SUHREC Project 2011/021 Ethics Clearance

Kaye Goldenberg <KGOLDENBERG@groupwise.swin.edu.au> 4 April 2011 13:16
To: acain@swin.edu.au, jgrundy@swin.edu.au

To: Prof. John Grundy, FICT/Mr Andrew Cain

Dear Prof. Grundy,

SUHREC Project 2011/021 Evaluating the effectiveness of constructive alignment in teaching introductory programming
Prof. John Grundy, FICT/Mr Andrew Cain
Approved Duration: 4 April 2011 To 30/04/2017 [Adjusted]

I refer to the ethical review of the above revised and resubmitted project protocol undertaken on behalf of Swinburne's Human Research Ethics Committee (SUHREC) by SUHREC Subcommittee (SHESC4) at a meeting held on 4 March 2011. Your response to the review as e-mailed on 22 March 2011 were put to a nominated SHESC4 delegate for review.

I am pleased to advise that, as submitted to date, the project has approval to proceed in line with standard on-going ethics clearance conditions here outlined.

- All human research activity undertaken under Swinburne auspices must conform to Swinburne and external regulatory standards, including the National Statement on Ethical Conduct in Human Research and with respect to secure data use, retention and disposal.

- The named Swinburne Chief Investigator/Supervisor remains responsible for any personnel appointed to or associated with the project being made aware of ethics clearance conditions, including research and consent procedures or instruments approved. Any change in chief investigator/supervisor requires timely notification and SUHREC endorsement.

- The above project has been approved as submitted for ethical review by or on behalf of SUHREC. Amendments to approved procedures or instruments ordinarily require prior ethical appraisal/ clearance. SUHREC must be notified immediately or as soon as possible thereafter of (a) any serious or unexpected adverse effects on participants and any redress measures; (b) proposed changes in protocols; and (c) unforeseen events which might affect continued ethical acceptability of the project.

- At a minimum, an annual report on the progress of the project is required as well as at the conclusion (or abandonment) of the project.

- A duly authorised external or internal audit of the project may be undertaken at any time.

Please contact me if you have any queries about on-going ethics clearance. The SUHREC project number should be quoted in communication. Chief Investigators/Supervisors and Student Researchers should retain a copy of this e-mail as part of project record-keeping.

Best wishes for the project.

Yours sincerely

Kaye Goldenberg
Secretary, SHESC4
****

Kaye Goldenberg
Administrative Officer (Research Ethics)

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SWINBURNE UNIVERSITY OF TECHNOLOGY

HUMAN RESEARCH ETHICS COMMITTEE

APPLICATION FOR ETHICS APPROVAL of a RESEARCH PROTOCOL

Date Received

……..…

HREC No:……

SECTION A: GENERAL INFORMATION

PROJECT FULL TITLE	Evaluating the effectiveness of Constructive Alignment in Teaching Introductory Programming.
SHORT TITLE (If applicable)	
APPLICANT DETAILS	
RESPONSIBLE SWINBURNE FIRST INVESTIGATOR / SUPERVISOR (Where project is part of student research degrees or dissertations, Senior Swinburne Supervisor must still be listed as the first investigator)	**Name & Title/Position:** Professor John Grundy, SUCCESS Centre Director Tel No(s) 9214 5324 Email: jgrundy@swin.edu.au Fax Faculty / School / Centre / Institute: Faculty of Information and Communication Technologies Swinburne Status: ☒ Swinburne Staff Member ☐ Adjunct Staff Member Address for correspondence: as above
Please complete as clearly as possible. (For Honours, higher degree and discrete student projects.)	**Main Student Investigator(s):** Andrew Cain, Lecturer Email acain@swin.edu.au Tel No(s) 9214 5324 Student ID Number 9426906 Fax Degree Being Undertaken Doctor of Philosophy

List below the names of other Chief/Associate Investigators and Research Assistants (including those with access to identifiable data).

Name & Title/Position: Dr Vivienne Farrell, Senior Lecturer Institutional Address: Faculty of Information and Communication Technologies, Swinburne University of Technology Tel No(s) 9214 8743
Name & Title/Position: Dr Clinton Woodward, Lecturer Institutional Address: Faculty of Information and Communication Technologies, Swinburne University of Technology Tel No(s) 9214 5945
Name & Title/Position: Dr James Hamlyn-Harris, Lecturer Institutional Address: Faculty of Information and Communication Technologies, Swinburne University of Technology Tel No(s) 9214 8672
Name & Title/Position: *Research Assistant nominated by the SUCCESS IT Education Research Group* Institutional Address: Tel No(s)

Proposed Period During Which Human Research Activity Requiring Ethics Approval is Needed:	**From**	03 *dd*	03 *mm*	2011 *yyyy*	**to**	31 *dd*	03 *mm*	2017 *yyyy*	

TYPE OF ACTIVITY (Select as many boxes as applicable)	☒ Research by Staff Member	☐ Contract Research (Attach copy of contract)
	☒ Supervised Postgraduate Research	☐ Supervised Undergraduate Research
	☐ Supervised Class Projects: No of students involved: Subject Code & Short Title:	

Broad Category of Research

Select one category box which best fits the application:

☐ Social/Cultural/Humanities ☐ Business/Management ☒ Education/Training/Program Evaluation

☐ Psychological/Brain/Neuro-sciences ☐ Health/Safety ☐ Engineering/Science/Technology

☐ Other (please specify) ……

Official Use Only:

☐ **Higher Risk/Impact** ☐ **Minimal Risk/Low Impact Research Only**

☐ ***SUHREC*** ☐ ***SHESC (HBS - A / B)*** ☐ ***SHESC (SBT - A / B)*** ☐ ***Other*** ☐ ***Notification Only***

Human Research Risk/Review Classification (Nb Checking to be consistent with published risk criteria[#])

To enable a determination as to whether prima facie your research activity is Minimal Risk and/or Low Impact, please clarify by selecting [X] any one or more boxes below as to whether your research activity involves:

[Double-click on ☐ YES /NO 'check box' to select X by entering in Default Value as Checked ☒ or leaving as Not Checked ☐]

☐ Vulnerable participants, children or those dependent on care*	☐ Indigenous Peoples* or Special Cultural/Ethnic groups
☐ Externally funded research requiring HREC-level clearance*	☐ Multi-centre/Other sites requiring HREC-level approval*
☐ Research conducted overseas	☐ Conflicts of interest or dual researcher-professional roles
☐ Data access/use without an individual's prior consent*	☐ Data access/use subject to statutory guidelines &/or reporting*
☐ Identification of participant individuals/groups in research outcomes without full consent or there is unclear consent for this*	
☐ Sensitive information/issues vis-à-vis context/impact (legal*, regulatory compliance*, commercial, professional, cultural, etc)	
☐ Personally intrusive/confronting or quite inconvenient/embarrassing questioning or other activity	
☐ Physically confining/invasive techniques or significant physical contact/stimulation (TMS*, X-ray*, CT scan*, MRI*, clothing change, etc)	
☐ Working in hazardous environments (asbestos dust*, infectious disease*, war or civil strife*, etc)	
☐ Handling hazardous substances (eg, asbestos*, radioactive material* , explosives*, etc) or equipment	
☐ Administration of medical/herbal substances*/treatments*	☐ Administration of other (non-medical) substances/treatments
☐ Health/medical diagnosis*/therapy*	☐ Non-minimal impact therapeutic or other devices*/activity*
☐ Screening for healthy participant inclusion/exclusion	☐ Medical or psychiatric assessment/conditions*
☐ Serious psychological profiling, investigation or exploration	☐ Withdrawal of treatment/services or use of placebo
☐ Withdrawal/substitution of educational/professional/commercial/recreational/other programs or services	
☐ Deception or covert observation	☐ Limited or non-disclosure of research information/procedures
☐ Participant recruitment/selection via third party	☐ Human research activity commenced without clearance
☐ Participation incentives, prizes or significant payments	☐ Research placing researchers/assistants at risk

PLEASE NOTE: If you have selected any one or more of the above boxes, your project will ordinarily be put for SUHREC ethical review. Items above marked * must be put to SUHREC proper. But in other cases, you may wish to put a case for expedited review by a SUHREC Sub-Committee (SHESC) in the (expandable) box below in relation to the criteria for determining risk/impact. If you put forward a case, then in the first instance your application will be put to the relevant SHESC; however, the relevant SHESC may still consider the project needs full SUHREC appraisal or SUHREC may review or override the SHESC decision.

