

The Use of C.A.R.E. Method to Foster Students' Engagement and Motivation to Learn in an Online Undergraduate Accounting Subject

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Abstract: *Academic staff members often face problems of student disengagement when teaching online. Disengaged students are usually not motivated to learn and have unsatisfactory academic achievement. Using Design-based research methodology, this study explained the use of C.A.R.E. (contextualisation, application, reflection and evaluation) method to teach an online undergraduate Accounting subject. The subject was a final Year subject of a three-year business degree programme. 86 students have attempted this subject. C.A.R.E. method was designed using situated learning theory. Contextualisation of content knowledge was achieved through a YouTube video series called 'Classroom in the World'. The videos showed the application of the content knowledge in a specific context. Application of the content knowledge was achieved through group discussions during online tutorial classes, using case study questions. Students were then asked to write reflective journals to reflect on their learning experience at the end of the semester. The final assessment task was an open-book case study, examining the application of the content knowledge in a business context. A review from the students' feedback at the end of the semester showed that the video series was helpful to engage, motivate and help them understand and apply the content knowledge to context. The average marks of the final assessment as well as data from learning analytics of two semesters were compared. There was a 13% increase in the average final assessment marks over the previous semester. Learning analytics showed a 29% increase in the weekly average page viewed and 61% increase in the weekly average number of participations. This study has demonstrated that C.A.R.E. method has helped foster student engagement, motivation to learn, and academic achievement. This study provides valuable insight into the application of C.A.R.E. method to support academic staff members to design online courses that are engaging and motivating to the students.*

Keywords: Students' engagement, online teaching and learning, motivation to learn

1. Introduction

The year 2020 has been a challenging year for many universities worldwide where COVID-19 pandemic has forced the universities to deliver their courses online (Rapanta, Botturi, Goodyear, Guàrdia & Koole, 2020). For many academic staff members, online teaching posed challenges in terms of technological skills as well as online teaching methods. They need to design, organise and deliver content knowledge that is both engaging and motivating students to devote their energy in their study. Disengaged students often have no motivation to learn, and this often leads to unsatisfactory academic achievement.

It is challenging to deliver a course through an online mode. Careful consideration is needed from content knowledge delivery to designing learning activities and assessing the learning outcomes. Academic staff members need an effective teaching method that is theoretically grounded to guide them through this designing process. This study, using design-based research methodology, explained how C.A.R.E. method of teaching can be used to teach an Accounting subject in online mode.

2. Literature Review

Situated Learning Theories

According to situated learning theory, learning cannot be achieved when a content knowledge is separated from the context in which it occurs. Hence, students need to learn content knowledge in a contextual setting (Lave, 1993; McLellan, 1996). Such a learning approach will help the students to understand how content knowledge can be applied in reality. Hence, academic staff members need to utilise various teaching tools (Dimitrios, et al., 2013) to create an authentic learning context embedding the content knowledge and deliver it to students. Such an approach can promote students' deep learning and improve students' motivation to learn (Leite, Fernandes & Figueiredo, 2018). Through group discussions and scaffolding from the lecturer, students would apply the content knowledge into different contexts. Such an approach could promote mastery of the content knowledge hence improving the learning outcomes. Situated learning theory posited that knowledge can be constructed through social interaction (Lave, 1993). Therefore, group discussions in tutorials, either between teacher-to-students or student-to-student, can help foster a better understanding of content knowledge and its application (Orgill, 2007).

The Teaching of Accounting

Teaching is beyond delivering of information. It requires the academic members to design an authentic learning context to make the content knowledge meaningful (Abell 2008; Nilsson, 2008). Accounting is a complex subject to teach (Abell 2008). Conventional teaching methods in accounting seldom bring real-world context into the classroom (Kushniroff, 2012). Accounting students often spend too much time listening to lectures or reading textbooks and not spending enough time engaging in activities that help them understand the application of the content knowledge in a business context. Furthermore, many accounting students have limited knowledge of accounting functions in a business environment (Boyd & Pitre, 2020). Hence, they approach accounting studies using rote learning approach. Therefore, academic staff members must present accounting content in an authentic context to overcome students' rote learning problems.

