

ORIGINAL RESEARCH ARTICLE

A comparative study on the traditional and intensive delivery of an online course: design and facilitation recommendations

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In this paper, we present findings from a comparative study on a fully online postgraduate course offered in traditional (i.e. 13-week academic session) and intensive (i.e. 6-week academic session) delivery formats. Keeping the course curriculum, structure and quality consistent in both delivery modes, the study investigated student participation and academic performance given different facilitation techniques applied to the discussion forums. Using data from the learning management system and students' final marks, we conducted quantitative and qualitative analysis and found no difference in the academic performance of students in both courses; however, there was a statistically significant relationship between student participation and academic performance in the intensive delivery format but not in the traditional delivery format. We also found differences in the type of interactions in the different delivery formats. Two key takeaways emerge from our study. Firstly, intensive online courses can be as effective as traditional courses in terms of achievement of learning outcomes with variations in learning design, in this case, the facilitation approach used. Secondly, considering the level and nature of interactions, student-centred discussion forums that allow students to assume different roles work well in the intensive delivery format especially in open discussions. These are important findings for academics and practitioners who wish to offer intensive courses without compromising on course quality and student success.

Keywords: online; intensive; facilitation; discussion; interactions; performance

Introduction

A large number of universities are offering intensive courses across a variety of disciplines (Harwood *et al.* 2018; McDonald 2003). Intensive courses typically offer the same learning objectives as a traditional course but over a shorter duration of study. Such courses are being offered to meet the demands of changing demographics of students who wish to partake in higher education. An increasing number of mature aged students are studying part-time due to work or family commitments (Chao, DeRocco, and Flynn 2009). Therefore, the students require the flexibility

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to compress or fast-track their studies depending on their needs (Ellis and Sawyer 2009; Harwood et al. 2018). The duration of traditional and intensive courses varies between institutions. Traditional courses run over 12–15 weeks with an expectation that students will devote around 12 h per week to their studies in the course, whereas an intensive course could range from 4 to 6 weeks with an expectation that students would devote around 22–25 h per week. Although it is clear that intensive courses offer course flexibility and convenience, the impact of the compressed format on learning outcomes is less obvious, especially in purely online courses. Majority of the literature comparing traditional with intensive courses is in the face-to-face context and therefore, findings are not transferrable to online learning. Regardless of the mode of delivery (face-to-face or online), keeping the quality of the course and curriculum content consistent across intensive and traditional modes is a challenge (Chen 2007) but a requirement considering the goal of equivalent learning outcomes for students. There is typically little or no flexibility in the curriculum content; therefore, the onus rests on adaptation of teaching methods and course design in different delivery formats (McDonald 2003; Wlodkowski 2008; Wlodkowski and Ginsberg 2010). In the context of online learning, given common limitations of time and resources faced by academics, modification to the online facilitation approach used presents as the most achievable adaptation to teaching methods.

Considering the need for and dearth of literature on the effectiveness and design of intensive online courses, we conducted a comparative study on an intensive and traditional offering of a purely online graduate level course at a large metropolitan university in Australia. The main objective of the study was to compare student participation and academic performance in the traditional and intensive delivery modes which only differed in duration and the facilitation approach used for the online discussion activities. Specifically, the study was guided by the following research questions: Is there a difference in students' academic performance in the traditional and intensive offering of the course? Do students participate differently in the online discussion forums of the traditional and intensive course? What is the relationship between participation in discussion forums and academic performance in traditional and intensive course? Does the nature of participation in discussion forums in the traditional and intensive course differ? In view of the increasing popularity of intensive online courses and shortage of research in the area, findings from our study provide valuable guidelines to academics and practitioners for the design and facilitation of online discussion forums in traditional and intensive online courses.