Risk/Impact Checked with a Research & Ethics Advisor (REA)? Yes ☐ **No** ☐ REA Comment, Initials & Date:

……

A1 *WHY* IS THE PROJECT TO BE UNDERTAKEN

Summarise in sufficient detail why the project is being undertaken. If references are quoted, full citations should be given. Include the educational and/or scientific aims of the project. *(boxes will expand for your text)*

This project is being undertaken as part of Andrew Cain's Ph.D. studies on approaches to teaching and assessing introductory programming subjects. It aims to evaluate the effectiveness of Constructive Alignment (Biggs 1996) in encouraging deep approaches to learning in the students of introductory programming units at Swinburne University of Technology.

Constructive Alignment is the use of teaching and learning activities and assessment methods that clearly align with the unit learning objectives. Constructive Alignment has been shown to help promote deep approaches to learning in students (Biggs 1996). While other studies (De Raadt 2005) have shown that approaches to learning have a strong correlation with success for students studying introductory programming.

The research aims to evaluate the effectiveness of Constructive Alignment by (1) examining students' approaches to learning in introductory programming units, (2) students' perceptions and use of teaching and learning activities and resources, (3) by tracking how students' study goals and strategies evolve during the semester, and (4) by analysing student outcomes as demonstrated in assessment work.

The long-term affect on student approaches to learning will be examined to (5) determine if this teaching method has any affect on students' approaches to study in other units and to work in general.

Feedback from participants will be used to gauge the effectiveness of the teaching method and to inform further research and development in this area.

Biggs, J.B. (1996) Enhancing teaching through constructive alignment, Higher Education, 32, p347-364, Springer Netherlands.

De Raadt, M., Hamilton, M., Lister, R. et al. (2005). Approaches to Learning in Computer Programming Students and their Effect on Success. *Proceedings of the Annual International Conference of the Higher Education Research and Development Society of Australasia (HERDSA)*. Sydney, Australia. 407-414.

A2 *WHAT* - BRIEF DESCRIPTION OF PROJECT

In plain English

This study will consist of thematic analysis of submitted work, surveys, focus groups, and interviews. These activities will form part of a longitudinal study that will be used to examine how this teaching method affects student approaches to learning.

At the start of each unit students will complete a **survey** with multiple choice and open-ended questions that will gather data on student expectations for the unit, goals in terms of understandings gained, and desired grades. This information will be used in the analysis of the students' goals (point 3 from A1). This survey is also being used as part of the teaching of the unit.

During the semester students will complete four **surveys** to gather data on their progress, perception of teaching and learning activities, resources used, student goals and the strategies they are using. This information will be used in the analysis of the students' perceptions, students use of teaching and learning activities and support material, and to track student study goals and strategies (points 1, 2 and 3 from A1). These surveys are also being used as part of the teaching of the unit.

At the end of the unit, students will complete a **survey** that will involve multiple choice and open-ended questions, and participate in a **focus group**. Both the survey and focus group will gather data on their general approach to learning, the usefulness of teaching and learning resources, and the assessment strategy (points 1 and 2 from A1). The focus group will be conducted using the protocol outlined in the appendix.

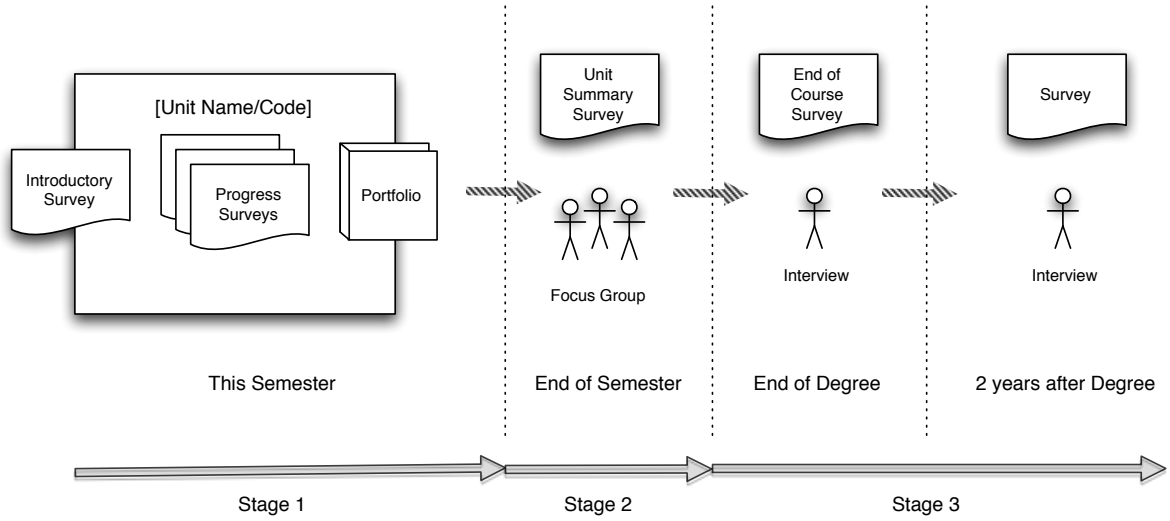
The **thematic analysis** of submitted work will allow closer examination of the student outcomes, and will look for evidence of further study or deeper learning of the subject content. This information will be used to analyse student outcomes (point 4 from A1).

The **longitudinal study** will use **interviews** and **surveys** to assess the impact this teaching method has on student approaches to study in other units and environments (point 5 from A1). The students will be interviewed at the end of their course and after a few years in the workplace.

A3 *HOW* - PROCEDURES

Please detail clearly and sufficiently the proposed research/statistical method(s), procedures and instruments to be used in the project, including all screening and research 'procedures' to which the participants will be subjected, and asterisk those which may have adverse consequences. Please include as appendices all screening instruments, questionnaires, interview protocols etc (at least in draft form if not finalised).

This research will be divided into three stages as shown below.



Stage 1: This stage will include the *Initial Survey* conducted in the first week of the semester, and the *progress surveys* conducted in weeks 3, 6, 9, and 12 of the semester. All students are required to complete these surveys as part of the unit. To be included in this research, students must complete and sign an informed consent form in which they opt to have their responses included in this research (see Appendix). This research will only include work from students where they have explicitly opted in.

These activities are primarily used as part of the teaching of the units under investigation. As a result, all of the students in the unit will participate in the surveys and will submit a portfolio for assessment. Students may agree to have their work included in this research, and the call for participants clearly indicates that this is a separate investigation looking at the effectiveness of the teaching method used. Students will have the option to consent to have their responses to surveys, and their portfolio work, included in this research.

Participants will be sought during the semester through unit wide announcements and emails. Students will be asked to indicate their willingness for their work to be included in this research, and will be able to opt in to the use of quotes separately. The one form (see Appendix) will be used to check if students are willing to have their survey responses and final portfolio included in this research. A similar form (see Appendix) will be emailed to prior students of the units asking for permission to include their portfolio work in the thematic analysis for purposes of comparison.

One of the investigators not involved in the teaching or assessment of the students in the unit will collect the signed consent forms. The forms will be kept secure by that investigator in a sealed envelope until results have been published.

