The impact of a spring cycle blended curriculum model on learning: A case study

Santhakumari Thanasingam
Language and Communication Centre
Nanyang Technological University

Swee Kit Alan Soong
Centre for Educational Development
Nanyang Technological University

Chun Hu
Faculty of Education and Social Work
University of Sydney

This study evaluates the impact of the Spring Cycle Blended Curriculum (SCBC) model on students learning in an English Proficiency course for undergraduates. The model took a blended learning approach, intending to combine the best of face-to-face interactions and the affordance provided by the Internet. The model was used over one and a half academic years to teach English Proficiency at the Nanyang Technological University, Singapore. Pre- and post-course surveys, student focus group discussions, discourse analysis and samples of student writing were used to evaluate the impact on student's learning which in this study was their ability to write better paragraphs. The survey and focus group data on student's perceptions showed that the model helped them to gain knowledge and regulate their learning to achieve the target writing outcomes. The workshop mode of instruction enabled students to learn from systematic input and discussion with peers and tutors. The consultation mode of instruction helped students understand their mistakes. The online mode of instruction enabled them to revisit activities so they could review what they needed to learn. In addition, the online discussion forum activity provided additional student-centred feedback which enabled students to ask questions, and to clarify and negotiate their understanding of paragraph building features. Such finding was supported by the analysis of the students' written texts. There was a high percentage of students who were able to use paragraph building features taught in the curriculum to structure their paragraphs.

Keywords: blended learning, scaffolding, learner efficacy

Background

The trend towards combining computer mediated instruction and face to face instruction is on the increase. But while blended learning systems aim to combine "the best of both worlds", if designed appropriately, they could mix the least effective of both worlds if not well-designed (Graham, 2005).

At the Language and Communication Centre (LCC) of the Nanyang Technological University, the need to maximise staff deployment by reducing face-to face contact hours with students for the module HW001, English Proficiency prompted the redesign of the curriculum for this module (Thanasingam and Soong, 2007a). The restructured curriculum model called SCBC (The Spring Cycle Blended Curriculum model) combined the pedagogies of blended learning and scaffolded learning in the design (Thanasingam and Soong, 2007b). While blending was chosen for the many strengths it had to offer, as suggested by Chen & Looi (2007), creating an effective blended learning experience for students continues to pose a challenge for researchers and practitioners. With an infinite number of possible solutions, researchers are still seeking out best practices for how to combine instructional strategies in a face-to-face and Computer Mediated Communication (CMC) environment that exploit the strengths of each environment and minimise their weaknesses (Osguthorpe & Graham, 2003). This study aims to examine the impact on learning efficacy of a blended learning design that incorporates a double scaffolded structure. The researchers aim to use the findings of this study to extract design principles and best practices to promote learner efficacy in future learning designs.

Literature review

Blended learning

Different researchers/theorists define blended learning with different emphasis. Some stress the modes of instructional delivery, highlighting the mix of traditional classroom instruction and use of the Internet. For instance, Williams (2002) defines blended learning as combination of face-to-face and online learning; and Bielawski and Metcalf (2003) refer to blended learning as mix of instructor-led and technology-based learning. On the other hand, Driscoll (2002) points out that blended learning should have four different definitions coinciding with different purposes: (1) combining modes of web-based technology to achieve instructional objectives; (2) combining various pedagogical approaches to produce an optimal leaning outcome with or without instructional technology; (3) combining any form of instructional technology with face-to-face instructor-led training, and (4) mixing instructional technology with actual job tasks to create a harmonious effect between learning and working.

It appears that the first two definitions emphasise the medium of instructional delivery but not the pedagogies and activities that could be used via each medium. In contrast, the latter definition is broad enough to encompass almost all kinds of learning. In this paper, we use a definition by Ellis, Goodyear, Prosser and O'Hara (2006) who define blended learning as the combination of elearning and face-to-face (f2f) learning activity. In other words, simply adding a component of technology use is not enough. Appropriate instructional strategies are needed and should be used together with technology to optimise student learning.

As blended learning takes place in a form of distributed learning, a convergence of traditional and distance education, it allows teacher, students and content to be located in different, noncentralised locations so that instruction and learning occur independent of time and place (Bowman, 1999). According to Moore and Kearsley (1996), the more distributed the teaching and learning paradigm, the more critical the need for interaction. Teachers need to facilitate students' interactions with course content and with their peers. They need to skilfully select and structure their teaching methods that motivate learners and relate learning experiences to their knowledge-levels, interests, and applications needs (Yoon & Lim, 2007). According to Berk and Winsler (1995), scaffolding requires an expert to facilitate the learner's transition from assisted to independent performance. Scaffolding the learner enhances their ability to achieve their target performance through the process of what Palincsar (1998) and Wood et al (1976)) calls fading. In fading, support by the expert for the learner is gradually reduced as learner becomes more competent with academic tasks that are initially beyond their ability. This suggests that scaffolding can be gradually reduced as the learner's efficacy increases with their ability to perform tasks.