Dimitrios, et al. (2013) analysed various studies in teaching Accounting and they reported that traditional teaching methods might not promote student's engagement and motivation to learn. Various information and communication technology tools need to be integrated with the traditional teaching methods as they are very popular among the students (e.g., Jill, Wang & Mattia, 2019). By doing so, the contemporary teaching methods could attract students' interest and improve their level of engagement. Besides, teacher-student interaction is also essential to make the learning process more engaging and effective. Jill, Wang and Mattia (2019) studied the effect on students' engagement, motivation to learn and perception on the use of recorded live lecture videos uploaded on YouTube as an alternative to face-to-face classes. The average length of these videos were ten to fifteen minutes. Videos showing worked examples and exam reviews were also uploaded to YouTube for students to view. They found that students only watched, on average, one half of each live lecture videos. This suggested that students prefer

shorter videos. However, it is interesting to note that students watched about 75% of the videos on exam reviews, which were all longer than the live lecture videos. This suggested that students were more exam oriented. It was reported that students' academic performance has improved at the end of the semester. This could be attributed to the videos on exam reviews that have helped them to be more well prepared for the exams. However, no consistent results showing that these YouTube videos have improved students' engagement and motivation to learn. This outcome could be due to the less engaging video content. It was found that almost all of the students believe that the videos were somehow helpful. The finding did not provide strong evidence on the effectiveness of YouTube videos in improving students' academic performance.

Online Teaching

Online teaching poses many challenges for academic staff members. Firstly, their role has changed, from an instructor to a facilitator (Juan, Steegman, Huertas, Martinez & Simosa, 2011). Online teaching is more student-centred, while face-to-face teaching would be more teacher-centred (Coppola et al., 2001). Hence, academic staff members need to use a new pedagogical approach to design and deliver the course content. The traditional classroom method can no longer be applicable in an online class. The delivery of the content knowledge needs to be adjusted to meet the demand of an evolving interactive e-environment (Kember & Kwan, 2000). It cannot be accomplished by incorporating multimedia into the courses (Kebritchi, Lipschuetz & Santiago, 2017). The classes' content needs careful consideration by integrating purposeful multimedia tools to enhance learning (Almala, 2005; Dimitrios, et al., 2013). Hence, academic staff members often find teaching online need more time and energy-consuming than teaching face-to-face classes.

Another challenge faced by academic staff members in online teaching is the lack of technology support (Edge & Loegering, 2000). There is a multitude of technological tools that could be used for online classes. In some cases, academic staff members need to explore and evaluate these tools to determine their suitability for their classes. Hence, their first consideration would be the ease of use and in meeting the learning activities' objectives. Tools such as YouTube videos is one of the popular tools in online teaching. YouTube videos contain functions such as comments and 'Likes', and these are useful to engage students in learning. YouTube videos could present content knowledge in an authentic context and thus increasing students' engagement (Rapanta, et al., 2020). The comments section could be used to get feedback. It could act as a platform for interaction between the lecturer and students as well as among students.

Feeling the absence of both the lecturer and students is another challenge of online teaching. In a face-to-face classroom, both lecturer and students could meet face-to-face and interact. However, this kind of interaction could be absent in online classes. Hence, students might feel isolated and disconnected (McInnery & Roberts, 2004). Such feeling, if not mitigated, could affect the learning outcomes. Students might lose their interests in the course and become disengaged from the learning. Hence, academic staff members must create a community of learning to enhance interaction (Koole, 2014). This community could address the students' social needs and improve learning outcomes (Rapanta, et al., 2020).

Student Engagement and Motivation in Online Learning

Student engagement can be seen from the amount of time and effort the students devoted to specific activities (Kuh, 2009). They might show great interest and high enthusiasm in performing the activities (Axelson & Flick, 2010). Such kind of engagement could be divided

into cognitive and affective (Mandernach, 2015). With high cognitive and affective engagement, students would be willing to invest their energy and attention on the activities, which would often result in better academic achievement. Hence, high student engagement can be seen as the outcome of strong motivation that could, in turn, result in effective learning (Barkley, 2010; Fletcher 2015).