Initial Survey: This questionnaire (see Appendix) will be conducted in Blackboard in the first week of the semester. This will collect demographic information (2 question), information on prior programming experience (4 questions), relevance of the unit to their chosen career (2 questions) and their expectations of what they will learn (3 questions) and the results they want to achieve (4 questions).

Progress Surveys: These surveys (see Appendix) will be conducted online in the weeks 3, 6, 9, and 12 of the semester. This will collect information of the grade they are aiming to achieve (2 questions), the activities and resources they have used in the last three weeks (3 questions), how they are progressing with the unit (5 questions), and what they are planning on doing in the following three weeks (1 question).

Thematic analysis: A thematic analysis of the work submitted (including submitted portfolios, assignment work, and test results) by students will be conducted after the unit results are published, with only those students who have opted in for this part of the research being included. This analysis will look to determine the structure of the students learning outcomes using the SOLO taxonomy (Biggs

and Collis (1982) *Evaluating the Quality of Learning: the SOLO taxonomy* New York: Academic Press) and for evidence of deep or surface learning approaches. The work will then be examined for any additional themes that appear within each of these groupings.

Stage 2: This stage includes collection of data after the end of the semester. Participants for this research will be sought in the final week of the semester through unit wide announcements and emails. Informed consent will be collected from students at the start of the survey and focus groups (see Appendix). Only those students who have opted in for this part of the research will be included.

Unit Summary Survey: Respondents will be invited to undertake the online questionnaire (see Appendix) through Swinburne's Opinio software. Reminder emails calling for participants will be send prior to the end of the survey. The survey will be opened at the end of the semester after the last teaching week. This will collect information on the alignment of activities to intended learning outcomes (5 questions), usefulness of teaching and learning activities (9 questions), assessment (6 questions), sense of achievement (4 questions), level of intellectual activities (5 questions), and general approach to study (20 questions). All questions will use a 4 or 5 point Likert scale.

Focus Groups: The focus groups will be conducted after the end of the exam period, and will be organised and run by research members who are not directly involved in the teaching or assessment of the students. These meetings will discuss the unit's intended learning outcomes, teaching and learning resources, assessment, and workload as well as general approaches to study (see Appendix). The meetings will be recorded and subsequently transcribed into a coded form.

Stage 3: This stage includes collection of data at the end of the students' degree, and two years later. Participants for this research will be sought via email or phone. Informed consent will be collected from students at the start of the survey and/or interview. Only those students who have opted in for this part of the research will be included. Students participating in the end of degree interviews will be asked if they are willing to be contacted again in the future, and a contacted email address will be requested.

The specific details of the questions will be informed by the research in stage 1 and 2. The areas expected to be included (see Appendix) include general kinds of work sought/obtained, student experience, relevance and awareness of learning objectives, assessment strategies encountered, application of approaches to learning in the work environment.

Interviews will be recorded and subsequently transcribed into a coded form.

Note: The first page of each of the informed consent documents will be printed on Swinburne stationary to ensure that it contains appropriate Swinburne logos used in accordance with the appropriate style guides.

A4 DESCRIBE ANY RISK THAT MAY ARISE TO THE PARTICIPANT / DONOR?

Risk to participants (and to researchers) can be real but does not need to be physical. Risk includes such as self esteem, regret, embarrassment, civil or criminal liability, disease, physical harm, loss of employment or professional standing, etc. Please consider such possibilities carefully

Some research activities may put the participant *at risk through what is being done or simply through their participation.*

Please describe the risk you perceive and the protective measures to be taken.

No risk is anticipated

A5 DESCRIBE ANY RISK THAT MAY ARISE TO THE RESEARCHER / ADMINISTRATOR?

Some research activities may put the researcher *at risk through what is being done or simply through their participation.*

Please describe the risk you perceive and the protective measures to be taken.

No risk is anticipated

A6 WHAT BENEFITS ARE ANTICIPATED FROM THE PROJECT

Ethical principles would require that benefits flowed from the activities - but please avoid grandiose claims.

(a) To the Participant (what and how so)

It is expected that respondents will benefit in the following way:

- An opportunity to reflect on how the teaching and learning activities of the unit have contributed to their personal development, and how these strategies can be applied to other subject areas.
- An opportunity to provide feedback that will help contribute to the development of the teaching method used.
- Experience a sense of engagement with the university in which their voice will be valued and contribute meaningfully to the outcomes and recommendations of the project.

(b) More generally (to society, profession, knowledge, understanding, etc, and how so.)

This research will provide feedback for the ongoing improvements to the teaching and learning activities and assessment in these subjects and other subjects related to software development.

A7 POTENTIAL PROBLEMS

From time to time in the course of a research project important information, such as an individual found to be at risk, or entirely unforseen events may come to pass. What procedures are in place to handle unexpected or particularly significant personal or other information that may come to light through the project, eg, unknown medical/psychiatric condition, a particularly distressed participant, civil or criminal liability, etc.

All participation will be voluntary and students will be free to withdraw from the study at any time. Should a participant become distressed during participation in the focus group discussions, participation will be ceased and the student will be informed that they may withdraw from the study. The students will also be given contact information for the student counselling service on the Information Statement and referred to the service by the lead researcher should an issue arise.

A8 PROFESSIONAL/ETHICAL ABILITY & TRAINING (Researchers/Students/Assistants)

NS 1.15 Research must be conducted or supervised only by persons or teams with experience, qualifications and competence appropriate to the research … using (appropriate) facilities … (and with appropriate skills and resources for dealing with any contingencies…

(a) Sufficiently detail what investigators/assistants will do in this project and their expertise/competence to do so.

John Grundy (Main Investigator) is Professor of Software Engineering, SUCCESS Tier 1 Centre Director & Head of the CSSE Academic Group, Swinburne University of Technology. He has conducted many experiments with end users of software systems including observation, structured interviews, surveys, and instrumented software systems interaction data capture. Many of these studies have contributed significantly to numerous academic publications including articles in Interacting with Computers, Software - Practice & Experience, Journal of Visual Languages and Computing, Automated Software Engineering journal, Journal of Systems and Software, and IEEE Transactions on Software Engineering. All of these end user studies have had approval from the full University of Auckland Human Participants Ethics Committee (UAHPEC). Some have been carried out by Prof. Grundy himself, but the majority by Research Assistants, Honors Students, Masters students and PhD students working under Prof. Grundy's direction. Recent examples of these end user studies include:

- Survey, observation and questionnaire on enterprise modelling tool usage (UAHPEC approval # 2007 / 178)
- Survey of Visual wiki concept by target end users (UAHPEC approval # 2008 / Q / 010)
- Observation and questionnaire on visual modelling tool usage (UAHPEC approval # 2008 / 405)
- Observation and questionnaire on Design Critics tool usage (UAHPEC approval # 2009/492)
- Survey, observation and questionnaire on Requirements capture tool usage (UAHPEC approval # 2010/172).
- Survey for Social Services Requirements Project (SUHREC Project # 2010/168)
- Interviews for Social Services Software Requirements Interviews (SUHREC Project #2010/235)

Andrew Cain is an on going Swinburne Academic staff member. Andrew is responsible for teaching a number of introductory programming units, and as a result will not participate in the focus group sessions, and the consent forms will be withheld from him during the period of potential conflict discussed. This is discussed in depth in section C8 below.

The research assistant will be nominated by the SUCCESS IT Education Research Group, and will be responsible to the lead researcher for ethical and methodological issues. Selection criteria will ensure that this individual will not have any association with the teaching of the units under investigation, must have an appropriate undergraduate degree, and will have experience conducting focus groups and online surveys.

The other investigators are on going Swinburne Academic staff members who have previous experience conducting surveys, interviews, focus groups, and evaluating and analysing student outcomes.