Self-regulation, learner efficacy and behavioural outcomes

Researchers have established that self-efficacy beliefs and behavioural changes and outcomes are highly correlated and that efficacy is an excellent predictor of behaviour outcomes (Pajares, 2002). In addition, according to Graham & Weiner (1996) particularly in psychology and education, self-efficacy has proven to be a more consistent predictor of behavioural outcomes than any other motivational constructs.

These claims are further supported by literature reviewed in Mok & Lung (2005) that suggest individuals who have better knowledge and awareness about their own knowledge status and learning targets are more able to engage in regulating their own learning, which in turn has positive effects on learning outcomes and efficacy. In addition, the literature also suggests that feedback providing learners with learning goals, constant feedback and periodic self-assessment of their progress is the most effective strategy to sustain self-efficacy, motivation and achievement in the learner (McDonalds & Boud, 2003). In addition, Boud (1995) considered self-assessment to be imperative for lifelong learning and effective learning and advocated it to be included in university courses.

Social cognitive theory (SCT)

In Bandura's Social Cognitive Theory (SCT), human functioning is viewed as the product of a dynamic interplay of personal, behavioural and environmental influences (Pajares, 2002). The idea of "reciprocal determinism" central to his theory describes how personal factors (cognition, affect and biological events), behaviour, and environmental influences create interactions that result in "triadic reciprocality". Of importance to this study is his claim on the influence of cognition on behaviour. In this theory (Bandura, 1986, 2003), cognitive capabilities, in particular, self- regulation and self-reflection are

identified to be the means by which humans determine and influence their destiny. They are the processes by which humans make sense of experiences to alter their thinking and behaviour accordingly. Central to this view of human agency is individuals can exercise control over their behaviours because they have the means to alter their self–belief or efficacy (Bandura, 1986, 2003).

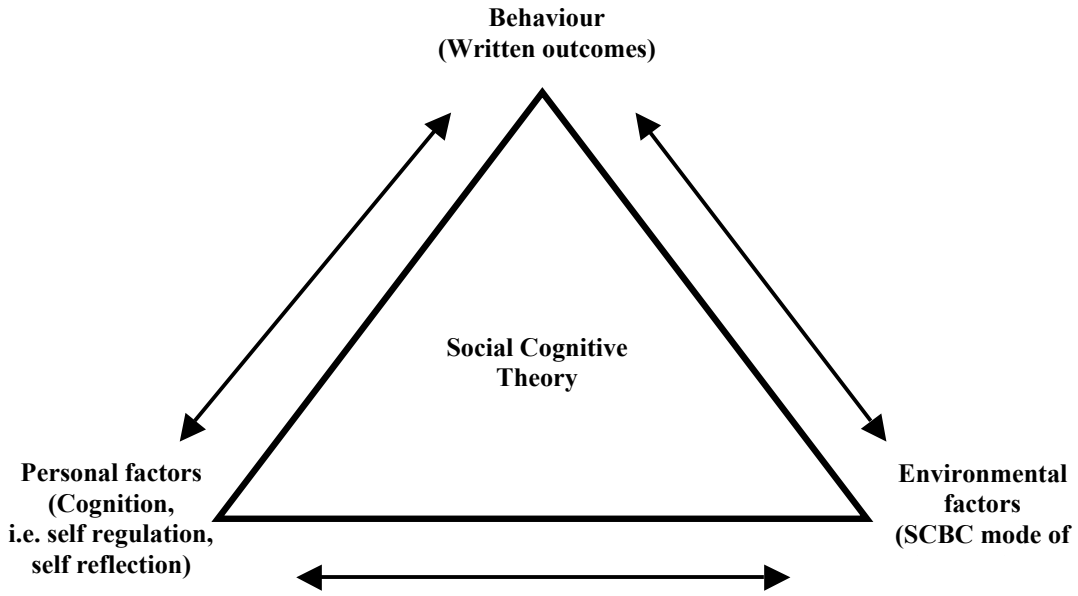

Figure 1: The social cognitive theory in the SCBC model

Research questions

The following are the research questions for the study:

i. What are the students' perceptions of SCBC model?
ii. From students' point view, how did SCBC model help them regulate their learning?
iii. How did SCBC model help students in their writing?

Learning design: A blended system embedded with scaffolded activities

This section will first introduce the structure of the HW001 curriculum model. The main features of the SCBC design that help students regulate their learning and promote efficacy will then be discussed.

The structure of HW001 (English Proficiency)

The HW001 module ran for a duration of 11 weeks. The 11 weeks were clustered into three 3-week learning cycles. Each learning cycle started with a face-to-face whole class meeting (Tutorial 1) where the tutors met their classes (25 students). For the subsequent two tutorials (Tutorial 2/Tutorial 3), each class was divided into two groups with 12 or 13 in each group. The tutors met each of the two groups either online or face-to-face. In other words, students were only required to attend class twice in three weeks with alternating order. While the tutors met half the class in either Tutorial 2 or Tutorial 3, the other half would complete their tutorial online. Figure 2 shows how Cycle 1 was run. Cycle 2 and 3 were run in the similar fashion, but on different contents.

