



		University	Glasgow
		Department	Computing Science
		Module	Accelerator 1 & 2
		Overview	In the traditional Computing Science 1 module, students receive 48 hours of lectures, 24 hours of labs and 12 hours of tutorials over the course of the first year. Students who obtained a C pass progressed to level 2, while those with a D pass or below were not generally permitted to proceed.
		Drivers for change	The policy of guaranteed progression for C students only was revised over time so that the D students would also be allowed to progress to level 2. However, analysis after three years of operating this policy showed that these students tended to struggle thereafter. Thus the main concern was the low progression rates. 89% of students who failed to progress to third year had failed to get a C pass in first year.
		Intervention	<p>The Department of Computing Science is piloting an accelerator course for second year 'at risk' students. Experienced students will facilitate the sessions, providing expert advice and gradually withdrawn scaffolded support. Formative feedback will be provided through peer discussion and paired study. The use of reflective learning diaries/programming logs will encourage learners' self regulatory practices. Students will also be provided with exam practice under exam style conditions, followed by group discussion and formative feedback.</p> <p>The accelerator course was originally trialled in 2005 on level 2 students who had failed to obtain a C pass at the end of first year. The scheme ran daily at 9am or 5pm for 6 weeks and the aim was to develop both programming and study skills (both seen as major contributors to students' poor performance). The scheme was extended for another 6 weeks but attendance was poor. However, it was then refined and repeated with the following year's level 2 'at risk' students daily for 12 weeks and attendance was promoted by follow-up calls for absentees. Qualitative data from facilitator and student interviews suggest that self-regulation, course satisfaction, peer, tutor and content engagement has been increased for regular attendees. The scheme is currently being extended to first year students as a preventative rather than remedial intervention. Students identified as 'at risk' by their class tests performance have been targeted for early intervention in the form of an ancillary course, facilitated by more experienced students. The course runs for four days per week at 9am or 5pm slots for a total of seven weeks in conjunction with the regular level 1 timetable.</p>
PROCESS	EMPOWERMENT	NICOL'S 7 PRINCIPLES OF GOOD ASSESSMENT DESIGN	Activities
			<p>Principle 1 (clarify criteria)</p> <ol style="list-style-type: none"> (1) A learning activity timetable was provided for the term, but students had an opportunity to agree upon the learning activities and standards with facilitators at the beginning of each session. (2) In the first half of the block, students worked in and out of the sessions on set problems contained within a weekly exercise pack (3) At the end of each session, students had the opportunity to fill in, with the help of facilitator discussion, their learning goals for the next session in a learning diary. This provided a study framework for work outside of the sessions and for the next session. They could then monitor their own progress and compare it to their peers' goal progress. (4) The learning activities undertaken during the accelerator session helped to clarify criteria for other course work and assessments. (5) Students have repeated opportunities to learn from each other how to meet assessment expectations. <p>Principle 2 (self-assess, reflect)</p> <ol style="list-style-type: none"> (1) During daily discussions, students generated and defend their thinking and problem solving skills, at times illustrating their technique using a whiteboard. They also had an opportunity to explain their answers, critiquing each other's after class tests and mock exams. (2) The course material became progressively more difficult each week and the facilitator support was gradually withdrawn by the students being left for a short duration (1/2 hour) to work under facilitator instruction in their absence. The facilitators checked the students' progress upon their return. The durations of these absences increased until the students reach a point where they are able to work effectively without facilitator assistance. (3) Students had an opportunity to reflect on the most challenging or easy parts of their learning activities by recording the information at the end of each session in their learning diary along with observations about what they felt helped them during the session.



ENGAGEMENT GIBBS & SIMPSON'S 4 CONDITIONS OF TIME & EFFORT ON TASK	Principle 3 (tutor feedback)	1) Students could access information and generic or personalised feedback directly from 'expert' facilitators and peers on a daily basis during the session discussions.
	Principle 4 (peer feedback)	1) Daily discussions formed a key part of the scheme. Students discussed concepts before, during and after working on assignments or practice exercises. They also worked together to problem solve in pairs or groups. 2) Students could easily work as part of a group in social seating clusters.
	Principle 5 (motivation)	1) Students were provided with opportunities for increased motivation to learn because they could monitor their own achievements and progress within the learning framework provided by the exercise packs and exam practice opportunities. 2) The gradual withdrawal of scaffolding enabled students to gradually increase autonomy and self-esteem over the period of the course 3) Students were provided with opportunities to gain confidence by being able to compare answers with each other and find solutions together.
	Principle 6 (close feedback loop)	1) Students were given the opportunity to gain understanding through receiving immediate feedback 2) Students undertook repeated cycles of learning activities through regular practice exercises, mock exams and class tests that support the general course assessments.
	Principle 7 (shape teaching)	1) Facilitators shaped discussions and sessions based on feedback gained from students during their interactions and from learning diary entries. Information from the learning diaries also provided facilitators with information to help them to deliver personalised intervention to individual students. 2) Facilitators shared feedback about the class and individual students at weekly feedback sessions and in an on-line forum (for Accelerator 1 students).
	Condition 1 (in and out of class)	1) Students were provided with guidance about the appropriate amount of study time required to accompany each exercise set and this gave them an opportunity to spread their study efforts evenly across the course both in and out of class.
	Condition 2 (spread evenly)	1) Students engaged with regular tasks while having direct access to immediate verbal formative feedback from peers and expert facilitators ensuring that they attend to the most important aspects of the course. 2) Students had a structured opportunity to distribute their learning activities evenly over the course through progressing through the set exercise packs and regular practice exams during the sessions and by undertaking the recommended study activities agreed with facilitators outside of sessions. 3) Students could use their learning diaries to allocate appropriate amounts of time on each of the tasks and to reflect on the amount of time required to effectively complete their learning goals and tasks. 4) Students had the opportunity to use their learning diaries to plan tasks evenly across the duration of the scheme, reflecting on their progress between practice and assessed tasks.
	Condition 3 (deep not surface)	1) Students were engaged in a repeated cycle of receiving lecture material, discussion, practice, feedback and practice exams to deepen their understanding of the application of theory.
	Condition 4 (high expectations)	1) Students were able to gain a knowledge and understanding of clear and high expectations through the class tests and feedback with the subsequent opportunities to use this feedback to improve their learning standards before the next assessment.



OUTCOME	Efficiencies	1) Financial costs of staff and administration are offset against income per student retained in the department through increased progression and other associated benefits thereof.
	Informal Learning Gains	Student focus group responses suggest that learning gains were achieved by
		1) Immediate feedback during accelerator sessions increased learning 2) Increased effort through peer support 3) Increased time on task 4) Increased confidence and willingness to engage with staff
	Formal Learning Gains	