aspects of learning, it focuses on three overlapping key elements or presences in an effective learning environment: cognitive presence, social presence, and teaching presence.

*Cognitive presence*, which is the fundamental element of this model, refers to participants' ability to engage in sustained communication and construct meaning regardless of the configuration of the community. As an element crucial to fostering critical thinking abilities in learners, cognitive presence is hard to implement in online environments. *Social presence* is considered as the students' ability to manifest their personal characteristics in the community and act as "real people." By paying attention to the emotional aspects of learning and creating a sense of group belonging where students feel encouraged to openly engage in sharing their emerging understandings, social presence can foster critical and higher-order thinking, in turn supporting cognitive presence and academic success. Finally, *teaching presence* is associated with the twofold functions of designing the educational experience and facilitating interactions. Teaching presence can be a responsibility of teachers and/or students and function as a means to the higher end of supporting and improving social and cognitive presence (Garrison et al., 2010). In the CoI model, the teacher focuses on creating opportunities for active and collaborative learning by fostering a safe learning community (Cooper & Scriven, 2017). By applying the scientific method and building trust between students and educators (Den Exter et al., 2012), students are encouraged to challenge their perceptions and integrate new knowledge with their existing knowledge, values, and world views. Cognitive presence is highest when students are engaged in exploration triggered by a specific event (Sezgin, 2021).

Building on the theoretical foundations of CoI to reap the benefits of the case study approach and at the same time, manage the cognitive load, we introduced the *Threaded Case Study* approach. This approach encapsulates features that correspond to each of the three elements of the CoI model (more details are provided in the Implementation section). In this approach, the whole course is designed around a large case, a particular aspect of which is used for analysis, discussion, and assessment within each session. This way, the discussions in each session provide a stepping stone for and feed into the discussions in the following session. Applying different analytical techniques to the same case enables students to appreciate how different analyses provide distinct insights from the same dataset. For instance, after performing the descriptive analysis (e.g., calculating summary statistics) in one week, students perform predictive analysis (e.g., regression analysis) of the same case in the following week. This enables them to broaden and deepen their understanding of core concepts and practise new analytical skills within the context of the same case. At the same time, the students are not required to get

familiar with a totally new case and process its numerous novel aspects, thus their cognitive resources are not strained. Additionally, we paid more attention to the affective sides of teaching and learning in our Threaded Case Studies. Therefore, we define the Threaded Case Study approach as a pedagogical method that employs a large case study as the basis for analysis, discussion, and assessment in each session, with discussions progressively building upon each other to effectively manage cognitive load and enhance students' comprehension of core concepts and analytical skills.

We redesigned assessment and learning in our Foundation BA course around three threaded cases. To enhance authentic assessment, our industry partners provided input for all three summative assessment tasks which were based on the real-life data they provided. We now briefly describe the design and learning intent of each of the three cases.

### 3. IMPLEMENTATION

The pedagogical practices in our course built on the three tenets of CoI namely, teaching presence, social presence, and cognitive presence. Based on this premise, three large cases were designed for teaching and assessment throughout the semester. The three parallel Threaded Case Studies aimed to engage students with examples close to their lived experiences and interests and allowed the potential for applying a broad range of core concepts and techniques which were being taught each week. Using a common dataset over the whole teaching period meant that students' efforts were invested in learning and applying core elements of the course, while the intrinsic cognitive load involved in understanding the contextual details of the data was minimised. This enabled students to become immersed in the data, progressively moving to greater depths with their analysis. Students expanded their repertoire of analysis skills which, ultimately, demonstrated informed decision-making. The implementation of our Threaded Case Studies concerning different aspects of the CoI is elaborated in detail below.

#### 3.1 Teaching Presence

Teaching presence is "the design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes" (Anderson et al., 2001, p. 5). We used multiple strategies to sustainably maintain optimal levels of teaching presence by paying careful attention to the design of instructional materials, organisation of course contents, facilitation of discussion among students, and assisting students with their questions. Implementing any teaching intervention at a large scale requires thoughtful coordination, so a core group of academics and tutors who were aligned with our teaching goals and methodology met regularly before the start of the teaching term. These meetings and regular personal communications set the tone for others to follow, supported the alignment of the approaches, and provided a forum for sharing any questions or difficulties and collaboratively working out solutions. To ensure the consistent quality of teaching and continuity in learning, all tutors were provided with a common lesson plan that served as a guide for running each week's seminars. We sought to avoid an overly-prescriptive approach seeking to balance the equality principle with each tutor's preferred teaching style. When each assessment task was

submitted, the team held a meeting to discuss the required adaptations and accommodate the changing circumstances.