Literature review

There is plenty of literature reporting favourable learning outcomes for students taking face-to-face courses in intensive and traditional delivery formats. Research studies report either no difference in learning outcomes (Anastasi 2007; Lovett, Meyer, and Thille 2008) or an improvement in the outcomes (Hall, Wilson, and Sanger 2012; Scott 2003) for students in the intensive delivery mode (Daniel 2000; Davies 2006; Scott and Conrad 1992). Findings of comparative studies on traditional versus intensive delivery of courses in the face-to-face context are not applicable to online courses due to the significantly different pedagogical practices in and affordances of (Gibson 1979) the online space (Harasim 1990). However, in the face-to-face context, the equivalency or perhaps even superiority of intensive courses as compared to traditional courses in terms of students' academic performance prompts the question

of whether the same holds true in the online context. The three comparative studies (Ferguson and De Felice 2010; Gao 2013; Harwood et al. 2018) we have identified on purely online courses corroborate the positive relationship between intensive delivery on student performance. Ferguson and De Felice (2010) examined both academic performance and satisfaction of students who completed an intensive and traditional course for pre-service teachers. In the study, the only difference between the courses was the duration while the content and teaching methods remained the same. They found that students in the intensive course performed better; however, there was no difference in student satisfaction between the traditional and intensive delivery. Likewise, Gao (2013) examined the academic performance of students in a traditional and intensive course first-year introductory course in computer technology and reported higher grades of students in the intensive format. Most recently, Harwood et al. (2018) compared student outcomes and satisfaction in a postgraduate level traditionally delivered course with an intensive online course in the health sciences and found no significant differences in student performance and satisfaction. In this study the two courses differed in pedagogy and curriculum. To date, we have been unable to identify additional comparative studies on online traditional versus intensive courses, a gap in literature reported by Ferguson and De Felice (2010) almost a decade ago, Gao (2013) and most recently by Harwood et al. (2018) as well.

Again, borrowing from literature in the face-to-face context, research studies suggest that typically lecturers of intensive courses modify or adjust teaching methods or techniques to allow for the shorter duration (Daniel 2000; Kretovics, Crowe, and Hyun 2005). Furthermore, it is reported that instructional methodology plays an important role in the success of intensive courses (Grady 2013). In a review of research studies on intensive and traditional courses, Davies (2006) puts the onus of the success of a course, intensive or traditional, on the appropriateness of the teaching methods used. Therefore, adaptation of teaching methods according to the mode of delivery appears critical for course quality and student success. Kuiper, Solomonides, and Hardy (2015) also emphasised that organising teaching and learning through intensive modes of delivery may require different approaches to curriculum development and pedagogy compared to traditional course planning and delivery, especially when the intensive delivery utilises online technologies. The key components of an online course comprise of the learning management system, the course content or curriculum, and the learning design. Broadly, the learning design includes the course structure, learning activities, tools, and facilitation techniques used for online engagement in, for instance, discussion forums. Given that lecturers are often strapped for time, altering the overall pedagogy, structure and activities of courses for traditional and intensive delivery is not a desirable undertaking. Therefore, the most achievable adjustment between the two delivery formats is adaptation to the facilitation approach adopted.

The impact of different online facilitation approaches on student engagement or participation within discussion forums has been the subject of research since the early 1990s (Vlachopoulos and Cowan 2010a). We define facilitation 'to be an activity in which someone (usually a tutor) makes interventions to encourage students to engage with, and achieve, their overall learning outcomes' (Vlachopoulos and Cowan 2010a, p. 214). Facilitation of online discussion forums can be divided into two broad categories: hierarchical or staged models in which students' transition from one stage to the next is facilitated by the tutor and; student-centred non-stratified models that allow students the freedom to assume different roles. Staged models typically focus

on the role of the instructor or tutor who is primarily responsible for ensuring meaningful student engagement. Examples of such models are the Five-Stage Moderation Model (Salmon 2000) and the REEAL Model of Online Facilitation (Bedford 2011). In Salmon's (2000) model, the facilitator engages those students who progress from one stage to the next until they reach the last two stages of knowledge construction and development. Student-centred models of facilitation put the onus of meaningful engagement on students who use different strategies to encourage peer participation (Baran and Correia 2009). Aviv, Erlich, and Ravid (2005) reported a clear relationship between students' level of student responsibility in structured online discussion with higher levels of involvement and critical thinking. An example of one such model is the Ring-Fence Model (Vlachopoulos and Cowan 2010a) in which the role of the facilitator is located outside a ring-fence which is also referred to as the enclosed learning arena. Within the ring-fence, students direct and facilitate their own learning. Vlachopoulos and Cowan (2010b) conceived a range of different roles that a teacher can play in student facilitated discussions, which varied from being a critical friend to that of a summariser and even a discussion rescuer.