The content around which the curriculum was built was the rhetorical pattern (RP) used to build good paragraphs. There were a total of 3 RPs taught in the module. To deepen and reinforce student learning of the new pattern taught in the workshop (Tutorial 1) when the whole class was present, learning activities were designed and delivered via online and face-to-face individual consultation. We named this design Spring-Cycle Blended Curriculum (SCBC) model.

The Centre for Educational Development (CED) was sought to provide the technological solution to integrate the blended curriculum. This solution came in the form of a prototype course site created to manage the different blends of the course. Figure 3 shows a screenshot of the tutorial site created for a tutorial group. The menu buttons 'Cycle 1', 'Cycle 2' and 'Cycle 3' contains lessons notes and references

<table>
<tr><th>Tutorial</th><th>α Group</th><th>β Group</th><th>Topic</th><th>Notes</th></tr>
<tr><td colspan="5">Cycle 1</td></tr>
<tr><td>Tutorial 1
18th Aug</td><td colspan="2">Workshop</td><td rowspan="3">The Building Blocks of A Paragraph</td><td rowspan="3">Expressways :Chapter 3 & 4
(relevant sections of Chapters 1 & 2)
http://ablongman.com/mcwhorterexpressways1e
http://www.mywritinglab.com
Pre-Course Assignment</td></tr>
<tr><td>Tutorial 2
25th Aug</td><td>Consultation & Review</td><td>Online</td></tr>
<tr><td>Tutorial 3
1st Sept</td><td>Online</td><td>Consultation & Review</td></tr>
</table>

Figure 2: Sample of a 3-week cycle tutorial structure

to the textbook used for the workshop sessions. The online component is integrated with the 'MyWritingLab' programme and students are able to access it through the tutorial site, under 'MyWritingLab' menu button. Online oral activities are designed in the Discussion Forum of the tutorial site found in the 'Discussion Board' menu button. Errors that students print out from 'MyWritingLab' exercises are discussed in consultation sessions.

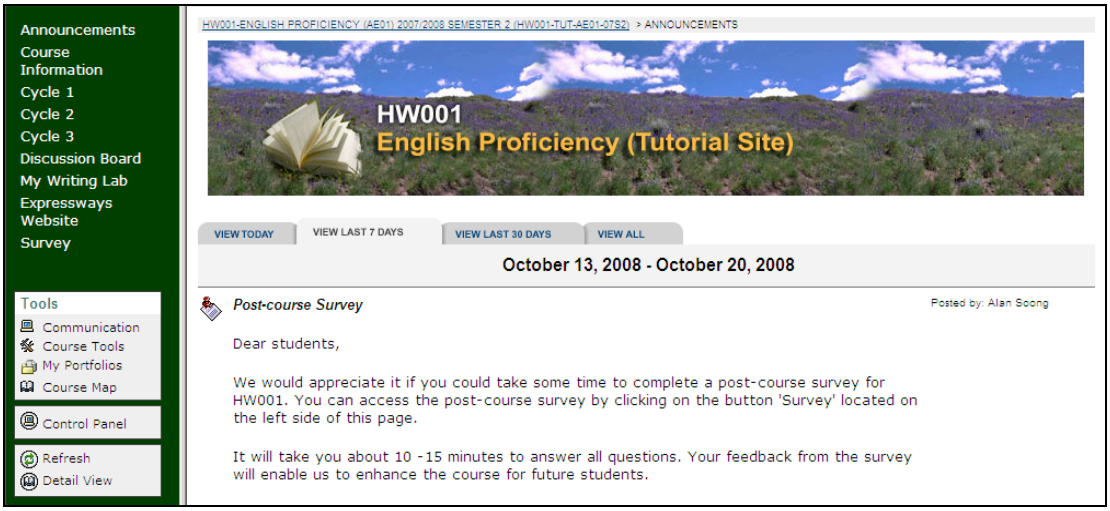

Figure 3: A screen shot of the tutorial site

Modes of instructions and functions in the blends

The three modes of instructions, namely tutors-led face-to-face whole class sessions, online activities and individual consultation, used in the SCBC model are differentiated according to the teaching strategies adopted for each. In addition to the traditional face-to-face instruction, the uniqueness of the blended design is its emphasis on promoting learner autonomy, self reflection and self direction. This is done through the use of student-centered assessment using online discussion forums and an online programme called 'MyWritingLab' (Figure 3) The features in the online programme that promote awareness of the student's knowledge status are the reply and retry functions that help learners learn from their mistakes and better their scores.

The other mode of instruction in the SCBC model is individual consultation with tutors which provides an additional avenue to promote knowledge awareness. In these sessions, tutors provide feedback on written in-class writing and students have an opportunity to clarify doubts and process the work they have completed in 'MyWritingLab'. Ample provision is made to bring understanding and help student close gaps in their knowledge so that they can achieve the target writing outcomes.