(b) Sufficiently detail any further training/qualifications required for investigators/assistants to carry out the project.

None

A9 FUTURE USE OF DATA

Will any of these data be used by yourself, your students or others for any purpose other than for this project as described in the protocol? If so please describe.

The data collected through this study may be used for comparative purposes in future research.

A10 EXTERNAL INVOLVEMENT

Is a body external to Swinburne involved in initiation or support of the project?

☐ Yes Name of body/organisation. .....

If an external body is associated with the project you **must** provide the HREC with detail of the arrangements, *including details of any funding or other resources being provided*. A copy of relevant pages from the contractual arrangements should be attached.

☒ No

A11 EXTERNAL APPROVALS

Projects involving other organisations or entities may require approval from other institutions or their ethics committees, etc. for such things as access to prospective participants, contact lists, data, facilities, etc. A copy of such approvals may be required to be provided to the HREC at the time of application or be made available as soon as possible. In which case, the project may not commence, until such evidence is provided.

Please indicate, as appropriate, if formal clearance/permission has been obtained or sought:

Institutional Yes ☐ Documentation Attached ☐ or to follow ☐

Next of Kin (for special groups) Yes ☐ Documentation Attached ☐ or to follow ☐

(estimate when likely to be obtained)

☐ No (please explain)

A12 RESEARCHER / SPONSOR RELATIONSHIP

Is there any relationship or association between the sponsor and any of the researchers listed in Section A of this form, for example are any of the researchers directors, officers, employees, shareholders or promoters of the sponsor or do they receive any personal benefits from the sponsor under any other contracts or arrangements?

☒ No

☐ Yes (please explain the relationship(s), including how a vested or a conflict of interest situation does not arise.)

SECTION B: ETHICAL ISSUES OVERVIEW

B ETHICAL ISSUES

[Double-click on ☐ YES/NO 'check box' to select box, then enter Default Value as Checked ☒ or leaving as Not Checked ☐]

		YES	NO
(a)	Non-/Limited Disclosure or Deception: Is any detail in relation to research purposes, methods or questions being withheld from participants? Or will deception of any kind be involved? Or any covert/undeclared observation? (Refer *National Statement* Chap 17)	☐	☒
(b)	Does the data collection process involve access to confidential personal data (including access to data provided for a purpose other that this particular research project) without the prior consent of subjects?	☐	☒
(c)	Will participants have pictures taken of them, e.g., photographs, video recordings?	☐	☒
	If "YES", please explain how you intend to retain confidentiality and ultimately dispose of the material.		
(d)	If interviews are to be conducted, will they be record by electronic device?	☒	☐
	If "Yes", please explain how you intend to retain confidentiality and ultimately dispose of the material.		
(e)	Will participants be asked to perform any acts or make statements which might compromise them, diminish self esteem or cause them embarrassment or regret (minimal, moderate or significant)?	☐	☒
(f)	Might any aspect of your study reasonably be expected to place the participant at risk of criminal or civil liability (not just immediately or directly)?	☐	☒
(g)	Might any aspect of your study reasonably be expected to place the participant at risk of damage to their professional/social/cultural/financial standing or employability?	☐	☒
(h)	Will the research involve access to data banks subject to privacy legislation?* *(NOTE: Annual reporting to Government may be required on this item. For info: please contact the Research Ethics Officer.)*	☐	☒
(i)	Will participants come into contact with any equipment which uses an electrical supply in any form e.g., audiometer, biofeedback, electrical stimulation, magnetic stimulation, etc.? If "YES", please outline below what safety precautions will be followed.	☐	☒
(j)	Will any treatment be used with potentially unpleasant or harmful side effects?	☐	☒
(k)	Does the research involve any stimuli, tasks, investigations or procedures which may be experienced by participants as stressful, noxious, aversive or unpleasant during or after the research procedures?	☐	☒
(l)	Will the research involve the use of placebo control conditions or the withholding/substitution of treatment, programs or services (health, educational , commercial, other)?	☐	☒
(m)	Will any samples of body fluid or body tissue be required specifically for the research which would not be required in the case of ordinary treatment?	☐	☒
(n)	Will participants be fingerprinted or DNA "fingerprinted"?	☐	☒
(o)	Are there in your opinion any other ethical issues involved in the research?	☒	☐

NOTE: If the answer to any of the above questions is "yes", please **explain** and **justify** below in sufficient clear detail. (The box below will expand to fit your response.)

(d) The focus groups / interviews will be recorded and transcribed to enable the researchers to accurately record and analyse the details at a later date, as opposed to taking detailed notes during the session. All names and personal identification will be removed during the transcription process and codes will be employed. All digital files will be kept in a locked and secure location during the course of the research and then destroyed at the completion of the research process. No individuals will be identifiable in the transcribed records. All participants will be informed of this process in the Form of Disclosure (see Appendix)

(o) To keep participants informed of the arrangements for the interviews and focus groups, a contact, such as mobile phone number or email address, will be requested. Contact information will be kept in locked draw accessible only to the researchers involved in coordinating these activities. Following completion of the interview/focus group, contact information will be destroyed.

Attach further documents if appropriate

SECTION C: PARTICIPANT DETAILS

C1 PARTICIPANT DETAILS

The composition of the participant group may, in some circumstances, distort and invalidate an outcome, and risks may arise through the composition of the participant group.

How many individual participants will be involved? *(Number/number ranges for which approval is sought)*

Males: 100-300 Females: 10-30 Total participants ~110-330

Over what range of ages?

From (youngest): 17 To (Oldest): No age Limit

If there is a gender or age imbalance in the number of participants please explain why.

Numbers will depend upon enrolment in the programming units under investigation.

It is expected that there will be a larger number of male participants due to the gender bias in the enrolments in these units.

C2 RECRUITMENT

How will participants be recruited/selected?

Please outline the process in sufficient detail how this is to occur.

***Note**: Where participants are obtained from or through schools, hospitals, prisons or other institutions, appropriate institutional or other authority will probably be needed. If soliciting for participants by advertisement or poster please attach proposed copies or text.*

(See also Project Information Consent Statements and Signed Consent Forms info at the end of this application form.)

Participants involved in this study will be students of the units being investigated.

In *Stage 1 & 2*, all students undertaking the subject will be informed of the research during the semester, and participants will be called for via subject announcements and emails at the intervals described in A2 above.

In *Stage 3*, participants will be contacted at the end of their course via email.

Note: For the *Unit Summary Survey*, the requests will contain the URL of the online questionnaire, allowing participants to volunteer without disclosing their participation. The email and unit announcements will outline the purpose of the research and the structure of the questionnaire. Full informed consent will be provided in order to gain entry to the online questionnaire.

C3 PRE-EXISTING CONDITIONS

In some situations an underlying medical or other significant condition of a participant may result in an otherwise relatively innocuous situation causing excessive stress and exacerbate the condition. Researchers must, therefore, be alert to *such situations and be able to address the resulting issues.*

Do participants have any medical or other significant condition of which you are aware, eg. diabetes, asthma, depression, epilepsy? What steps are in place to handle any resulting problems (you may need to correlate with A3, A4 and A7 of this form)?

None anticipated

C4 DISCLOSURE AND INFORMED CONSENT

How will participants be informed about the project in order to give valid consent:

- ☒ Consent Information Statement(s)/Letter(s) and Signed Consent Form(s) will be used.
  A copy must be attached to your application. A guide to consent instruments is given at the end of this form.
- ☒ Consent Information Statement(s)/Letter(s) and consent implied by return of anonymous questionnaire
- ☒ Verbal advice (Please explain how and why)
- ☐ Other (Please explain how and why)

Participants in the focus groups will be given a project overview statement and informed consent sheet. Additional verbal advice will be given to ensure they understand the nature of group interviews and the impact this has on their privacy and anonymity. This will be used to highlight the points expressed in the Agreement section of the Informed Consent, and to indicate where students can get help/counselling if they require it after the session.