Findings of research on both types of facilitation approaches are mixed. For instance, research shows that active participation of the instructor enhances student engagement (Fidalgo and Thormann 2012; Tsiotakis and Jimoyiannis 2016). On the other hand there is evidence that instructor presence does not increase student participation (Zhao and Sullivan 2017). Student-led facilitation strategies are shown to foster student involvement, a greater sense of community, and learning outcomes (Baran and Correia 2009). It is important to note, though, that in online discussions, motivation to participate has been shown to be strongly associated with 'how learners experience and perceive social interaction while they relate to individuals' (Yang et al. 2006, p. 278). Yang et al. (2006) concluded that student-centred facilitation may lead to marginalisation and dis-engagement of low-achieving students who become passive because their goal is not to learn from each other but to satisfy their tutor's priorities with their responses.

What we do know is that the design and facilitation of discussion forums impacts student participation which in turn plays a critical role in fostering learning which communities (Jan 2018; Jan and Vlachopoulos 2018; Palloff and Pratt 2007) have a positive bearing on the learning outcomes (Yang et al. 2016). Due to time lags, asynchronous online interactions take time to establish. In discussion forums that include facilitation approaches based on staged models, students rely on the instructor or tutor to drive the discussion. The challenge of such models is that they take time to work because it is not immediately apparent what the students are supposed to do. In student-centred discussions where there is minimal expectation of intervention or direction from a tutor, students take on different roles and assume ownership of the forum in a relatively shorter period of time. Considering the ultimate goal of equivalent learning outcomes for students in intensive and traditional delivery formats of a course, the aim should be to maximise student participation as higher engagement leads to community formation which is linked to better learning outcomes.

Context of the study

We conducted our study on two offerings of a fully online postgraduate course in education leadership and management at a large metropolitan university in Australia.

The course was offered in semester three (S3) (intensive delivery) 2013 and semester one (S1) (traditional delivery) 2014. The curriculum and design of the course in the learning management system in S3 and S1 were identical. The differences between the courses in the two semesters were the duration of the course, facilitation approach used in the discussion forums and the time gap between each discussion activity. For our purposes, we refer to the different facilitation approaches as student-moderated (SM) and tutor-moderated (TM). S3 ran for a period of 6 weeks and comprised back-to-back SM discussion forums spanning 2 weeks each. S1 ran over 13 weeks and included TM discussion forums which ran over 2 weeks each but were interspersed with other activities. A total of 27 students saw the course to completion in S3 as compared to 21 students in S1. In both semesters, one tutor facilitated the course. Table 1 summarises the differences between the course in S1 and S2. The cohort includes those students who completed the course.

The three discussion forums were identical in design in S3 and S1 but were different from one another. Discussion (D1) was a guided discussion in which students were provided with a reading and a set of questions. In discussion 2 (D2), the students were given a discussion topic but were required to contribute questions for discussion. Discussion 3 (D3) was an open discussion in which students were asked to discuss anything that needed to be addressed from the course syllabus and was of interest to them or was directly linked with the assessments. All discussions were threaded. In both semesters, online participation constituted 10% of the finals marks, and the remaining 90% was allocated to written assignments.

Methodology

We used a mixed-method approach to address the research questions. Data for quantitative and qualitative analyses were obtained from the learning management system (Moodle) at the end of S3 and S1. Data included: (1) the online messages posted by the students and the online tutor in the online discussion forums and (2) the final student marks in the courses under scrutiny. Statistical and social network analysis (SNA) was used to examine the difference in overall academic performance, participation and the relationship between participation and performance. SNA was conducted in UCINet 6.0 and SPSS was used for statistical analysis. Qualitative analysis of the content of posts made in the discussion forums was used to determine the nature of interactions. Qualitative analysis was conducted using NVivo. The research was conducted throughout in accordance with the regulations and ethical codes of the concerned University. Appropriate precautions were taken to protect the confidentiality of participants. The researcher obtained written permission from the participants to use the data for research purposes and publication.

Table 1. Differences between the intensive (S3) and traditional (S1) courses.