In online learning, student engagement could be assessed from three aspects, i.e. behavioural, emotional and cognitive engagement (Fredericks, Blumenfield & Paris, 2004; Reeve & Tseng, 2011). Behavioural engagement refers to the level of active participation on academic task. Emotional engagement, on the other hand, refers to the reaction of the student with the teachers and fellow students. This may include the sense of connectedness with them. Cognitive engagement refers to the willingness to invest in time and effort to tackle difficult topics or solving complex problems. All these aspects of engagement will affect students' attitudes and motivations towards learning. High student engagement would lead to a high motivation to learn. Students who were always engaged in learning were able to sustain their motivation, resulting in better achievement (Reeve & Tseng, 2011). These causality effects enable the students to continually evaluate and adjust their learning strategies to ensure they achieve their learning goals.

3. Methodology

Research Design

Design-based research (DBR) methodology was used in this study to design C.A.R.E. method for online teaching. DBR is a methodology, especially for educationists. It usually starts with a theory and uses it to develop a tool, a method, practices, or protocols to improve teaching and education research practices (Anderson & Shattuck, 2012). Hence, DBR is meant to convert a theory into practice. Such research often occurs in a real educational context, instead of a laboratory environment. Consequently, it could produce a reliable outcome with high validity. In this study, C.A.R.E. method was designed and tested in an undergraduate Accounting subject that has been delivered online.

The design of C.A.R.E. Method

C.A.R.E. method is designed based on the Situated Learning Theory (Lave, 1993; McLellan, 1996), where specific context was incorporated when presenting the content knowledge. This contextualised knowledge is then cascaded into the learning activities and, eventually, the evaluation or assessment of the learning outcomes. Figure 1 shows the details of the four components of this method, i.e. Contextualisation, Application, Reflection and Evaluation. The explanation and illustration hereafter in this study will be based on a topic in the accounting subject delivered online, i.e., environmental and social management accounting. One of the objectives of this topic was to understand the corporate impact on the environment and the roles of management accountant in environmental management accounting.

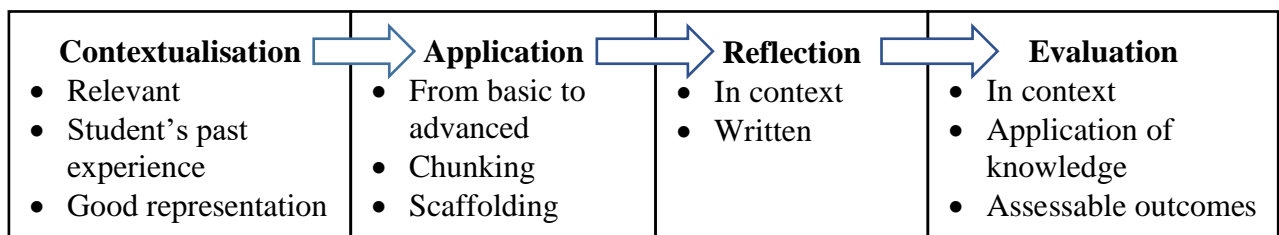


Figure 1: C.A.R.E. Method in Online Teaching

Contextualisation

To contextualise each topic, a YouTube video series called Classroom in the World was made. There was a video for each topic in the subject. The following principles were applied when designing these videos (Jill, et al., 2019):

- Focus on the learning objectives;
- Use an enthusiastic voice; and
- Incorporate context and prompts for tutorial class discussions.

Taking an example for our discussion, a video was made, explaining the environmental impact of an agriculture company, specifically, on how chemical fertiliser in a plantation could impact the water quality around the plantation and eventually affect the company's financial performance. Besides, a brief explanation was also provided on how the polluted water could get into the water treatment plant and become the community's drinking water. The video scene was a stream, with bushes surrounding the stream (see Figure 2). Even though it was not in a plantation, this scene could bring out the context of the topic. That stream was a popular place for picnickers, and students could relate their experience picnicking at the location. The video recorded the sound of water flowing at the creek, added more impact on the context. Subsequent feedback from students showed that this was a good representation of the topic. They found this video very helpful to understand the content knowledge and its application to another context.