Scaffolded curriculum and learner support

The modes of instructions in the blends of the learning design is supported through a double scaffold arrangement of activities that integrates and 'holds' the blends. The first scaffold is provided in the

teaching of new input only after a Cycle of three tutorials is completed. New input is only taught at the beginning of a new cycle. The basic paragraph building tools taught in the first Cycle are reinforced in the next two Cycles as new content input on different rhetorical patterns is added as learning progress down the spiral curriculum. The second scaffold which is found within each Cycle comprises activities designed using the online and consultation modes to deepen and reinforce what was taught in the face-to-face workshop. Formative assessment built into the online component and the in-class writing tasks also help learners deepen their learning by helping them assess what they know so that they can receive the necessary knowledge to close gaps in their understanding. Within each Cycle, activities are designed using the online and consultation modes of instructions to deepen and reinforce what was taught in the face-to-face workshop. The in-built formative assessments in the online and in-class writing tasks help learners assess their own learning and to receive the necessary knowledge to close their knowledge gap. The double scaffold arrangement of activities in the model ensures students are given ample support while they master the skills they need to learn. The model scaffolds learning while promoting self-direction and autonomy in the learner.

Methodology

Sample

The data collected for this study provide snapshots of data collected from two separate tutorial groups taught by the same tutor in two different semesters, namely January 2007 semester and January 2008 semester. The instruments comprise surveys, focus group meetings, written texts and discourse threads from a discussion forum. The surveys and focus group questions were used to study students' perceptions on how the three modes of instructions incorporated in the SCBC design helped them regulate their learning. The discussion threads were analysed to study how students regulated their understanding of concepts taught in the course. The written texts were analysed to examine how the concepts taught through the SCBC model were applied by students to improve their paragraph structures.

Fourteen students who attended the HW001 course in January 2008 were invited to participate in the pre- and post-course surveys. Six of these students were also able to participate in a focus group meeting that was conducted at the end of the course. In addition, discussion threads of 13 students who participated in a discussion forum in January 2007 were analysed. Twelve written texts comprising pre-, mid- and post-course samples were also randomly selected from each of the two tutorial groups in the two semesters.

Instrumentation

Based on the literature reviewed earlier, better knowledge and awareness of knowledge status and learning targets enables individuals to engage in regulating their own learning. This in turn has a positive effect on learning outcomes and efficacy. In addition, feedback on the individuals' progress is one of the mediums which help them self assess their progress and helps sustain self-efficacy, motivation and achievement.
The instruments used in the study were chosen based on the information they provided on impact the course and the different blends had on enhancing the knowledge and regulating the learning students required to perform the final target written task. The instruments included are as follows:

Pre- and post-course survey questions
The surveys contain multiple-choice and open-ended questions to gather feedback from students about the three modes of instructions incorporated into the SCBC design.

Focus groups
The questions designed for the students' and tutors' focus groups were aimed to gather feedback from students on the strengths and areas of improvements for each of three modes of instructions, namely workshop, face-to-face consultation and self-access online learning.

Content analysis
Thirteen students were asked to participate in a structured discussion forum designed to evaluate interaction patterns, knowledge construction and quality of comments made by participants.

Pre-, mid- and post-course written text analysis
Twelve students wrote short paragraphs on rhetorical patterns taught in class. A scoring sheet identifying features to be displayed in their writing was designed to measure changes in these features across 3 texts.

The first text (A) was written before the course was taught. The second text (B) in the middle of the course and the third text (C) after the completion of the course.

Procedures

Administrtion of surveys
The pre- and post-course surveys were administered online through the course site in Blackboard learning management system. Students were given 14 days to complete the surveys.

Focus group with students and tutors
Semi-structured, open-ended questions were used during the focus group meetings with students and tutors respectively. Each session lasted between 90 minutes to 2 hours. The main points discussed were summarised at the end of each session.

Content analysis
The unit of analysis used to analyse interaction patterns in 34 discussion threads was the message comprising of comments and responses. The units of analysis used to analyse knowledge constructed was the thematic unit i.e. a single thought unit or idea that was considered relevant to providing critical feedback to the presenter (Hew & Cheung, 2003).

A total of 39 phases were coded within the 34 message postings extracted from the discussion forum that students participated in. The Phases were classified according to Gunawardena et al's (1997) framework for construction of knowledge The 3 Phases in the construction of knowledge in this study were identified according to phrases in the message postings that were (1) observations, opinions (Phase I), (2) disagreements questions and answers (Phase II) and (3) clarifications and negotiations (Phase III), as listed in Table 1.

Table 1: Phases in the construction of knowledge

Pairs of Participants	Phase I (observation, opinion)	Phase II (disagreement, question, answer)	Phase III (negotiating, clarifying)
1	3	1	0
2	4	2	2
3	1	4	0
4	1	3	2
5	5	3	0
6	0	4	4
Total	14 (35.9%)	17 (43.6%)	8 (20.5%)

Effectiveness of student feedback was determined according to the student's ability to (1) identify the rhetorical pattern (RP) or the structure used to organise information in the paragraph of the speech, (2) identify features such as examples used in the paragraphs of the speech and (3) identify the Topic Sentence (TS) or the opening sentence that determines how information in a paragraph should be organised. With this information students were able give feedback by deciding if the paragraphs of the presenter (1) had no clear structure, (2) had a process structure, (3) had a classification structure or (4) had a compare-contrast structure.