Various methods of delivering content and communications were considered in our Threaded Case Studies to augment engagement and facilitate discussion. First, as our Threaded Case Study paid attention to both cognitive and affective aspects of teaching and learning, separate online threaded discussions were created for pastoral care and technical support. This created a safe space for interested students to get affective support without distracting other students' attention from learning and technical discussions. It also enabled students to participate in cognitive or affective social learning activities that were relevant to their specific learning needs at the time. Regarding the cognitive aspects, a public electronic discussion board was established to respond to learners' inquiries, which was further broken into separate sections depending on the nature of the enquiry. For example, a sub-discussion board was established for each topic, with others devoted to answering questions on specific elements of the assessment tasks. A frequently-asked-questions section within the discussion board provided direction and responses based on common questions from previous teaching periods. Second, weekly electronic or in-person consultation opportunities were provided for students where they could bring their questions to be further explored in a discussion scenario. Third, *Mentimeter*, an interactive presentation tool that enables presenters to engage audiences in real time through polls, quizzes, and surveys, was used to increase student engagement and participation in seminars. We used a variety of *Mentimeter* question formats to keep seminars engaging. Fourth, a dedicated email inbox was provided for students to raise matters of a more personal nature. Finally, an element of discretion also provided students with the option to switch to the seminar most suited to their learning style and preference. Seeking to constantly encourage attendance, we never refused a student's request to switch between online seminars and accommodated all requests to switch between on-campus seminars.

### **3.2 Social Presence**

Social presence is "the ability of participants to identify with the community (e.g., course of study), communicate purposefully in a trusting environment, and develop interpersonal relationships by way of projecting their individual personalities" (Garrison, 2009, p. 352). We fostered social presence by creating a safe environment and paying careful attention to students' emotional states and mental well-being. Knowing that student anxiety was high, we took pains in week 1 to begin the process of building rapport with our students and openly discussing the elephant in the room – technological and math anxiety about the course. By openly discussing any anxiety students were experiencing in relation to the course and assuring them with messages of support and continuity, we sought to allay their anxiety. From the outset, we took the firm view that unprepared attendance and passive engagement were preferable to non-attendance. A key rule was to only ever be encouraging when engaging with students; we never criticised unprepared students or students who resisted active engagement. Participation was encouraged by constant messages of "instant feedback" and "learn more from our mistakes than our successes."

Seminar tutors came online 30 minutes before the commencement of each session. This provided an opportunity

to meet students in an informal and relaxed mode while providing the opportunity to respond to student questions. Students built relationships with each other, which was a particularly significant supportive environment for students struggling with COVID-driven lockdown isolation. The inclusive and welcoming tone of the pre-seminar online presence flowed into the formal seminar and supported an inclusive and interactive environment.

During the COVID-19 pandemic, it became increasingly obvious that students were struggling with lockdown-induced mental health challenges, therefore, every seminar commenced with a short *Mentimeter* activity promoting practical good mental health habits. For example, one week, we asked students to share practical good mental health habits that they have been implementing during the lockdown. Some themes, such as exercise, mindfulness, and staying connected with loved ones emerged out of students' input. The *Mentimeter* created during the activity served as a visual reminder for students to prioritize their mental health during these challenging times and provided an opportunity for them to share and learn from each other's strategies for coping with lockdown-induced mental health challenges. To minimise stigma toward mental health issues and to normalise seeking professional health for improving mental well-being, a link to the University's Welfare Team and Counselling Services was provided in the first session. Using *Mentimeter* in the seminar space provided a degree of anonymity which encouraged students to respond to questions without any fear of stigmatisation. The completed Excel spreadsheet from the pre-seminar activity was the starting point for each week's seminar. Students who had not completed the pre-seminar activity still had the benefit of a common starting point with all the other students. This warm-up activity using the introductory slide got students to log on to *Mentimeter* and made allowance for students who arrived a few minutes late for the session. Overall, we took these measures to turn the seminars into constructive and interactive learning spaces: building relationships from the informal pre-seminar discussions, demonstrating empathy through the weekly mental health activity, providing a common starting point in each seminar, and maintaining a non-judgmental approach.

### **3.3 Cognitive Presence**

In our Threaded Case Study, cognitive presence was implemented to motivate students to cognitively engage with the course contents. More specifically, all four aspects of the cognitive presence, i.e., triggering event, exploration, integration, and resolution, were embedded in the three cases that we designed. The triggering occurred both during the lectures and the tutorials where the students were familiarized with the cases and were supposed to identify the problems. In the exploration phase, the students had the chance to reflect on the problem, carry out analyses, and try different solutions in both the tutorial activity and the lecture. The integration phase was present where students discussed the ideas during the lectures and tutorials. In other words, the discussions during the lectures and tutorials enabled the students to reflect on their proposed solutions, analyses, and interpretations and move from their current level of understanding to a level which is more closely associated with the problem (Shea et al., 2022). Finally, the resolution phase was inherent to the entire teaching process since the students were required to apply their solutions

and analyses to the new instances and problems offered by new cases such as Case 2 and Case 3.

The four phases of cognitive presence were relied upon in the design and implementation of the cases. The cases were called Case 1, Case 2, and Case 3 and were used for teaching, practising, and assessment, respectively. Throughout the semester, the students were required to attend lectures and tutorials. The lectures presented each week’s key concepts and aimed to reinforce the concepts and build students’ analytical skills. Then, the lecturer applied the concepts, for instance, descriptive statistics, to Case 1. All students were provided with access to the latest version of Excel and were given enough time to use Excel to execute steps in the analytical process. They were also encouraged to directly ask questions. Case 1 was based on a fictional university in Victoria, Australia. Students could relate to this case study as the context was similar to their own learning context. The case comprised cross-sectional data from a sample of 500 students across twelve variables. Two were categorical data: Gender (Male, Female and Prefer Not to Say) and Origin (Local or International). Of the ten numerical data fields, eight reflected results for all core first-year courses, with lecture attendance and tutorial attendance comprising the final two data fields. The case also included ten years of time-series data. This case created opportunities for practising and evidencing each week’s data analysis concepts and techniques during weekly lectures. An unchanging dataset from week to week allowed teachers and students to fully focus on that week’s concepts and techniques. Little class time was lost each week in explaining the dataset.