Classroom in the World (CITW) #5

Figure 2: One of the videos in Classroom in the World series (Source: Authors')

Application

During online tutorial classes, case study questions based on the content knowledge from the YouTube videos were given and discussed. These cases were of different context in order to provide an unfamiliar context for the students to apply their content knowledge. The lecturer started the discussion with some basic questions, and gradually progressed to advanced problems requiring more cognitive skills. Long questions have usually been chunked into smaller parts to enable students to grasp. Where relevant, the lecturer would probe the students for a more in-depth discussion to scaffold students to develop a deeper understanding on the content knowledge and its application. Besides, online non-graded quizzes were conducted on specific topics during tutorials. The quiz questions were based on the cases presented in the YouTube videos. The outcome of the quizzes was discussed instantaneously to provide feedback to the students. The response rates of these non-graded quizzes were often very high. Nearly the whole tutorial class would participate.

Reflection

Students were required to write a reflective write-up of up to 600 words at the end of the semester, reflecting on their learning experience. Reflection was an essential exercise of learning, and through useful reflection, students could improve their learning outcomes and sustain their motivation to learn (Fung, Abdullah & Hashim, 2019). A marking rubric was given to guide the students to reflect and write. A content analysis of these reflective write-ups demonstrated that they had a deeper understanding of this subject's content knowledge through the YouTube video series. Some even suggested for such kind of videos to be used in other subjects.

Evaluation

All learning outcomes need to be evaluated to determine the effectiveness of students' learning. The final assessment of the subject at the end of the semester was an open-book case study. The case study contained two simulated business cases, examining the students' abilities to apply the content knowledge. These cases involved problem-solving or situation analysis. The case study for the topic illustrated here was a manufacturing plant that produces bed sheets, pillows and bolster cases. The manufacturing processes generated some harmful gases as well as solid waste that was environmentally harmful. Students were asked to analyse and identify the impact of these outcomes. Besides, students were required to suggest how to report these outcomes in the company's corporate report. The outcome of this assessment would be able to demonstrate the level of understanding and the application of its content knowledge to context. Students who have been very engaged in the learning throughout the semester would demonstrate a mastery of knowledge, providing high quality answers in this final assessment.

Sample selection

The C.A.R.E. method was used to teach an Accounting subject that has a total of 86 students in a private university in Malaysia. All of these students were in their final year of study in a three-year degree programme. They have enrolled and followed through this subject for the whole semester. All of these students have passed the pre-requisite subjects before enrolling into this subject. Hence, all of them were assumed to possess the same level of accounting knowledge when they enrolled in this subject.

Data Collection and Analysis

In this study, the Learning Analytics (LA) function on the university's learning management system was used to collect data. LA was the outcome of the shift in education towards the digital era (Buckingham Shum & Crick, 2016). It was used in past studies to generate data for researchers and lecturers to understand students' behaviour on learning management system (Ferguson, 2012; Viberg, Hatakka, Bälter & Mavroudi, 2018). It was also used to evaluate online student engagement (Worsley, 2018). Hence, LA offers a reliable measurement to assess the quality of online learning activities on student engagement.

In this study, LA function generated two groups of data, i.e., the average pages viewed per student per week and the average number of participation per student per week. Data from the previous semester was also extracted to provide a more meaningful comparison. The duration covered was 16 weeks, starting from the beginning of the semester until the final assessment week. This duration is believed to have adequately covered all the learning and assessments activities of one whole semester. Data visualisation in the form of bar charts was used to understand the pattern of student engagement.

The average marks of the final assessment over two semesters were extracted and compared to assess students' achievement. Even though these two semesters did not have an equal student number, all the data and marks used for comparison were on an average student basis. In addition, the results of the students were normally distributed in these two semesters, with no extreme values.