Pre-, mid- and post-course written text analysis
Two external graders experienced in teaching proficiency graded the texts collected over the duration of the course. They used the prescribed scoring sheet to identify changes in the use of paragraph building patterns across the 3 texts written by each student. The paragraph building features included the student's use of Topic Sentence (TS), Transition Markers (TM), Supporting Details (SD) and Concluding Sentence (CS). Other features which received less emphasis in the course were also tracked for changes in usage by students. These were Content (C), Sentence Construction (SC) and Grammar.

Data analyses

The data from the surveys, focus group meetings, content analysis and text analysis were analysed and organised into themes or patterns for further discussion in the following section. The data obtained from the surveys were first coded for easy classification and to identify patterns or themes that could emerge from the study.

Findings

The findings reported in this section will firstly present findings of student's perception on how the three modes of instructions in the SCBC model (environmental factors) helped them regulate their learning (personal factors). This discussion will focus on the features in each of the modes of instructions that help students regulate the development of knowledge required to achieve target outcomes. This will be followed by a presentation of findings to show how students regulate learning within one of the activities incorporated in the model. The final section will discuss data from sample written texts to show the impact of the SCBC model on the students's behavioural outcomes (behaviour).

Students' perception on the three modes of learning in the SCBC model

Students' perception on the three modes of learning in the SCBC model was collated from the post-course survey and focus group meeting. Based on the feeback from students (N=7) through the post-course survey, it was noted that four students (54.1%) indicated that their most preferred mode of learning as either a combination of consultation and online, or a combination of all the three modes of learning (Figure 4). One student (14.3%) preferred to learn through a combination of workshop and consultation sessions. Only two students (28.6%) preferred to learn through a single mode of instruction, either workshop sessions or consultation sessions. The findings clearly suggest that students preferred a blended learning design.

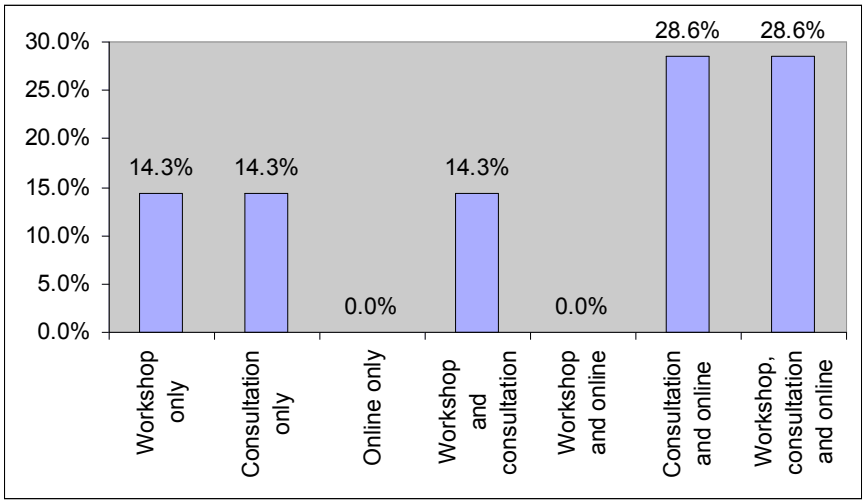

Figure 4: Students' most preferred mode of learning for the course HW001 (N=7)

Worskshop sessions
All 7 students (100%) agreed that the workshop activities were useful. Feedback from both focus group and survey questions indicated that they appreciated the group interaction during the workshop sessions. They commented that feedback from their peers and tutors during workshop sessions help them to improve their language. They also appreciated the clear and systematic style of tutors' teaching during the workshop sessions. The findings suggest that the activities, feedback and input given in the workshops provided the necessary knowledge required for students to improve their language. According to Pajares (2002), knowledge of the precise nature of skills required helps in the performance of the expected behaviour. The workshop mode of instruction in the SCBC model supports regulation of learning required to achieve target learning outcomes.

Consultation sessions
All 7 students (100%) either strongly agree or agree that the consultation sessions were useful. It was found that students appreciated the feedback from tutors on how to improve their language during consultation sessions. They stated that sessions with their tutor helped them to better understand the mistakes made in the exercises attempted during online sessions. Some students suggested that more consultation sessions should be provided so that they could receive more feedback from their tutors regarding the online exercises. The findings suggest that consultations enhance student efficacy by providing an avenue for them to gain knowledge to meet their learning targets. This supports the improvement shown in written outcomes discussed in the later section. These findings support the claims that better knowledge enable students to regulate learning, which in turn has positive effects on learning

outcomes and efficacy (Graham & Weiner, 1996; Pajares, 2002 and Mok & Lung, 2005). The consultation mode of instruction in the SCBC model supports regulation of learning required to achieve target outcomes.