Once the lecture finished, the students were asked to run the same statistics on Case 2 before the next lecture. Case 2 involved a fictional business that manufactures and retails common business furniture, such as desks, chairs, and filing cabinets. With a case adopting a straightforward business model and common products and functions, students did not have to undertake the unproductive task of understanding the functions of a complicated or highly technical business. Nevertheless, the case study did provide an example of a business that would illustrate the practical application of concepts and techniques being taught each week. The dataset incorporated cross-sectional data with survey results from a sample of 300 employees across the company. This included categorical data (Gender, Position, Department) and numerical data (Performance, Job Satisfaction, Absence, Years Employed, Salary, and Age). A separate dataset included time-series data for monthly sales over 40 years from the inception of the company to the most recent completed year. A common dataset which was unchanged for the term allowed students to focus on understanding, assimilating, and applying the new concepts and techniques during weekly tutorials and computer laboratory exercises. To support learners, most of whom lacked appropriate levels of technological and background math and statistics knowledge, we provided them with a step-by-step guide to executing techniques taught that week in Excel and was supported by a video. This activity also allowed them to work on the case at their own pace. The activity ended with several thought-provoking questions that were meant to be discussed during the following lecture.

Case 3, which was an authentic case related to an elite national sporting team, was used for assessment. The General Manager was interested in developing data awareness and application within the organisation and agreed for the team to

become a case study for all three summative assessments during a semester. A common dataset was used for each assessment task. The dataset comprised a cross-sectional survey of the membership base, with each data record including three categorical data points and eight numerical data points. A second dataset comprised a time-series of total memberships over the past 15 years. This case was particularly effective in helping students understand the relevance of this course as it created an opportunity to apply what they were learning to solve a real business problem. Students could also use their reports as an artefact in their portfolio to evidence their capacity for solving real business problems. Students were encouraged each week to apply the concepts and techniques being taught to the case study of this elite sporting team. When assignments were ultimately released, with specific questions, students were already familiar with the dataset allowing their effort to be invested wholly in applying the concepts and techniques relevant to each assessment task. Table 1 summarises some of the key characteristics of the cases we designed and implemented in our program.

Case 1	Case 2	Case 3
<b>Usage purpose</b>		
Teaching the concepts in lectures	Students’ practicing with teachers support	Assessment (Case 3 was changed every teaching period)
<b>Basis</b>		
A fictional university established in Victoria	A fictional business that manufactures and retails common business furniture	An authentic case related to an elite national sporting team
<b>Data</b>		
Cross-sectional (a sample of 500 students) and Time series (60 teaching periods).	Cross-sectional (a sample of 300 employees) and Time series (Sales over 480 months).	Cross-sectional (a sample of 250 marketing campaigns) and Time series (new membership over 120 months).
<b>Examples of variables included</b>		
Categorical data: Gender (Male, Female and Prefer Not to Say) and Origin (Local or International) Numerical: Students score in various units Time Series: Students satisfaction across different semesters	Categorical: Employee department and Position Numerical: Performance and Salary Time Series: Sales (\$) in each month	Categorical: Campaign type and Campaign Media Numerical: Campaign Reach, Campaign success Time Series: New memberships in each month

**Table 1. Summary of the Threaded Case Studies**

4. EVIDENCE AND DISCUSSION

This section provides evidence of how our Threaded Case Studies worked within the Foundation BA course where they were implemented. Students’ overall performance in terms of their pass rate on the subject in face-to-face and online classes was calculated and the percentages have been provided for the pilot and after intervention stages. Similarly, student satisfaction, which was measured through the end-of-subject survey, is reported in Table 2. Besides, qualitative data have been collected through the end-of-subject survey where the students provided their insights about different aspects of the Threaded Case Studies implemented in this subject. The qualitative data were then analysed through content analysis where the researchers analysed students’ feedback in a reiterative process until the themes appeared out of the dataset. The themes regarding the efficiency of different aspects of Threaded Case Studies are accompanied by students’ feedback. The findings are followed by a discussion of the reflections about why they were facilitative and what aspects could be improved.

In terms of the pass rate, the project led to continuous improvement in student performance. The first two Threaded Case Studies were introduced in T1-2020 (pilot intervention) and complemented in T1-2021 by the third Threaded Case Study (after intervention). Table 2 shows the improvement in student performance in terms of the pass rate increase in the course compared to the pre-intervention baseline (average of 3 prior trimesters normalized to zero).

	Pilot Intervention		After Intervention		
	T1-2020 n=845	T2-2020 n=848	T1-2021 n=849	T2-2021 n=691	T1-2022 n=760
On-campus students	8%	8%	16%	13%	15%
Online students	15%	14%	21%	24%	23%

Table 2. Improvement in Student Performance in Terms of Pass Rate

Since the initiation of the project, the course has seen year-on-year improvement in student satisfaction, again exceeding its goals. Notably, in T1-2022, when responding to the question about their overall satisfaction with the course, almost 90% of students responded Agree or Strongly Agree. Additionally, the Cloud campus, which had previously been the course’s most challenging cohort, experienced a dramatic improvement in student satisfaction. Qualitative information about students’ perspectives is reported with regard to the key characteristics of our Threaded Case Study. Table 3 shows the improvement in student satisfaction in the course compared to the pre-intervention baseline (average of 3 prior trimesters normalized to zero).