4. Findings

Figure 3 and Table 1 show the weekly average pages viewed per student over 16 weeks of the two consecutive semesters. It can be seen that the weekly average pages viewed per student in the current semester was higher in most of the weeks over the previous semester. The peak was in week 16, the final assessment week where students had the most viewed pages. There was a 29% increase in the total weekly average pages viewed per student over the previous semester. Figure 4 and Table 2 show the weekly average number of participations per student over 16 weeks. Similarly, the weekly average number of participations per student for the current semester was mostly higher than those in the previous semester. There was a 61% increase in the total weekly average number of participations per student in the current semester from a semester earlier. Since all the assessments and learning activities over two semesters were the same, it can be concluded that the use of C.A.R.E. method has increased the student engagement in the current semester significantly.

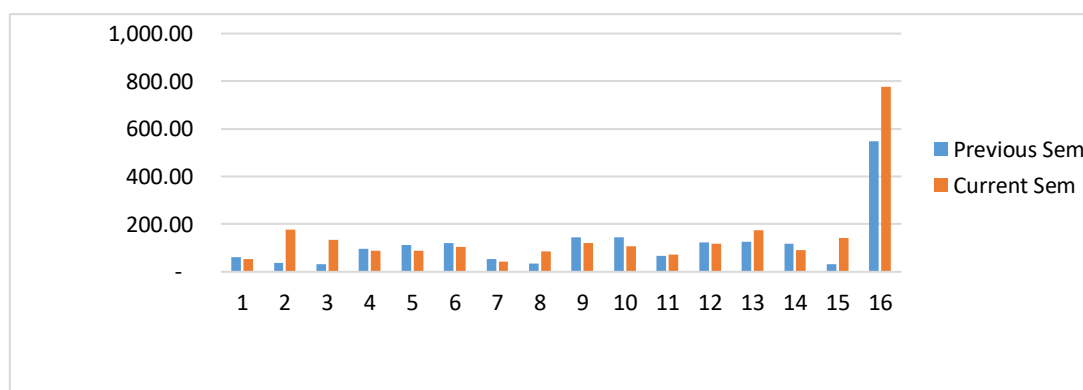


Figure 3: Weekly average pages viewed per student over 16 weeks of two consecutive semesters

Table 1: Weekly average pages viewed per student over 16 weeks of two consecutive semesters

Week No.	1	2	3	4	5	6	7	8		
Previous Sem	61.7	36.3	31.0	97.1	112.3	120.9	53.2	35.0		
Current Sem	54.7	177.4	133.3	87.7	89.7	105.0	44.0	84.6		
Week No.	9	10	11	12	13	14	15	16	Total	Change
Previous Sem	143.9	144.8	67.2	122.1	125.7	117.1	32.2	547.5	1,848	
Current Sem	121.1	107.9	73.0	117.9	174.8	91.0	143.1	776.4	2,381.7	+29%

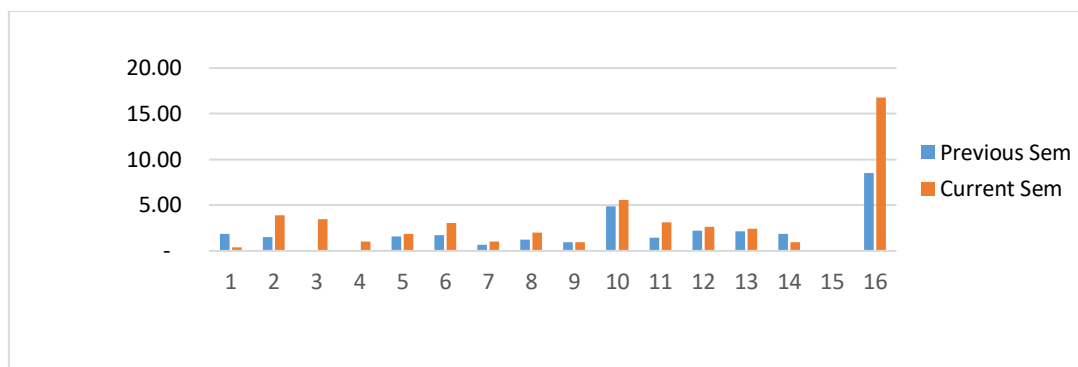


Figure 4: Weekly average number of participations per student over 16 weeks of two consecutive semesters