Online sessions
Six out of 7 (85.7%) students either strongly agree or agree that the online sessions were useful. One (14.3%) disagreed that the online session was useful. Feedback from both focus group and survey questions indicated that students valued the ability to revisit online video lessons for revision and knowledge. They also liked the flexibility to learn anytime, anywhere and learning by themselves. It was also noted that students found the online sessions very engaging. Another observation indicated that students valued the immediate feedback received after each attempt on the online exercises. These findings suggest that the use of the online programme such as 'MyWritingLab' enhances learning efficacy because it enables students to self-assess, review learning and repeat the exercises to gain mastery. Repetition supports the creation of efficacy beliefs by enabling students to gain mastery (Bandura, 1986). The online mode of instruction in the SCBC model supports regulation of learning required to achieve target outcomes.

Self regulation displayed in joint construction of feedback in a discussion forum

This section will discuss the findings that show how self-regulation is facilitated in the discussion forum activity found in the self-access mode of instruction. The indicators of self regulation observed in this setion include asking questions to clarify doubts and negotiating and agreeing upon ideas to construct effective feedback on a recorded presentation of a speech.

In our earlier study on interaction patterns among students participating in this activity (Thanasingam & Soong, 2007a), it was found that 77% of the participants were actively engaged in reviewing their peers comments. Of this, the findings using a framework by Gunawardena et al (1997) for knowledge construction discussed in the same paper revealed that 14 (35.9%) comments were observations and opinions (Phase I level). 17 (43.6%) stated disagreements, asked and answered questions (Phase II level) and 8 (20.5%) displayed clarification and negotiation of knowledge (Phase III level).

A closer study of the content developed in these knowledge construction patterns (Table 2) showed that students clarified their doubts through questions, negotiated and agreed upon ideas in order to give effective feedback using paragraph building features taught in the course.

According to Nicol & Macfarlane-Dick (2004), effective student–centred feedback, supports self-reflection in learning and helps learners close their knowledge gap.

In addition feedback on student's perception of this activity indicated that students learnt from peers when participating in the online discussions (Thanasingam & Soong, 2007a). A mean of 3.46 and 3.38 respectively was obtained for questions related to whether the activity helped them improve their understanding and learning respectively. The results support the use of discussion forums to enhance efficacy as it provides an avenue for them to regulate their learning.

Learning outcomes displayed in written texts (pre-, mid- and post-course)

The data in Table 3 shows that the use of paragraph building features in the pre- and mid-course texts.

The highest percentage of students who improved in paragraph structure occur in the use of the main paragraph building features such as Topic Sentence (TS: 78.5%), Transition Markers (TM: 78.5%) and Supporting Details (SD: 66%). There is a marginal change in the use of Concluding Sentence (CS: 53.5%), and less than half the students display changes in Content (C: 37.5%), Sentence Construction (SC: 45.5%) and Grammar use (G: 45.5%). The features showing the highest change are features taught in the writing component of HW001 for developing paragraph structure. The data suggests that the intervention using the SCBC model has enabled students to successfully use the relevant structures (TS, TM, SD & CS) to construct better paragraphs. This positive change in behavioural outcomes can be attributed to the features of the SCBC model discussed earlier. The design features of the SCBC model facilitates regulation of learning which in turn has a positive impact on efficacy and learning outcomes (Graham & Weiner, 1996; Pajares, 2002 and Mok & Lung, 2005).

Table 2: Quality of feedback knowledge constructed in discourse extract

Time (hours)	Comments by students	Student ID	Notes on knowledge constructed	Phase of knowledge construction
1709	"… many different opinions… three common opinions… classification,compare contrast, process" "…I don't think… Process... Adv/Disadv is the way we use compare/contrast" "But it was said…classification I'm not sure…" "Does anyone know what the TS is?"	A10	Student is clarifying reasoning based on earlier comments by the other classmates. Student is asking this key question on TS for the second time.The answer to this question will inform students of the correct RP used.	Phase II / Phase III
1723	"..And,the body of the paragraph is positive and negative,so X use the compare and contrast to build the structure"	A2	Student is clarifying reasoning by providing examples to justify the RP of the speech	Phase III
1734	The TS is "While there are many positive developments with the Internet, there are also certain fears and concerns"	Presenter	The presenter answers the earlier question on TS.This provides the clarification to justify that the RP is indeed compare - contrast.	Phase II / Phase III

Table 3: Percentage of students who displayed change in the use of features required to construct a paragraph (N=12)

Features	G1[A-B](%)	G2[A-B](%)	Average % of students who displayed change (%)	G1[B-C](%)	G2[B-C](%)	Average % of students who displayed change (%)	Comments
Topic Sentence	66	91	78.5	16	8	12	More % change between A & B
Transition Markers	66	91	78.5	25	33	29	More % change between A & B
Supporting Details	66	66	66	33	25	29	More % change between A & B
Concluding Sentence	41	66	53.5	25	25	25	More % change between A & B
Content	25	50	37.5	41	25	66	More % change between B & C
Sentence Construc-tion	58	33	45.5	33	50	41.5	% change remained constant
Grammar	58	33	45.5	25	25	25	More % change between B & C

G1: Grader 1 [A-B]: Change in the use of feature between Text A and Text B
G2: Grader 2 [B-C]: Change in the use of feature between Text B and Text C

The overall smaller change in features such as Content, Sentence Construction and Grammar is expected as general content knowledge on topics student's write about is not taught in the course. Students are expected to have general knowledge on the topics. Content knowledge is undoubtedly gained as they discuss and share ideas in with peers. While graders were asked to indicate general change in Sentence Construction (SC) and Grammar (G), they were not asked to measure specific items for this analysis as

the students in this course were given grammar input based more on their individual rather than collective needs.