Copies of appropriate consent instruments must be attached to your application. Please consult the Guide to Human Research Informed Consent Instruments in carefully preparing informed consent instruments.

C5 COMPENSATION

Consent to participate must be freely given and not induced through the level of reward, perceived reward, or power relationships

Provide details of any financial or other reward or inducement is being offered to subjects for participation. Indicate the source of the funds.

As a thank you gift for attending the focus groups and interviews, each participant will receive a movie ticket and refreshments during the session.

C6 RELATIONSHIP TO INVESTIGATOR(S)

Free consent may be difficult to ensure if the participant is dependent upon the investigator for employment, assessments etc

Some relationships cause special ethical issues to arise

Are participants linked with the investigator through some particular relationship - eg. employees ultimately responsible to or superiors of the investigator, students of investigator, family members, friends etc.

Participants in the study will be students of the main student investigator, but no coercion will be used to encourage participation. The Unit Summary Survey questionnaire will not contain any information that can be used to identify the participants, and the other parts of the study will only be conducted after results are published and the teacher/student relationship has ended.

The student/teacher relationship is the main source of potential problems for this research, with perceptions of coercion being the central concern.

This issue is further complicated by the fact that the researchers may teach both the first and second programming units, for example HIT1301 in Semester 1 and HIT2302 in Semester 2. As most students will complete the first unit and progress to the second unit the following semester, there is the potential for the perception of coercion in this second unit.

These concerns will be addressed in the following ways:

- The *Unit Summary Survey* is voluntary and anonymous. No identifying information will be collected within the questionnaire and there will be no means of matching responses with individual students.
- The informed consent forms that indicate if students are willing to have their responses to the *Initial Survey*, *Progress Surveys*, and their Portfolio work (for the *thematic analysis*) included in this research will be withheld from researchers involved in teaching these students until the period of potential conflict is deemed to have passed. Until such time, the forms will be kept in a sealed envelope in a locked cabinet at Swinburne by the researchers who are not directly involved in teaching the units. Additionally, all students will be required to complete and sign the forms, indicating if they wish to participate or not. In this way it will not be possible to determine those who do, or do not, wish to participate simply by observing those who sign the form.

The *Focus Group* will be organised and run by researchers not involved in the teaching and assessment of the unit. Data from the Focus Groups will be transcribed into an encoded form using an encoding scheme whereby the student names and ids will not be known by researchers involved in teaching the units until after the period of potential conflict is deemed to have passed. After this period has passed the same encoding scheme will be used to encode responses to the *Initial Survey*, *Progress Surveys*, and data collected from the *Thematic Analysis*.

The period of potential conflict will be deemed to have passed based on the following:

- For first programming units (e.g. HIT1301) where the researchers **are not** involved in the teaching of the second unit, the period of potential conflict will be deemed to have passed once the results for the unit are published.
- For first programming units where the researchers **are** involved in the teaching of the second unit, the period of potential conflict will be deemed to have passed once the results for the **second** unit are published.
- For second programming (e.g. HIT2302) units, the period of potential conflict will be deemed to have passed once the results for the unit are published.

C7 INVOLVEMENT OF SPECIAL GROUPS

Particular issues of consent may arise where special groups of participants are to be involved. There may be, for example, a need to obtain informed consent from persons other than the direct participant. Examples of such special groups include
special cultural groups - eg. indigenous Australians; children and young persons (Guidelines section 4.2); groups with special circumstances - eg. persons with an intellectual or mental impairment (Guidelines s. 5)
Please identify and describe the nature of the groups and procedures used to obtain permission.
Note. Persons proposing research projects involving Indigenous Australians should consult with the relevant University manager of indigenous programs prior to finalising definition of the project.

Not applicable

C8 PRIVACY

The University is subject to the Victorian Information Privacy and Health Records Acts as well as the Commonwealth Privacy Act and, in particular, the Information/Health/National Privacy principles (IPPs/HPPs/NPPs) set out therein and is required to report annually on projects which relate to or utilise particular records.
Does the research involves access to data which was collected by an organisation for its own purposes (ie. not specifically collected for *this* project) such as student records, other data banks, human pathology or diagnostic specimens provided by an institution/s?
If yes, please indicate source/s.

Yes.

The *Initial Survey*, *Progress Surveys*, and *Portfolio* work are all part of the delivery and assessment of the programming units under investigation. Students' will complete these as part of their participation in these units. Permission will be sought to access this data for use in this research.

Call for participants will be sent to students enrolled in the units under investigation using contact details maintained by the University. For example, call for participants in the focus groups will be made via email sent from the Blackboard website.

C9 LOCATION OF STUDY

Please indicate where the research will be carried out. If the research will not be on University premises permission of owner / occupier may be required. If so, please indicate what authority or permission may be required and how will be obtained. ***NB**: Where required, please attach to this application evidence of authority obtained or provide the Secretary, HREC as soon as practicable.*

The surveys conducted as part of the units will be conducted through Swinburne's Opinio survey software or via the Blackboard CMS using its survey/test mechanisms as determined by the Unit Convenor as these are primarily to support the teaching of these units.

The *Unit Summary Survey* will be conducted online through Swinburne's Opinio survey software.

The focus group/interviews will be conducted at Swinburne.
The analysis of student work will be conducted at Swinburne.

Surveys at the end of their course will be conducted online through Swinburne's Opinio survey software.
Interviews at the end of their course will be conducted at Swinburne or via phone.
Interviews two years after completing their course will be conducted at Swinburne or via phone.

SECTION D: DATA & PUBLICATION ARRANGEMENTS (Nb Section D Revised Aug 2007)

PLEASE CONSIDER CAREFULLY YOUR RESPONSES TO THIS SECTION. YOU NEED TO BE CLEAR AS TO WHAT IS OCCURING WITH RESPECT TO DATA COLLECTION, RETENTION and DISPOSAL.
(In your responses, you should demonstrate familiarity with National Statement requirements for confidentiality, relevant Privacy Principles and Swinburne's *Policy on the Conduct of Research,* eg, Sect 4, see URL:
http://www.swinburne.edu.au/corporate/registrar/ppd/docs/PolicyontheConductofResearch.pdf**).**

D1 DATA COLLECTION/RECORDING (Nb Section D1 Revised Aug 2007)

Please note that, with any information or data collected/retained, if any individual can reasonably be identified, the information can be deemed "personal information" or "health information" under National/Health/Information Privacy Principles (NPPs/HPPs/IPPs).

(a) How or in what form will **data** be collected/recorded?

(*eg, notes; verbatim, audio and/or video recordings; transcriptions of recordings; recorded or signed consents; etc*)

Data will be recorded through Blackboard and the Opinion survey software. This information will be downloaded, transformed, and stored in electronic format.

The focus group/interviews will be recorded electronically using a computer, or similar digital recording device, and hand written notes taken.

Where the data obtained contains details that identify students, this data will be recoded using an internal coding scheme. This will ensure that the collected data does not contain details that directly identify the participants.

The first time data is collected for a student they will be allocated an internal coding number that is unique and randomly generated. This number will not be calculated from other details, nor will it be possible to reverse engineer this number to determine the student's identification number, name, or other details.

The coding scheme that maps student details to the internal coding scheme will be maintained in a separate spread sheet that is encrypted and secured with a password. This ensures that no one other than the researchers will have access to this data.

Only the recoded data will be kept, and the mapping spread sheet will be used to enable the coding of future submissions by the participants.