Student’s comments on the qualitative data have been classified with references to the three main characteristics of our Threaded Case Studies, i.e., teaching presence, social presence, and cognitive presence. The findings are presented below.

	Pilot Intervention		After Intervention		
	T1-2020 n=845	T2-2020 n=848	T1-2021 n=849	T2-2021 n=691	T1-2022 n=760
On-campus students	6%	4%	14%	14%	18%
Online students	9%	15%	22%	17%	25%

Table 3. Improvement in Student Satisfaction in the Course

4.1 Teaching Presence

In our Threaded Case Studies, we maintained optimal teaching presence by effective design and organisation of materials, facilitation of discussion among students, and helping students with their enquiries and difficulties. The students’ feedback on the end-of-subject survey indicated that our Threaded Case Studies were successful in fostering teaching presences. For instance, a student (S1) indicated that:

*“Learning resources were well thought out, methodical, and well laid out. Seminars complemented the lectures very well; there was a clear and logical link between the learning outcome/s, the lectures and seminars, and the ensuing assessment” – S1*

As the feedback suggests, the contents were related to the assessment and were effectively organised. Further feedback from another student (S2), however, indicated that the contents were quite hard to understand. In their words:

*“The content of this course was quite difficult to comprehend and required some considerable effort to learn... The practical applications of the content were fantastic. Kudos for the work done with [industry partner]” – S2*

Although S2 pointed to the difficulty associated with learning the materials, they appreciated the authenticity and quality of the threaded case study co-designed by the industry partner. They also went on to acknowledge the helpfulness of the staff in assisting the students by saying:

*“...the input of the teaching team was critical in helping with this. They were all extremely helpful and patient...” – S2*

This comment highlights the effectiveness of our Threaded Case Studies in attending to the teaching presence and providing optimal support to foster students’ engagement with materials and learning. Finally, many students commented on the appropriacy and efficiency of the delivery methods. For instance, S3 indicated that:

*“All the topics selected were well articulated and I feel that appropriate support was given to help understand them. The online tools were very supportive in learning.” – S3*

In our Threaded Case Studies, there were separate threaded discussions devoted to technical support and pastoral care. Moreover, a frequently asked question section, several online polling and engagement activities, and a separate email inbox

were considered to cater to students' technical and pastoral issues as well as academic queries. Many comments have indicated that these tools were effective in providing support to the learners.

#### 4.2 Social Presence

To foster social presence, we paid careful attention to the affective domain or the emotional expression by encouraging "open communication" and "group cohesion" where students were encouraged to share their emerging understandings in an encouraging environment (Garrison et al., 2010). This was done by attending to students' emotional and mental well-being with the help of Mentimeter activities, building an effective rapport during the informal pre-seminar discussions and maintaining a non-judgmental approach. The students' comments showed that they were highly satisfied with the staff's efforts in fostering social presence. A student (S4) said:

*"[Staff 1] worked hard to make a personal connection with us all, to help us to learn and to make sure that our mental health has been taken care of during this trying time... He puts so much time and effort into making our online learning engaging... His seminars and consultations have always been a safe space to ask questions and learn from our mistakes."* – S4

Many students expressed their appreciation for how the Threaded Case Studies and the lecture and seminar format built their confidence and capacity for working on real-world business problems. For instance, S5 acknowledged:

*"I give this feedback a lot to other units and I was so pleased to see this unit already do this. The fact that I was able to use a case study from a real-life business was awesome (even if the data had to be changed to remain confidential). It really allows me to figure out whether this is something I would like to do or not when I start my career, as well as what type of businesses are related to what we were working on."* – S5

Following the conclusion of the T2/2021 teaching term, another student's (S6) feedback was:

*"As a mature age 46-year-old, with very little Excel knowledge, I found it difficult. But thank you for the help, encouragement, and wonderful teaching material. [teaching staff], you did say, 'you will get there,' so I took that belief and carried on... Thank you. [Staff 2], you said in the first lecture how 'data is the future and it's all around us.' I'm definitely seeing this now. I'm planning on volunteering next year to assist in my company's (I'm a Boeing 777 Captain) Flight Data Analysis Program team."* – S6

Making a virtue of a necessity, throughout the COVID-19 pandemic and lockdown, we empathised with our students' personal experiences and demonstrated how data awareness, data analysis, and data communication played a fundamental role in navigating the crisis. Responding to student experience during the pandemic, we provided students with simple mental health exercises every week and provided links to the university health and wellbeing centre.