The percentage of students who improved in the use of paragraph building features between text B and C is much smaller for the features TS (12%), TM (29%), SC (29%) and CS (25%). This finding is significant. It shows students have mastered these basic features early in their writing development. Of interest is that Content information though not explicitly taught shows an increase (66%) and SC shows a consistent change (41.5%). Content is frequently exchanged in the interactive tutorials where students share and gain knowledge collaboratively. SC which is an aspect of sentence grammar is singled out as an important feature for intelligibility in writing. This suggests that students recognise it is different from general grammar and more individual students have given it a priority in developing their writing skills. The development in general grammar is low (25%). This as mentioned earlier could be due to the priority in the course given to building features related to paragraph building and intelligibility. It is possible to increase the duration of the course for students to develop other grammatical features but this would be related to the individual communicative needs of students. The findings clearly suggest that the changes in the patterns in student writing reflect the language content chosen to be taught and the emphasis given to it in the learning design.

The findings discussed in this section strongly suggest that the positive change in writing patterns can be attributed to the design of the SCBC model which facilitates regulation of learning. In addition, the positive change of the intervention using the SCBC model impacts the content selected to be included in the curriculum.

Conclusion and implications of study

This case study used a combination of instruments to determine the impact of the SCBC model on regulation of learning, efficacy and behavioural outcomes. Students' written texts were used to examine behavioural outcomes, the content of a discussion forum was used to analyse how students self regulated their understanding through the joint construction of knowledge, and a combination of survey and focus group feedback were used to determine how the 3 mode of instructions used in the learning design supported self-regulation and efficacy.

The impact of the SCBC model on behavioural or target writing outcomes
The study shows that the SCBC model comprising a blended–scaffolded learning design has helped students improve their ability to write better paragraphs. The findings show that the largest percentage of students improved in their use of paragraph building features which were selected to be included in the curriculum. These changes occurred mid-way of the course where the SCBC design provided students with sufficient rounds of practice and input on paragraph building features to regulate learning required to achieve target outcomes.

The impact of the three modes of instructions of instructions used in the design of the SCBC model on the student's ability to regulate their learning
The comments from learners on the modes of instructions used in the design of SCBC model suggest that learners liked a blended approach and were able to learn from all three modes of instructions. The workshop mode of instruction enabled them to learn from the systematic input and discussion with peers and tutors. The consultation mode of instruction helped them understand their mistakes. The online mode of instruction enabled them to revisit activities so they could review what they needed to learn. The discussion forum activity provided additional student-centred feedback which enabled them to ask questions, clarify and negotiate understanding. All 3 mode of instructions, together with the forum activity helped students gain knowledge they required by providing opportunities for regulation of their learning.

The design features of the SCBC model which have been studied on a small scale clearly facilitate regulation of learning which in turn has a positive impact on efficacy and learning outcomes (Graham & Weiner, 1996; Pajares, 2002 and Mok & Lung, 2005).

Implications for learning designers

Of significance for learning designers are principles that can be drawn from this small scale study. Firstly, students mostly prefer a combination of learning modes. The modes of learning however should be purposefully (meaningfully) integrated in the design. Secondly, feedback that enhances learner efficacy is valued by learners. Workshop sessions can provide immediate feedback from peers and tutors;

consultation sessions can provide personalised feedback to clarify learning; and online sessions including discussion forums can provide feedback on demand from the system tutors and from peers. Thirdly, repetition which enhances efficacy (Bandura, 1986) is also valued by students. Students want more consultation so they can do more exercises to improve themselves. They value the ability to revisit online materials and self-access resources so they can improve learning. In addition, the study shows the blended learning design with a double scaffold specifically impacts the content that is targeted to be taught.

References

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A., & Edwin A. Locke, E. (2003). Negative Self-Efficacy and Goal Effects Revisited. *Journal of Applied Psychology*, 88(1), 87–99. https://doi.org/10.1037/0021-9010.88.1.87

Bowman, M. (1999). What is distributed learning? *Tech Sheet, 2* (1). http://techcollab.monterey.edu/techsheet2.1/distributed.html [viewed 4 September 2008].

Berk, L. E. & Winsler, A. (1995). *Scaffolding children's learning: Vygotsky and early childhood education*. *NAEYC Research and Practice Series, 7*. Washington, DC: National Association for the Education of Young Children.

Bodrova, E. & Leong, D. J. (1996). *Tools of the mind: The Vygotskian approach to early childhood education.* Englewood Cliffs, NJ: Merrill/Prentice Hall.