(b) As regards **any individual**, in relation to any data collection or retention, you need to acknowledge either or both of the following:

[*Double-click on ☐ 'check box' to select X by entering in Default Value as Checked ☒ or leaving as Not Checked ☐*]

☒ **An Individual can be identified OR is Potentially Identifiable / Re-Identifiable**

(*An individual can be identified at some point or by the very nature of the data collected/retained: at time of an interview, by signed consent form, identified or labelled voice or image recording, pen-and-paper questionnaire, on-line survey instruments, etc.*

Whilst data may not have (explicit) identifiers, an individual's identify can still reasonably be worked out.

Or data may have (explicit) identifiers removed and replaced by codes that permit matching of an individual with the data collected/retained, in which case it is possible to identify or re-identify the person to whom the data relates.)

☒ **An Individual is Non- or Un-identifiable**

(Data collected/retained anonymously and with no reasonable possibility of being identified.)

Your acknowledgement may require further explanation or clarification; if so, please include in the following box.

Identifying details from the Blackboard/Opinio surveys, notes on focus group meetings, interviews, and assessment work will be coded, with names and student IDs known only to the researchers. Any lists connecting codes with names will be destroyed at the completion of the study. Code pseudonyms will be used where direct quotes are reported and other identifying information will be removed when reporting results.

There will be no reporting on small groups of students within the overall cohort. For example, only a small number of female students are expected in these units (historically around 10%). To avoid any potential for identifying these students in the research, output will explicitly avoid the use of titles that denote gender.

As this is a long running study it is expected that the number of participants may get progressively smaller as the stages of the research progress. If the group becomes too small to either provide valuable aggregated data, or if it becomes difficult to protect the identity of the participants involved this stage of the research project may be cancelled.

Particular attention has been paid to the issues of anonymity and confidentiality in the focus groups as related to Internal Confidentiality (Tolich 2009). Participants in the focus group will be asked to treat the meeting as a "public meeting", and that they should not disclose information they feel violates their privacy. See Focus Group Protocol and Informed Consent for the Focus Group in the Appendix.

Martin Tolich (2009), "The Principle of Caveat Emptor: Confidentiality and Informed Consent as Endemic Ethical Dilemmas in Focus Group Research", Journal of Bioethical Inquiry, Volume 6, Issue 1, Springer Netherlands

Unlike the other aspects of this research, the Unit Summary Survey of Stage 2 of this research will not collect any identifying details, nor will it be possible to link the responses to the participants. A link to the Unit Summary Survey will be placed on the unit's website and emailed to students. This link will not contain any details that enable participants to be tracked. Participants will automatically be assigned a code via the Opinio survey system. There will be no list connecting these codes to individual participants to ensure full anonymity. Any other potentially identifying information will be removed when reporting results. Any participant who elects to only be involved in this part of the research will not be identifiable.

D2 DATA SECURITY (Nb Section D2 Revised Aug 2007)

Please note that "data must be held for sufficient time to allow reference. For data that is published this may be for as long as interest and discussion persists following publication. It is recommended that the minimum period for retention is at least 5 years from the date of publication but for specific types of research, such as clinical research, 15 years (or more) may be more appropriate." (Sect 4.3 of *Swinburne's Policy on the Conduct of Research*)

Please indicate **how data** (all types of data, including, eg, signed consent forms) **will be securely retained** (eg, electronic form in password-protected disk drive, locked filing cabinet, etc) **and where**? With more than one type of data, will the types be separately stored?
In your explanation, you will need to make clear **how due confidentiality and/or anonymity will be maintained**.

(a) During the study

All identifiable data will be kept in secure, locked conditions, at Swinburne. Electronic data will be stored in an encrypted form.

(b) Following completion of study

Following the completion of the study, all identifiable data will be destroyed. Only de-identified data will be kept, and this will be stored in a locked cabinet at SUT as required by Ethical approval procedures.

Note: original assessment work will not be kept as part of this study, but will be retained by the respective unit convenors for the period specified in Swinburne assessment policies and procedures.

D3 PUBLICATION/OUTPUT (Nb Section D3 Revised Aug 2007)

Please explain in sufficient detail:

(a) What, if any, publication (conference, news media, academic journal, other journal, etc) is envisaged following on or in relation to this project, both in terms of data proper and/or analysis of data?

(b) Will participants be informed about any envisaged research publication/outcome? (This information is normally to be included in the information given prior to obtaining informed consent.)

(c) Would any participants be able to be identified through the publication of data proper or research findings? If so, explain why this is necessary.

(a) Publications will include PhD thesis, journal articles and conference papers.

(b) All participants are informed in the project disclosure on the front page of the survey, and in the advertising emails and subject announcements. All participants will required to opt to participate in the research, and may also opt in separately to allow publication of direct quotes.

(c) While results from the study may appear in publications such as journals and conference proceedings, it will not be possible to identify individual participants through these publications.

D4 INDIGENOUS ISSUES

Storage arrangements for data relating to research into Indigenous matters must be determined in compliance with the Policy on the Conduct of Research after consultation with the communities involved.
What consultation has taken place and what arrangements have been made.

Not applicable

D5 OTHER ISSUES (Nb Section D5 Revised Aug 2007)

Are there any other issue relating to data collection, retention, use or disclosure which the ethics committee should be made aware of and, if so, please explain how you are to deal with this.
(Eg, Research outcomes unduly impacting on any individual or group not directly participating, etc.)

Not applicable

SECTION E: SUBSTANCES & CLINICAL ISSUES

☒ ***No*** matters in this section are applicable to the study *or*

E1 ADMINISTRATION OF SUBSTANCES/AGENTS

Name of substance(s)		
Dosage per administration		
Frequency of administration		
Total amounts to be administered		

Anticipated effects:

***NOTE**: If the research involves administration of foreign substances or invasive procedures, please attach a statement accepting responsibility for those procedures by a medical or paramedical practitioner with Indemnity insurance.*

☐ STATEMENT ATTACHED

E2 BODY FLUIDS OR TISSUE

What fluids or tissue? How will be samples be obtained?

Frequency and volume

How are samples to be stored?

How will samples be disposed of?

Who will take the samples?

What are their qualifications for doing so?

Do participants carry, as far as you know, the Hepatitis B or HIV virus? If so how will the risks be handled

Do participants carry, as far as you know, any other contagious diseases or viruses? If so how will the risks be handled

SECTION F Declarations for Signature [1 2 3]

1. With respect to this project**, I / We, the undersigned Investigator(s)/Assistant(s) agree**:

- **To undertake human research activity or handle data confidentially in accordance with Swinburne requirements, including any standard or special ethics clearance conditions, under the proper direction of the responsible Swinburne manager and/or principal Swinburne (or other) researcher/supervisor.**

NAME: (block letters)	SIGNATURE:	DATE:
JOHN GRUNDY		
ANDREW CAIN		
VIVIENNE FARRELL		
CLINTON WOODWARD		
JAMES HAMLYN-HARRIS		

All listed applicants must sign. The Chief Investigator/Supervisor is also responsible for personnel subsequently joining the project. Expand this table or duplicate this page as required. NB This information is subject to Swinburne or external audit.

****** Please note that ******
PROJECTS MUST NOT COMMENCE WITHOUT PRIOR WRITTEN APPROVAL from the Human Research Ethics Committee (SUHREC) or its appropriate Subcommittee (SHESC)

2. Declaration of Compliance by Chief Investigator(s)/Student Supervisor(s).

I declare that the above project has been developed and will be conducted in accordance with relevant Swinburne standards, policies and codes of practice, including any standard or special conditions for on-going ethics clearance. I further declare that all listed and subsequently appointed researchers or assistants involved in this project will be made aware of the conditions of ethics approval as communicated to me, including approved documentation and procedures.