Differences	Semester 3 (S3), 2013	Semester 1 (S1), 2014
Cohort	27 students 1 tutor	21 students 1 tutor
Duration	6 weeks	13 weeks
Discussion (3 forums) Facilitation approach	2 weeks each consecutive Student-moderated	2 weeks each gaps in-between Tutor-moderated

Quantitative analysis

SNA is an analytical technique used for investigating relationships or ties between nodes in a network. The nodes in our study were the students and the tutors. The relationships were the interactions within the discussion forums between the nodes. Note that we use the terms ties and interactions interchangeably. Therefore, students who only posted to the discussion forums but did not interact with others (isolates) were not included in the SNA measures calculated. The networks were weighted and directed meaning the number of times two nodes interacted and original posts versus responses to posts were identified. SNA measures of density and individual degree centralities were calculated for networks from D1, D2 and D3 in both semesters and for all nodes. The *density* of a network is calculated by the total number of interactions or ties divided by the total number of possible ties. The *in- and out-degree centrality* of a node is the number of incoming and outgoing posts for each node, that is, the number of posts made and responses received. Given the number of participants in the study, non-parametric measures of correlations, specifically the Mann–Whitney U Test and Spearman Rank-Order Correlation, were used as tests of significance.

Qualitative analysis

Qualitative content analysis was conducted on all posts (including isolates) in the three discussion forums in S3 and S1. The illocutionary unit (Howell-Richardson and Miller 1996) was used as the unit of analysis. The illocutionary unit focuses on the linguistic properties of the messages and the individual to whom the message is directed. All messages were coded for the type of interactions using the coding scheme given in Table 2.

Findings

Quantitative analysis

The final mark obtained in the courses was taken as a measure of overall academic performance. Table 3 shows summary statistics on the final marks in both courses in

Table 2. Interaction coding scheme.

Type of interaction	Code	Criteria
Group proactive	GPI	Student or tutor looks for a response from someone in the group – anyone
Group reactive	GRI	Student or tutor responds to one of the above, or some other message, playing reply back to group
Monologue	M	A new thread. No evidence of interaction with any other participant
Individual proactive	PI	Student or tutor looks for a response from a specific contributor, or even asks for it
Quasi interactive	QI	Threaded (follow-up) message where tutor or student acknowledges previous message but continues with a new idea/concept
Individual reactive	RI	Student of tutor responds to one of the above, or some other message, from and then to a specific contributor

Note: For detailed indicators of criteria, refer to Vlachopoulos (2012).

Table 3. Summary statistics of final marks.				
Statistic	S3	S1		
No. of students	27	21		
Mean	70.46	70.73		
Median	69.50	72.50		
Std. deviation	7.909	10.986		
Range	33	52		
Minimum	55	33		
Maximum	88	85		

Table 3. Summary statistics of final marks.

S3 and S1. Interestingly, the average marks in both semesters are the same as that of the highest marks in S3 and lowest in S1. Mann–Whitney U test conducted on the final marks of students in S3 and S1did not indicate any statistically significant (p < 0.001) difference in the academic performance of students in the traditional and intensive cohorts.

Table 4 shows the network size, total number of posts and ties or interactions, and density for each of the discussion forums in S3 and S1.

The density of the networks in D1 and D2 in S1 (TM) is slightly higher than in S3 (SM). However, the density of the network from D3 in S1 (TM) is substantially less than in S3 (SM). To test for significance of differences in densities, we conducted Mann–Whitney U Tests on the in- and out-degree centralities (in- and outgoing posts) for all nodes. We found no statistically significant difference in the centralities for D1 and D2. However, for D3, the Mann–Whitney U Test indicated that the in-degree centralities were significantly greater for D3 in S3 (Mdn = 6.00) than D3 in S1 (Mdn = 3.00), U = 130, p = 0.007. Similarly, the out-degree centralities (outgoing posts) were greater for D3 in S3 (Mdn = 5.00) than for D3 in S1 (Mdn = 2.00), U = 95, p < 0.001. This leads to the conclusion that the SM, an open-ended discussion forum (D3) in the intensive course (S3), was most effective in engaging students.

To ascertain the relationship between interactions or participation and academic performance, we conducted Spearman Rank-Order correlations between in- and out-degree centralities in the discussion forums and the final marks of the students in S3 and S1. The correlations obtained are shown in Table 5.