Boud, D. (1995). Assessment and learning: contradictory or complementary? In P. Knight (Ed.) *Assessment for Learning in Higher Education*. London: Kogan Page

Chen, W. & Looi, C. K. (2007). Incorporating online discussion in face to face classroom learning: A new blended learning approach. *Australasian Journal of Educational Technology*, 23(3), 307-326. http://www.ascilite.org.au/ajet/ajet23/chen.html

Driscoll, M. (2002). *Web-based training: creating e-learning experiences*. (2nd ed.). San Francisco: Jossey-Bass.

Ellis, R., Goodyear, P., Prosser, M., & O'Hara, A. (2006). How and what university students learn through online and face to face discussion: conceptions, intentions and approached. *Journal of Computer Assisted Learning*, 22, 244-256. https://doi.org/10.1111/j.1365-2729.2006.00173.x

Graham, C. R. (2005). Blended learning systems: Definition, current trends, and future directions. In C. J. Bonk & C. R. Graham (Eds.), *Handbook of blended learning: Global perspectives, local designs*. San Francisco, CA: Pfeiffer Publishing.

Graham, S. & Weiner, B. (1996). Theories and principles of motivation. In *Handbook of Educational Psychology.* Berliner & Calfee (Eds.). New York, NY: Simon & Schuster Macmillan.

Gunawardena, C.N., Lowe, C.A. and Anderson, T. (1997). Analysis of a global online debate and the development of an interaction analysis model for examining social construction of knowledge in computer conferencing. *Journal Educational Computing Research,* 17(4), 397-431.

Hew, K. F. and Cheung, W. S. (2003). Models to evaluate online learning communities of asynchronous discussion forums. *Australian Journal of Educational Technology*, 19(2), 241-259. http://www.ascilite.org.au/ajet/ajet19/hew.html

McDonald, B. & Boud, D. (2003). The impact of self-assessment on achievement: the effects of self-assessment training on performance in external examinations. *Assessment in Education*. 10(2), 209-220. https://doi.org/10.1080/0969594032000121289

Mok, M. M. C. & Lung, C. L. (2005). Developing self-directed learning in teachers. *International Journal of Self-Directed Learning,* 2(1), 18-39.

Nicol, D.J. & Macfarlane-Dick, D. (2004). Rethinking formative assessment in HE: a theoretical model and seven principles of good feedback practice. In, C. Juwah, D. Macfarlane-Dick, B. Matthew, D. Nicol, D. & Smith, B. (Eds) *Enhancing student learning though effective formative feedback*, York, The Higher Education Academy.

Osguthorpe, R. T. & Graham, C. R. (2003). Blended learning environments, definitions and directions. *The Quarterly Review of Distance Education*, *4*(3), 227-233.

Pajares, F. (2002). *Overview of social cognitive theory and of self-efficacy*. http://www.emory.edu/EDUCATION/mfp/eff.html [viewed 23 Mar 2008].

Palincsar, A.S. (1998). Keeping the metaphor of scaffolding fresh - A response to C. Addison Stone's "The metaphor of scaffolding: It's utility for the field of learning disabilities." *Journal of Learning Disabilities, 31,* 370-373. https://doi.org/10.1177/002221949803100406

Thanasingam S. & Soong, S.K.A. (2007a). Interaction patterns and knowledge construction using synchronous discussion forums and video to develop oral skills. In *ICT: Providing choices for learners and learning. Proceedings ascilite Singapore 2007*. http://www.ascilite.org.au/conferences/singapore07/procs/thanasingam.pdf

Thanasingam S. & Soong, S.K.A. (2007b). The spring cycle blended curriculum model for teaching paragraph writing. In *ICT: Providing choices for learners and learning. Proceedings ascilite Singapore 2007*. http://www.ascilite.org.au/conferences/singapore07/procs/thanasingam-poster.pdf

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

Williams, C. (2002). Learning on-line: a review of recent literature in a rapidly expanding field. *Journal of Further and Higher Education*, 26(3), 263-272. https://doi.org/10.1080/03098770220149620

Wood, D., Bruner, J. S. and Ross, G. (1976). The role of tutoring in problem solving. *Journal of Child Psychology and Psychiatry, 17*, 89-100. https://doi.org/10.1111/j.1469-7610.1976.tb00381.x

Authors: Santhakumari Thanasingam: Language and Communication Centre, Nanyang Technological University. Email: sthanasingam@ntu.edu.sg
Swee Kit Alan Soong: Centre for Educational Development, Nanyang Technological University. Email: sksoong@ntu.edu.sg
Chun Hu: Faculty of Education and Social Work, University of Sydney.
Email: c.hu@edfac.usyd.edu.au

Please cite as: Thanasingam, S., Soong, S.A. & Hu, C. (2008). The impact of a spring cycle blended curriculum model on learning: A case study. In *Hello! Where are you in the landscape of educational technology? Proceedings ascilite Melbourne 2008*.
https://doi.org/10.14742/apubs.2008.2369