#### 4.3 Cognitive Presence

Cognitive presence was implemented in our Threaded Case Studies to augment learners' engagement with course contents. There were four aspects to cognitive presence namely, triggering event, exploration, integration, and resolution. It was assumed that alignment of the Threaded Case Studies with these aspects would maximise students' engagement. The data indicated that the design and implementation of Threaded Case Studies were successful in achieving this goal. A student (S7) said:

*"The seminars and the recording for the pre-seminar work and the recording for the seminars – helps to show how things are done and how to discuss the data."* – S7

This comment shows that the contents were successful in introducing the topic and presenting the problems to students. It also indicates that the students could discuss due to the clarity of the materials. S8 also confirmed this point by saying:

*"Having the pre-seminar videos on the task was extremely helpful in allowing the task to be followed along if at any point you got stuck with a problem. The assignment guidance videos were very helpful in doing the assignments, especially for an online student who couldn't be in class to ask questions about it."* – S8

According to S8, the materials allowed them to deal with the problems efficiently despite the difficulties associated with online classes. S9 highlighted the potential of the seminars in fostering reflection in them by saying:

*"The way that the seminar sessions are set up to reflect questions that we will see on the assignments is very helpful, especially seeing as this is an introductory unit to analytics so most people wouldn't have a lot of experience doing this type of work."* – S9

S10 highlighted that the teaching staff were helpful and collaborative enough and this has increased the students' engagement. In their words:

*"[Staff 3] was a great lecturer. I found him incredibly easy to follow; he didn't go too fast like a lot of other lecturers and he explained everything in depth. [Staff 2] was a wonderful tutor, he explained the content methodically and was extremely approachable on the discussion boards. His guidance videos for the assessments were incredibly helpful but the seminar content was what really got me engaged and switched on to analytics, as a result of this unit I will be enrolling in more Business Analytics units in my 2nd and 3rd years."* – S10

Comment from S11 not only admires the teaching practices, but also emphasizes the practicality of the learned knowledge. As they indicated:

*"I think this unit is taught wonderfully. The lectures are easy to follow and go into a lot of depth, and it is not overwhelming. The seminars and pre-seminar tasks really helped me understand Excel functions and how to undertake analysis. The assessment format was so much more useful to me learning and for practical application of what I learnt, as opposed to just studying theory for an exam. This format is much more preferable and I feel like I got so much more out of it."* – S11



This point is most relevant to the resolution aspect of cognitive presence where learners can apply their solutions and analyses to new situations and cases. In the Threaded Case Studies, the students had the chance to apply their newly-learned information to the assessment case (Case 3). This has in turn fostered their resolution whereby they could see the practicality of their learning.

The major points arising from students' feedback have been summarised in Table 4.

### 5. TEACHING SUGGESTIONS

Patton (2012) defines "critical case sampling" as a sampling strategy premised on the logic that if a particular intervention is effective in a critical setting, then it is likely to be effective in other settings, thereby enhancing the transferability of the findings (Suri, 2011). The context described in this Teaching Tip can be logically described as a "critical" case as it manifested most pedagogical challenges confronting educators teaching Foundation BA courses, e.g., a large number of students with varied prior learning experiences and aspirations.

Rather than assuming hypothetical average students, it is important to recognise the diversity of prior learning experiences, study-work-life configurations, and career aspirations of students. This becomes particularly important in a Foundation BA course where students come with different levels of knowledge, skills and experiences with math, English and business processes. Developing a range of student profiles is the approach we successfully adopted to effectively cater to the varied needs of our students in our Threaded Case Studies. Explicitly recognising the learning needs, as well as prior learning experiences of our diverse students, enabled us to design a learning environment where students could personalise their learning pathways. In practical terms, this required us to prepare sufficient resources to scaffold self-paced learning to address gaps in learning for diverse learners, while also optimally challenging students with more advanced skills.

While case studies are an effective strategy to enhance student engagement, discussing a new case in each class offers limited opportunity to delve into deeper analytic strategies. The Threaded Case Study approach is particularly effective for helping students understand how different analytic strategies (e.g., descriptive, inferential, or predictive) have different affordances and offer different insights from the same data set. Threaded Case Studies also minimised intrinsic cognitive load associated with understanding the contextual information of a case, thus enabling students to focus on developing their analytical skills. Threaded Cases should be designed in a way that they provide opportunities to progressively broaden and deepen understanding of core concepts and practise a range of analytical techniques.

To enhance student engagement, it is important to design cases that are authentic and relevant to students' lived experiences and career aspirations. Co-developing cases with industry partners enabled us to design cases based on real data. With one of our industry partners, we developed a case study to solve a real-life problem that the client wanted to be solved, making it mutually beneficial for our partner and us. Further, this strategy created internship opportunities for the top students who had a chance to present their solutions to a real client. To deter plagiarism across cohorts, it is important to design new cases every trimester. However, co-designing cases

takes time. To maximise the return on investment of our industry partners' time, we designed multiple case studies with the same partner.

Theme	Students' Feedback
<b>Teaching Presence</b>	
Efficiency of materials	"... there was a clear and logical link between the learning outcomes, the lectures and seminars, and the ensuing assessment"
	"... The practical applications of the content were fantastic"
	"... the input of the teaching team was critical..."
<b>Social Presence</b>	
Satisfaction with the staff	"[Staff 1] worked hard to help us to learn and to make sure that our mental health has been taken care of ..."
Building confidence for real-world performance	"... It really allows me to figure out whether this is something I would like to do or not when I start my career..."
<b>Cognitive Presence</b>	
Maximising students' engagement	"... the seminars and the recording help to show how things are done and how to discuss the data"
Fostering problem-solving ability	"The way that the seminar sessions are set up to reflect questions that we will see on the assignments is very helpful..."
Relevancy of the learned knowledge	"... The assessment format was so much more useful to me learning and for practical application of what I learnt..."