Signature & Date: ……

Name of Signatory & Position: Professor John Grundy, SUCCESS Centre Director

(Optional) **Form checked by a Research & Ethics Advisor (REA)? Yes** ☐ **No** ☐ REA Initials & Date: ……

3. Endorsement of Head of Academic Unit (or Delegate) or Above.

I declare that this project: has been developed and will be conducted in accordance with relevant Swinburne standards, policies and codes of practice; and has research merit, adequate resourcing and appropriate leadership/supervision.

Signature & Date: ……

Name of Signatory & Position: ……

*(Please note: This endorsement must be given by an authorised official who is **not** also a chief or co-investigator of the project and who is not also the supervisor of a student investigator with an interest in the project.)*

Initial Survey (collected as part of the subject)

1. Student ID
2. Highest previous study: [High School],[Tafe],[Undergraduate],[Postgraduate]
3. Have you studied programming prior to this subject? [Yes], [No]
    a. Which programming languages do you have experience with?
    [Java], [C#], [Visual Basic], [Pascal], [Python], [C/C++], [Others]
    b. How would you rate your current programming competency?
    [Beginner] to [Expert] (5pts)
    c. How many years programming experience do you have?
    [None], [<1 year], [1-2 years], [more than 2 and less than 5 years], [> 5 years]
4. Do you plan to work in software development after completing your studies?
    [My work will not be related to software development],
    [I will work with software developers, but not develop software myself],
    [I will be working as a software developer]
5. With respect to your career, where do you see yourself in 5 years?
6. By the end of your studies what programming competency do you want to achieve?
    [Beginner] to [Expert] (5 points)
7. With respect to programming, what kinds of things do you expect you will be able to do by the end of this subject?
8. What things do you expect you will know more about by the end of this subject?
9. Indicate the grade you are aiming to achieve?
    [Don't know], [Pass], [Credit],[Distinction],[High Distinction]
10. Why are you aiming for this grade?
    [Previous Grades],
    [Experience of Programming], (do and don't have experience)
    [Level of interest],
    [Other reasons]
11. How many hours per week do you expect to spend in order to achieve this grade?
12. Is there any other information you would like to add that would assist us in understanding your previous experience or your aspirations for learning in this unit?

Progress Surveys (collected as part of the subject)

1. Student ID
2. What grade are you currently aiming to achieve in this subject?
   [Don't know], [Pass], [Credit], [Distinction], [High Distinction]
3. If you are not aiming for an HD, is it clear what you would be required to do to achieve a higher grade? [Yes],[No]
4. In the last three weeks have you done any of the following for this subject? Tick all options that apply.
    a. [Memorised facts, terms, and/or syntax]
    b. [Completed practice tasks from the assignments]
    c. [Completed assessment tasks from the assignments]
    d. [Searched the internet for code examples]
    e. [Searched the internet for other material related to the subject]
    f. [Read books or articles related to the subject]
    g. [Worked on writing the bonus reports from the assignments]
    h. [Worked on implementing bonus programs from the assignments]
    i. [Started or continued work on a program of your own creation]
    j. [Started or continued work researching a topic related to the subject]
    k. [Discussed programming concepts or a program design with others]
    l. [Tried to explain programming concepts and/or terms to someone else]
    m. [Helped someone debug a program]
    n. [Other study for this subject]
5. In the last three weeks have you used the following teaching and learning resources when studying for this subject:
    a. Textbook
    b. Lectures
    c. Tutorials
    d. Podcasts
    e. SwinGame
6. In the last three weeks have you found the following teaching and learning resources useful when studying for this subject:
    a. Textbook
    b. Lectures
    c. Tutorials
    d. Podcasts
    e. SwinGame
7. In the last three weeks have you learnt anything related to this subject that you found particularly interesting? Yes/No. Provide brief details.
8. In the last three weeks have you found anything related to this subject particularly confusing or difficult? Yes/No. Provide brief details.
9. What would you say are the most significant things you have learnt in this subject in the last three weeks?
10. What do you find the most rewarding in this subject?
11. Are you planning to do any of the following for this subject in the next three weeks? Tick all options that apply.
    a. [Working on preparation and assignment tasks]
    b. [Writing bonus reports]
    c. [Implementing bonus programs]
    d. [Designing or implementing a program of your own creation]
    e. [Writing or editing your experience report]
    f. [Researching a topic related to the subject]
12. Is there anything else you could add that would help us understand how you are approaching your study in this subject?

End of Unit Survey

We would like to know your thoughts about the teaching and learning activities and assessment tasks used in the subject.

For the following questions please select the answer which best represents your opinion.

5 point Likert scale [NA, Strongly Agree – Strongly Disagree] (for each of the following, except where noted)

1. Alignment of activities to intended learning outcomes:
    a. I am aware of all of the intended learning outcomes in [unit].
    b. The intended learning outcomes influenced my focus during the semester.
    c. The assessment in [unit] matched the unit's intended learning outcomes.
    d. The lectures in [unit] covered key aspects of each of the unit's intended learning outcomes.
    e. The tutorials in [unit] allowed me to developed skills and understanding related to the unit's intended learning outcomes.
2. Usefulness of activities: I found the…
    a. Weekly reading helped me learn the subject content.
    b. Weekly assignments allowed me to demonstrate my understanding of the topics covered.
    c. Feedback I received on the weekly assignments helped to develop my understanding of the topics covered.
    d. Lecture discussions helped develop my understanding of the material.
    e. Tutorial sessions provided me with an opportunity to get the help I needed.
    f. Podcasts were a flexible means of learning new material.
    g. Podcasts provided me with useful information.
    h. SwinGame API motivated me to learn more about programming.
    i. Teaching and learning activities in this subject worked well for me.
3. Subject Assessment
    a. I felt in control of my learning.
    b. The subject's intended learning outcomes were clear and easy to understand.
    c. I knew what was expected to achieve the different grade results.
    d. I feel that the assessment tasks enabled me to demonstrate the depth of my knowledge.
    e. I was able to use the assessment matrix to plan my studies.
    f. The assessment in [unit] has affected the way I approach assessment in other units.
4. Achievements
    a. I am proud of what I achieved in [unit].
    b. I feel that I learnt more in this unit than I expected.
    c. I feel I achieved more in this unit than in others I studied this semester.
    d. I am keen to learn more about programming.
5. During the course of this semester, how much of [unit]'s course work emphasised the following intellectual activities? [Very Little],[Some],[Quite a bit],[Very Much] (for each of the following)
    a. **Memorising** facts, ideas, or methods from your readings.
    b. **Analysing** the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components.
    c. **Synthesising and organising** ideas, information or experiences into new, more complex interpretations and relationships.
    d. **Making** judgements about the value of information, arguments or methods, such as examining how others gather and interpret data and assessing the soundness of their conclusions.
    e. **Applying** theories or concepts to practical problems or in new situations.

These questions are from Biggs et. al., *Revised Study Process Questionnaire* (R-SPQ-2F), British Journal of Educational Psychology, 2001, and are used with permission.

[this item is *never* or *only rarely* true of me],
[this item is *sometimes* true of me],
[this item is true of me about *half the time*],
[this item is *frequently* true of me],
[this item is *always* or *almost always* true of me]

1. I find that at times studying gives me a feeling of deep personal satisfaction.
2. I find that I have to do enough work on a topic so that I can form my own conclusions before I am satisfied.
3. My aim is to pass the subject while doing as little work as possible.
4. I only study seriously what is given out in class or in the subject outline.
5. I feel that any topic can be highly interesting once I get into it.
6. I find most new topics interesting and often spend extra time trying to obtain more information about them.
7. I do not find this subject very interesting so I keep my work to a minimum.
8. I learn some things by rote, going over and over them until I know them by heart even if I do not understand them.
9. I find that academic topics can at times be as exciting as a good novel or movie.
10. I test myself on important topics until I understand them completely.
11. I find I can get by in most assessment by memorising key sections rather than trying to understand them.
12. I generally restrict my study to what is specifically set as I think it is unnecessary to do anything extra.
13. I work hard at my studies as I find the material interesting.
14. I spend a lot of my free time finding out more about interesting topics that have been discussed in different classes.
15. I find it is not useful to study topics in depth. It confuses and wastes time, when all you need is a passing acquaintance with topics.
16. I believe that lecturers shouldn't expect students to spend significant amounts of time studying material everyone knows won't be examined.
17. I come to most classes with questions in mind that I want answering.
18. I make a point of looking at most of the suggested reading that goes with the lectures.
19. I see no point in learning material that is not likely to be on the examination.
20. I find the best way to pass examinations is to try to remember answers to likely questions.