As can be seen, in S3, the in- and out-degree centralities are positively correlated with the final marks in all except one case, that is, D1 and in-degree centralities. On the other hand, in S1, only one correlation is significantly positive, that is, D1 and out-degree centralities. This is an important finding as it indicates that in the SM discussion forums of S3, regardless of the design of the discussion activity, students' level of participation is positively linked to academic performance, meaning that those students who interacted more performed better. In S1, while the overall academic performance of students is not statistically different from the students in S3 (as discussed above), participation in the discussion activities does not have any statistically significant relationship with academic performance. Given that online participation constituted only 10% of the final marks, this finding has important implications but does not support a conclusive relationship between participation and academic performance.

Summarising findings from the quantitative analysis, we conclude that the duration over which the course was delivered had no impact on the learning outcomes of students as they performed comparably. Furthermore, our findings show that in the

Table 4. Network size, ties and density.

Measure	S3 (SM)			S1 (TM)		
	D1	D2	D3	D1	D2	D3
No. of students	27	27	27	21	21	21
No. of tutors	1	1	1	1	1	1
Network size ¹	28	28	28	23	22	20
No. of posts	204	185	235	112	115	86
No. of ties	120	109	154	91	71	54
Density	0.32	0.29	0.41	0.36	0.31	0.28

Notes: 1Network size includes only those students who participated in the discussions, that is, isolates are excluded.

Table 5. Spearman rho's correlations between degree centralities and performance.

Centrality		S3 Marks	S1 Marks
D1 in-degree	Correlations	0.371	0.300
_	Sig. (2-tailed)	0.057	0.186
	N	27	21
D1 out-degree	Correlations	0.403*	0.567**
_	Sig. (2-tailed)	0.037	0.007
	N	27	21
D2 in-degree	Correlations	0.592**	0.260
_	Sig. (2-tailed)	0.001	0.254
	N	27	21
D2 out-degree	Correlations	0.417*	0.326
_	Sig. (2-tailed)	0.030	0.149
	N	27	21
D3 in-degree	Correlations	0.432*	0.017
	Sig. (2-tailed)	0.028	0.943
	N	27	21
D3 out-degree	Correlations	0.500**	0.118
_	Sig. (2-tailed)	0.009	0.632
	N	27	21

Notes: $*p \le 0.05$, $**p \le 0.01$

intensive course, higher participation in the SM discussion forums is linked with overall higher performance in the course. Finally, we find that, at least at the postgraduate level, open-ended discussions invite greater participation. The next section presents findings from qualitative content analysis of all posts in S3 and S1 discussion forums conducted to determine if there is a relationship between higher participation and the type of interactions.

Qualitative analysis

All posts from S3 and S1 were extracted from the learning management system and coded using the coding scheme given in Table 2. Each post or part thereof was assigned a code. Posts or parts of it that belonged to more than one category were assigned to multiple categories. Two researchers independently performed the coding and achieved a Cohen's (1960) Kappa interrater reliability of 73%. Results of the coding are shown in Table 6.

Table 6. Number of codes.

Discussion forums	S3 (SM)	S1 (TM)	S3 – S1 Difference
Discussion 1 (D1)	227	121	-47%
Discussion 2 (D2)	181	115	-36%
Discussion 3 (D3)	229	85	-63%

Chart 1. Discussion 1.

Chart 2. Discussion 2.

Chart 3. Discussion 3.

As shown in Table 6, the SM discussion forums of S3 had a substantially higher number of codes as compared to the TM discussion in S1 in line with the differences in the total number of posts made (see Table 4). The largest differential of 63% occurs in the open-ended D3 which is not surprising since D3 in S3 had the highest participation rate overall and D3 in S1, the lowest. Charts 1, 2 and 3 depict the type of posts in each of the discussion forums in S3 and S1. Overall, the charts clearly show that the higher interactions in the SM discussion forums in S3 are linked with the number of posts or parts of a post that were coded as individual reactive. If we consider each of the discussion activities individually, Chart 1 shows that the largest number of codes in the SM-guided discussion (D1) in S3 is individual reactive as compared to monologues in the TM discussion in S1. This indicates reciprocal exchange amongst students. Chart 2 shows that in D2 in which students are provided the topic of discussion but expected to raise their own questions, the number of individual reactive and individual proactive codes in S3 (SM) are again more than S1 (TM). Again, this points to a greater mutual exchange and discourse between students. In the open-ended discussion (D3), a larger total number of codes in S3 (SM) are expected since the overall participation is significantly higher; however, what is interesting to note in Chart 3 is that the majority of the codes are *individual reactive* followed by individual proactive. This clearly shows the high level of interactions and mutual engagement of students which points to not only the effectiveness of the SM approach to facilitation but also to the effectiveness of open-ended discussion forums in terms of fostering engagement and mutual exchange – requisites for formation of learning communities. Thus, the qualitative analysis supports and further elaborates on our quantitative findings.