**Table 4. A Summary of Students' Feedback on Different Aspects of the Threaded Case Studies**

Merely providing an optimally challenging cognitive environment is not enough. It is important to support students emotionally by also acknowledging their feelings and challenges and by explicitly discussing efficient coping strategies. For instance, we used threaded discussions and warm-up Mentimeter activities to build rapport with and among students by explicitly discussing issues like math anxiety or stresses arising from COVID-19 social distancing requirements. By enhancing social presence and teaching presence, we created a safe environment encouraging a positive attitude towards errors where students' errors become an opportunity to learn. Recognising competing pressures on student time, we encouraged all students to participate in discussions at different levels. Commencing each lesson with a quick summary of key points from the pre-class readings enabled all students to benefit from class discussions.

We found designing and implementing Threaded Case Studies based on the CoI model to be particularly effective for improving student engagement, retention, success, and learning outcomes. Nonetheless, designing good Threaded Case Studies with industry partners takes time. To make it sustainable, in our

recent offerings we have removed exams from our assessment plan. This has enabled students to focus their energy on developing analytical skills while applying them in more authentic contexts. In the Foundation BA courses, it is important to challenge the legacy of hurdle exams and consider a more authentic assessment design that encourages students to personalise their learning and develop a solid foundation for learning in later years.

## 6. CONCLUSIONS, LIMITATIONS, AND FUTURE RESEARCH

Foundation BA courses play a critical role in developing the building blocks of core knowledge, skills and attitude essential for business professionals in the contemporary data-centric world (Zhang et al., 2020). Undergraduate business programs in many countries are characterized by large cohorts of students from diverse backgrounds, in terms of prior knowledge and skills in math, business processes and the English language. This paper presents the design, implementation, and evaluation of our approach to using Threaded Case Studies, premised on the CoI model, to deepen engagement in a Foundation BA course with large and diverse cohorts of students enrolled in online and hybrid modes. This course was taken by a large number of students as a core or an elective in their undergraduate programs.

The CoI model (Garrison et al., 2010), focused our attention on enhancing all three key elements of an effective learning environment by strengthening the social presence, cognitive presence, and teaching presence. The Threaded Case Study approach was adopted to efficiently enthuse students and optimise their learning by engaging them in authentic case studies while minimising extraneous cognitive load. There was a substantial and measurable improvement in student performance, student retention, and student satisfaction. The detailed description of this approach along with concrete recommendations will assist other Information Systems educators in enhancing their courses.

There are some potential limitations in the present study that can restrict the generalizability of its findings. The insights shared in this Teaching Tip are based on our self-study rather than an experimental study comparing the effectiveness of Threaded Case Studies with that of using multiple case studies. Also, given the overwhelmingly positive impact of Threaded Case Studies on student engagement, satisfaction and achievement within our context, the ethics of an experimental-control design that would involve subjecting a control group to a teaching strategy that is less optimal (i.e., using multiple case studies) within our contextual configuration becomes questionable (Suri, 2014). Nonetheless, we acknowledge that the closed-ended student satisfaction survey used in the present study made it impossible for us to identify what helped the students the most. Therefore, it would be useful to conduct further studies collecting this information using focus group discussions or open-ended surveys that further explore what aspects of the Threaded Case Studies benefit the students the most.

## 7. REFERENCES

Albert, S., & Grzeda, M. (2015). Reflection in Strategic Management Education. *Journal of Management*