Table 2: Weekly average number of participations per student over 16 weeks of two consecutive semesters

Week No.	1	2	3	4	5	6	7	8		
Previous Sem	1.8	1.5	-	-	1.6	1.7	0.6	1.2		
Current Sem	0.4	3.9	3.5	1.0	1.9	3.0	1.0	2.0		
Week No.	9	10	11	12	13	14	15	16	Total	Change
Previous Sem	1.0	4.9	1.5	2.2	2.2	1.9	0.0	8.5	30.6	
Current Sem	1.0	5.6	3.1	2.6	2.5	0.9	-	16.8	49.2	+61%

In addition to the LA data, the average mark in the final assessment over the two semesters was compared. There was an increase of 13% in the average mark of the final assessment in the current semester over the previous semester. Given the case study in the final assessment of both semesters had almost equal word count, it could be synthesised that using C.A.R.E. method in designing and delivering the course has improved students' achievement. Such a result could be due to better student engagement through more frequent views of pages on the learning management system and a higher participation rate in the learning activities.

5. Discussion and Conclusion

This study explained the use of C.A.R.E. method to teach an online Accounting subject in an undergraduate programme. This method was grounded in situated learning theory where knowledge content needs to be presented in a context (Lave, 1993; McLellan, 1996). The lecturer and students regularly engaged in group discussions (Orgill, 2007) using the case study questions, providing an authentic context for them to apply the content knowledge. Such an approach has fostered student engagement and improved their motivation to learn. This finding was consistent with the past studies (Barkley, 2010; Fletcher 2015; Fredericks, Blumenfield & Paris, 2004; Reeve & Tseng, 2011).

Indeed, accounting is a subject that requires students to apply content knowledge to a business context (Boyd & Pitre, 2020). Using C.A.R.E. method to teach accounting has helped the lecturer to bring in the context that was crucial for students' effective learning (Kushniroff, 2012). The use of YouTube videos might have contributed to the outcomes of this study (Dimitrios, et al., 2013; Jill, et al., 2019). Besides, this method also emphasised on reflection, which was an essential component of effective learning. Lecturer must build in activities or

assessment that requires the student to reflect on (Fung, Abdullah & Hashim, 2019). The reflective write-up in this study acted as a tool for students to reflect on their learning. Such an assessment had improved their understanding of the content knowledge and their self-efficacy for better achievement. Indeed, the higher average final assessment mark in the current semester over the previous semester could indicate the effectiveness of C.A.R.E. method.

The increase in the weekly average number of pages viewed per student as well as the average number of participations per student confirmed that C.A.R.E. method has improved students' behavioural engagement (Fredericks, Blumenfield & Paris, 2004; Reeve & Tseng, 2011). Students were more willing to invest time to take part in these academic tasks. This could be translated into better cognitive engagement. Such an improvement in engagement could, arguably, fostered their motivation to learn. Students who are actively engaged in learning were able to sustain their motivation, resulting in better achievement. This outcome was supported by the study of Reeve and Tseng (2011).

In conclusion, the use of C.A.R.E. method to teach online Accounting subject has fostered student engagement and motivation to learn. It enabled students to apply the content knowledge in reality and enhanced their learning experience. These improvements have resulted in the improvement of the students' academic achievement. It is pivotal that academic staff members to incorporate context into their delivery of course content.

This study validated the theory of situated learning by putting it in practice through C.A.R.E. method. This method provided a useful guide grounded in situated learning theory, for academic staff members in designing and delivering content knowledge. It also provides some insights into how to create a context and embed the content knowledge that is crucial for the teaching of accounting subjects. Moreover, this study also provided some suggestions on designing assessment tasks with context built-in and aligned with the learning objectives.

The limitation of this study was that it only evaluated C.A.R.E. method in an online Accounting subject. Future studies could apply this method to other online subjects of different nature, e.g. law and business management where there are more rules, theories and concepts to grasp than Accounting. In addition, this study relied on learning analytics data to measure student engagement. Although such data was a good representation of behavioural engagement, future study could collect data from individual students to understand how the teaching using C.A.R.E. method has helped them to be more engaged with their study and improve their motivation to learn.

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