Discussion

The impetus for conducting the study came from the increasing demand for intensive online courses and lack of research on the impact of such courses on the learning outcomes of students. The key objective of the study was to compare overall academic performance and participation in online discussion activities of students in the traditional and intensive delivery modes of an online course. We wanted to ascertain whether modification of the facilitation approach used for the online discussion activities is an effective modification to the design of the course for compressed delivery. We used quantitative and qualitative analyses to investigate the differences in students' academic performance, differences in student participation in the online discussion activities, the relationship between participation and academic performance and differences in the nature of participation in the online discussion forums.

The course comprised three differently designed discussion activities. D1 was a guided discussion, D2 was topic driven but without guiding questions and D3 was open-ended. The discussion activities in the intensive version of the course in S3 were SM and those in the traditional course (S1) were TM. We found no statistically significant difference in the academic performance of students in S3 and S1. From this we conclude that, given a different facilitation approach, that is, SM discussions, the compressed duration of the course did not have any impact on learning outcomes of students. Therefore, our study corroborates findings of studies that report equivalency of learning outcomes in intensive and traditional modes of delivery in the face-to-face (e.g. Lovett, Meyer, and Thille 2008) and online context (e.g. Harwood et al. 2018). We found no statistically significant difference in participation in D1 and D2 in S3 and S1; however, we did find a statistically significant difference in participation in D3 in S3 and S1. The finding of the lack of a significant relationship between the facilitation approach used and participation in D1 and D2 is in line with findings in previous research (e.g. Fidalgo and Thormann 2012; Zhao and Sullivan 2017). However, our findings of the statistically significant difference in participation in D3 in S3 and S1 indicates that a SM facilitation approach may be most effective if the discussion activity is open-ended which allows students the freedom to direct their own learning. We also found a statistically significant positive relationship between participation and academic performance in the intensive delivery mode (S3) but not in the traditional delivery (S1) mode. We cannot arrive at a definitive conclusion based on this finding since, in the course, participation only constituted 10% of the final grade. However, the finding does raise the question of whether assessment allocations truly reflect the learning that takes place via participation, engagement and discourse in online courses (McDonald 2003). One cannot help but wonder, had participation been allocated a higher percentage to the final grades in this course, given the significant differences in interactions in D3 between the two offerings, would the learning outcomes have been equivalent?

The qualitative analysis showed the dominance of *individual reactive* posts in the discussion forum with the highest participation rate, that is, D3 in S3. From this, we conclude mutual or reciprocal engagement of students. On the other hand, in the discussion forum with the lowest participation rate, that is, D3 in S1, even though the number of *individual reactive* posts is the highest, there are a sizeable number of *monologues* as well which is indicative of disengaged students. Thus, our findings from the qualitative analysis provide further support to the effectiveness of SM open-ended discussion activities in fostering student participation.

Findings of our study are encouraging for those academics and practitioners who are faced with the challenge of compressing courses for intensive delivery without compromising on content and quality. It is apparent that by manipulating the design of a course, in this case, the facilitation approach used, one can achieve similar learning outcomes in compressed courses. Limitations of our study include the lack of control of confounding factors that might have impacted student participation and academic performance, for instance, other personal and professional commitments of students during the course. Given the global demand in online intensive courses and a serious gap in research on the design and effectiveness of such courses, we believe that findings from our study make a valuable contribution to the sparse literature in the area.

Future research

There may be other factors that influence participation, and exploring these potential factors could be part of further research. Other factors may relate to what activities were scheduled or due concurrently in the course or other opportunities for students to have their questions answered outside the online discussion forum. Further research could also look into the factors that appear to influence the way in which online facilitators decide when and how to intervene in SM discussions in short time-frames, such as in intensive online courses. In particular, the field might benefit by a study which explores the extent to which these factors may influence the facilitators to operate in a proactive or a reactive way, and the impact of differences in their practice on students' learning and development. This would establish wider applicability for this study's suggestions.

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