- Education*, 39(5), 650-669.  
<https://doi.org/10.1177/1052562914564872>
- Anderson, T., Rourke, L., Garrison, D. R., & Archer, W. (2001). Assessing Teaching Presence in a Computer Conferencing Context. *Journal of Asynchronous Learning Networks*, 5(2), 1-17.  
<https://doi.org/10.24059/olj.v5i2.1875>
- Bakhru, K. M. (2018). Aligning Teaching Methods for Learning Outcomes: A Need For Educational Change in Management Education Using Quality Function Deployment Approach. *International Journal of Learning and Change*, 10(1), 54-69.  
<https://doi.org/10.1504/IJLC.2018.089533>
- Bhattacharya, S., & Kumar, R. V. (2022). A Study on the Impact of Case Study-Based Teaching Pedagogy in Marketing Education: An Analytic Hierarchy Process Approach. In Rajagopal & R. Behl (Eds.), *Managing Disruptions in Business: Causes, Conflicts, and Control* (pp. 239-261). Springer International Publishing.  
[https://doi.org/10.1007/978-3-030-79709-6\\_13](https://doi.org/10.1007/978-3-030-79709-6_13)
- Caskurlu, S., Richardson, J. C., Maeda, Y., & Kozan, K. (2021). The Qualitative Evidence Behind the Factors Impacting Online Learning Experiences as Informed by the Community of Inquiry Framework: A Thematic Synthesis. *Computers & Education*, 165, 104111.  
<https://doi.org/10.1016/j.compedu.2020.104111>
- Cooper, T., & Scriven, R. (2017). Communities of Inquiry in Curriculum Approach to Online Learning: Strengths and Limitations in Context. *Australasian Journal of Educational Technology*, 33(4), 22-37.  
<https://doi.org/10.14742/ajet.3026>
- Den Exter, K., Rowe, S., Boyd, W., & Lloyd, D. (2012). Using Web 2.0 Technologies for Collaborative Learning in Distance Education—Case Studies from an Australian University. *Future Internet*, 4(1), 216-237.  
<https://doi.org/10.3390/fi4010216>
- Garrison, D. R. (2009). Communities of Inquiry in Online Learning. In P. L. Rogers, G. A. Berg, J. V. Boettcher, C. Howard, L. Justice, & K. D. Schenk (Eds.), *Encyclopedia of Distance Learning*. IGI Global.  
<https://doi.org/10.4018/978-1-60566-198-8.ch052>
- Garrison, D. R., Anderson, T., & Archer, W. (1999). Critical Inquiry in a Text-Based Environment: Computer Conferencing in Higher Education. *The Internet and Higher Education*, 2(2), 87-105.  
[https://doi.org/10.1016/S1096-7516\(00\)00016-6](https://doi.org/10.1016/S1096-7516(00)00016-6)
- Garrison, D. R., Anderson, T., & Archer, W. (2010). The First Decade of the Community of Inquiry Framework: A Retrospective. *The Internet and Higher Education*, 13(1), 5-9. <https://doi.org/10.1016/j.iheduc.2009.10.003>
- Hu, S., & Kuh, G. D. (2002). Being (Dis)Engaged in Educationally Purposeful Activities: The Influences of Student and Institutional Characteristics. *Research in Higher Education*, 43(5), 555-575.  
<https://doi.org/10.1023/A:1020114231387>
- Kift, S. (2015). A Decade of Transition Pedagogy: A Quantum Leap in Conceptualising the First Year Experience. *HERDSA Review of Higher Education*, 2(1), 51-86.
- Konst, T., & Kairisto-Mertanen, L. (2020). Developing Innovation Pedagogy Approach. *On the Horizon*, 28(1), 45-54. <https://doi.org/10.1108/OTH-08-2019-0060>

- Martin, F., & Borup, J. (2022). Online Learner Engagement: Conceptual Definitions, Research Themes, and Supportive Practices. *Educational Psychologist*, 57(3), 162-177. <https://doi.org/10.1080/00461520.2022.2089147>
- Patton, M. Q. (2012). *Essentials of Utilization-Focused Evaluation*. Sage.
- Pilz, M., & Zenner, L. (2018). Using Case Studies in Business Education to Promote Networked Thinking: Findings of an Intervention Study. *Teaching in Higher Education*, 23(3), 325-342. <https://doi.org/10.1080/13562517.2017.1382467>
- Redmond, P., Abawi, L., Brown, A., Henderson, R., & Heffernan, A. (2018). An Online Engagement Framework for Higher Education. *Online Learning*, 22(1), 183-204. <https://doi.org/10.24059/olj.v22i1.1175>
- Sezgin, S. (2021). Cognitive Relations in Online Learning: Change of Cognitive Presence and Participation in Online Discussions Based on Cognitive Style. *Participatory Educational Research*, 8(1), 344-361. <https://doi.org/10.17275/per.21.20.8.1>
- Shea, P., Richardson, J., & Swan, K. (2022). Building Bridges to Advance the Community of Inquiry Framework for Online Learning. *Educational Psychologist*, 57(3), 148-161. <https://doi.org/10.1080/00461520.2022.2089989>
- Song, B. L., Lee, K. L., Liew, C. Y., Ho, R. C., & Lin, W. L. (2022). Business Students' Perspectives on Case Method Coaching for Problem-Based Learning: Impacts on Student Engagement and Learning Performance in Higher Education. *Education + Training*, 64(3), 416-432. <https://doi.org/10.1108/ET-03-2021-0106>
- Spector, J. M. (2005). Time Demands in Online Instruction. *Distance Education*, 26(1), 5-27. <https://doi.org/10.1080/01587910500081251>
- Suri, H. (2011). Purposeful Sampling in Qualitative Research Synthesis. *Qualitative Research Journal*, 11(2), 63-75. <https://doi.org/10.3316/QRJ1102063>
- Suri, H. (2014). *Towards Methodologically Inclusive Research Synthesis*. Routledge. <https://doi.org/10.4324/9780203383193>
- Suri, H., & Jones, T. (1998). Mathematics Anxiety: The Role of Teachers in Prevention and Cure. In J. Gough & J. Mousley (Eds.), *Mathematics: Exploring All Angles. Refereed Proceedings of the Thirty-Fifth Annual Conference of the Mathematical Association of Victoria Held in Melbourne* (pp. 435-440). Mathematical Association of Victoria.
- Sweller, J. (2010). Cognitive Load Theory: Recent Theoretical Advances. In *Cognitive Load Theory* (pp. 29-47). Cambridge University Press. <https://doi.org/10.1017/CBO9780511844744.004>
- Sweller, J., van Merriënboer, J. J. G., & Paas, F. (2019). Cognitive Architecture and Instructional Design: 20 Years Later. *Educational Psychology Review*, 31(2), 261-292. <https://doi.org/10.1007/s10648-019-09465-5>
- Theroux, J., Carpenter, C., & Kilbane, C. (2004). Experimental Online Case Study for a Breakthrough in Student Engagement: Focus Group Results. *Journal of Asynchronous Learning Networks*, 8(3), 71-83. <https://doi.org/10.24059/olj.v8i3.1822>
- Trigwell, K. A., & Prosser, M. (2020). *Exploring University Teaching and Learning: Experience and Context* [Online]. Palgrave Pivot. <https://doi.org/10.1007/978-3-030-50830-2>
- Yew, E. H. J., & Goh, K. (2016). Problem-Based Learning: An Overview of Its Process and Impact on Learning. *Health Professions Education*, 2(2), 75-79. <https://doi.org/10.1016/j.hpe.2016.01.004>
- Zhang, L., Chen, F., & Wei, W. (2020). Teaching Tip: A Foundation Course in Business Analytics: Design and Implementation at Two Universities. *Journal of Information Systems Education*, 31(4), 244-259.

## AUTHOR BIOGRAPHIES

**Reza Kachouie** is the Director of Teaching and a senior lecturer

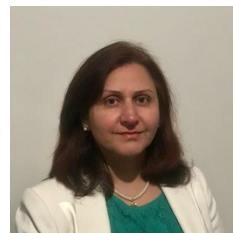


at the Department of Information Systems and Business Analytics at Deakin Business School. With a multi-disciplinary background in applied mathematics, engineering, entrepreneurship, and marketing, Reza has extensive experience working in both academia and industry. He has received multiple local and national awards, recognizing his outstanding contributions to student learning. His research interests include analytics education, dynamic capabilities, value innovation, opportunity creation, marketing analytics, and human-robot interaction. He has extensively published in prestigious journals such as the *Journal of the Academy of Marketing Science*, *European Journal of Marketing*, *Journal of Business Research*, and *International Journal of Innovation Management*.

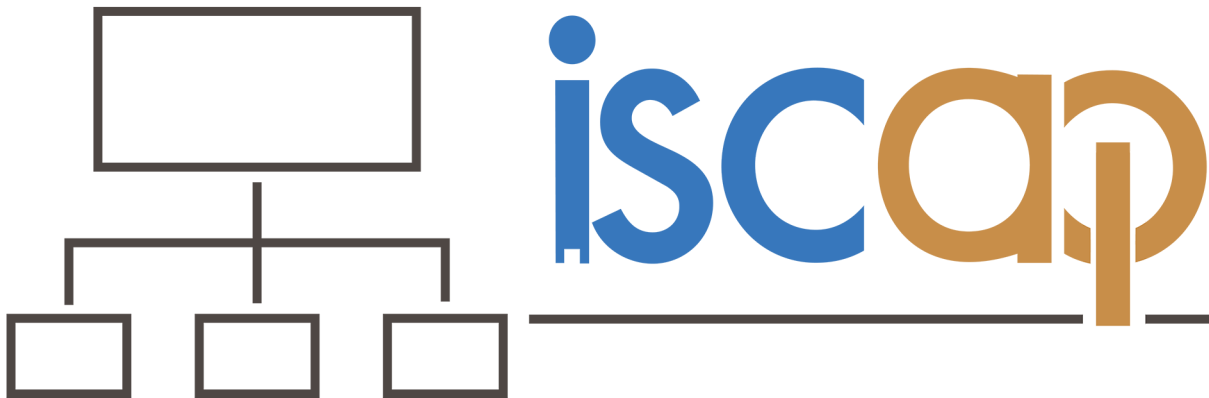
**Stephen Williams** has been teaching as a sessional academic at the Deakin Business School since 2011. He is an Associate of Chartered Accountant Australia and New Zealand, and holds an MBA from Edinburgh University. Stephen is a dual winner of the Deakin Vice Chancellor's Award for Academic Excellence and was included in the 2022 citations of the Australian Awards for University Teaching. Prior to joining the Deakin University, Stephen had over 30 years of experience in the investment and pension/superannuation industry gained in Australia and the UK.



**Harsh Suri** is an honorary associate professor at Deakin University. With a strong nexus between her teaching and research, her leadership in each of these domains has been recognized through multiple awards locally, nationally, and internationally. She has conceptualized and led the operationalization of strategic curriculum enhancement projects across four large Australian universities. Her research interests include evidence-based education, technology-enhanced learning, graduate employability, and sustainability education. She has published in top-tier educational journals and her research monograph has been published in the Routledge Research in Education Series.



## INFORMATION SYSTEMS & COMPUTING ACADEMIC PROFESSIONALS



### STATEMENT OF PEER REVIEW INTEGRITY

All papers published in the *Journal of Information Systems Education* have undergone rigorous peer review. This includes an initial editor screening and double-blind refereeing by three or more expert referees.

Copyright ©2024 by the Information Systems & Computing Academic Professionals, Inc. (ISCAP). Permission to make digital or hard copies of all or part of this journal for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial use. All copies must bear this notice and full citation. Permission from the Editor is required to post to servers, redistribute to lists, or utilize in a for-profit or commercial use. Permission requests should be sent to the Editor-in-Chief, *Journal of Information Systems Education*, [editor@jise.org](mailto:editor@jise.org).

ISSN: 2574-3872 (Online) 1055-3096 (Print)