Interview and Focus Group Protocol [Draft]

General Tips for Conducting the Interview & Focus Groups

- Start each interview with the project statement, and collection of informed consent. In the interviews indicate the longitudinal nature of the study, and assure participants that their personal identity will remain confidential in all publications.
- Explain the privacy issues involved in group interviews. Encourage participants to treat this as a "public meeting".
- In the Focus Groups: interview all students who respond to the call for participants.
- For the longitudinal study: Interview a selection of students. Try to include a range of outcomes (based on thematic analysis).
- Use Focus Group sizes between 6 and 10 people.
- When writing up observations, be sure to include number and percentages of people responding *(i.e 7 out of the 9 students interviewed used the assessment matrix to guide their study in the unit.)*
- Don't be too focused in questions, use them as a guide. Ask general, open-ended questions.
- Start the interviews and focus groups with one or two open-ended questions.
- Develop three or four questions that 'get at' each of the attributes
- Use same questions in each focus group/interview; major questions, followed by minor ones
- PROBE (i.e. *what things have you been doing in the past that allow you to...;* use follow up questions (i.e. '*You haven't mentioned...')*

Interview Method and Outcomes

- One or two research members will conduct the focus groups at the end of each semester. This must not include any researchers who are involved in the teaching or assessment of the unit in which the students are involved. (approximately 60 minutes each focus group)
- One research member will conduct the interviews of the students at the end of their course and two years later. (approximately 30 minutes per interview)

Post Interview/Focus Group

- Debriefing immediately after the end of semester focus group meetings. (30 minutes)
- Identify and document main themes and observations from the interview/focus group.
- Code all transcripts using an internal coding scheme (map all student names and IDs to a consistent internal code)

Outcomes

- Each member of the interview team will prepare a summary of the interview, the themes identified, and observations made. (2-3 pages)
- Summaries will be made available to the researchers involved in teaching these units once the period of potential conflict has been deemed to pass (after the publication of results for the current unit, or the subsequent unit if taught by researching in this project). This will help mitigate the potential issues of perceived coercion.

Focus Group Discussion Areas (After semester) [Draft]

The focus group will be unstructured, and with the discussion focusing around the topics in the following list.

1. Intended learning outcomes: for example:
    a. Were they aware of the intended learning outcomes?
    b. Were the students able to see how the activities all aligned with the learning objectives of the unit?
    c. Was the alignment helpful? How?
2. Use of teaching and learning resources: for example:
    a. Which activities and teaching and learning resources did they find the most beneficial? Why?
    b. How did they use each of the teaching and learning resources? [text, lectures, tutorials, podcasts, SwinGame] Why?
3. Understanding of portfolio assessment: for example:
    a. Have they done portfolio assessment before? Did that affect the way they approached the subject?
    b. How did they use the assessment matrix? Were they able to use this to help plan their study for the subject?
    c. Did the portfolio give them the opportunity to fully demonstrate what they have learnt in the subject?
    d. Were students able to use the portfolio assessment to explore aspects of the subject that were of interest to them?
    e. How do they think portfolio assessment compares to assessment approaches used in other subjects?
4. Workload:
    a. How are they finding the workload for this subject?
    b. What are the main tasks/activities they are spent time on?
    c. How does this compare with other subjects they are studying?
5. Approach to study in general:
    a. What approaches do they use for learning material? [Prompt with cognitive activity level scale memorise to reflect]
    b. Do the activities differ between subjects? How?
    c. What affects the approach they use?
    d. Are they approaching study in this subject differently from other subjects?
    e. Has their approach to this subject influenced the way they approach assessment tasks in other subjects?

Survey/Interview Discussion Areas (end of degree and 2 years out):

Final questions will be informed by results from the previous surveys and focus groups. The following questions are representative of the kinds of questions that will be asked.

1. General employment details:
    a. Type of work they are looking for or have attained
2. Student Experience
    a. Which subjects
        i. Did they enjoy the most, and why?
        ii. Were the most valuable to their chosen career, and why?
        iii. Did they feel they learnt the most in, and why?
        iv. Were the most memorable, and why?
    b. What factors do they think influenced their student experience the most in these units?
    c. What factors do they think influenced their approach to study? How? Why?
    d. What factors motivated them the most in their study?
3. Learning Objectives and Intended Learning Outcomes
    a. In which units were they aware of the learning objectives/intended learning outcomes?
    b. Did knowing the objectives of the unit help focus their study? Did this differ between units?
4. Assessment Strategy
    a. What different assessment strategies did they encounter? Discuss.
    b. What do they think of these different strategies?
    c. Which strategy best suited their approach to study?
    d. Did the assessment strategy of the unit change their study approach? How?
    e. How did their approach to study alter over the duration of the course?
    f. What did they think about the strategy used in [unit]?
5. Portfolio assessment
    a. What did they think of the portfolio process?
    b. Did portfolio assessment affect the way they approached the subject?
    c. What were the best/worst things about portfolio assessment?
6. Application to the work environment
    a. Which skills have been the most useful in their career so far? Why?
    b. Which skills do they see as having a long term benefit? Why?
    c. How do they approach learning now that they have completed their studies?

[Informed Consent for permission to use assessment items and subject survey responses, and seeking participants in future stages of the research. This page will be printed on Swinburne stationary, with appropriate logos used in accordance with the style guides.]

Project Title

Evaluating the effectiveness of Constructive Alignment in Teaching Introductory Programming.

Investigators

Prof. John Grundy, Faculty of Information and Communication Technologies, Swinburne University of Technology
Andrew Cain, Faculty of Information and Communication Technologies, Swinburne University of Technology
Dr. Vivienne Farrell, Faculty of Information and Communication Technologies, Swinburne University of Technology
Dr. Clinton Woodward, Faculty of Information and Communication Technologies, Swinburne University of Technology
Dr. James Hamlyn-Harris, Faculty of Information and Communication Technologies, Swinburne University of Technology

Explanation of Project

This study will evaluate the effectiveness of Constructive Alignment in teaching introductory programming subjects. This teaching method aims to encourage students to use deep approaches to learning in order to enhance their learning outcomes. It is hoped that this study will provide feedback that can be used for the on going improvement of these subjects and of teaching and learning in the software development field in general.

As a student of one of these subjects we would like to invite you to participate in this research. Figure 1 shows an overview of the stages and the activities involved. The research is divided into three stages. Stage 1 relates to your work in this subject, and the researchers are seeking permission to use your submitted work in their studies. Stage 2 occurs after the end of this semester, and involves a survey and focus group that will look at the teaching and learning activities and assessment approach of this subject. Finally Stage 3 will look at the long term impacts, and reflections you have, on the teaching method used in this subject and how it has affected your approach to study and to work in general. Results from this study may appear in publications such as journal articles and conference papers, however it will not be possible to identify individual participants.

Participation in this study is entirely voluntary and if you wish to withdraw from this study you may do so at anytime without needing to give any reasons or explanations for doing so. Your choice to participate, or not, will have no affect on your results in this subject or on your relationship with Swinburne University.

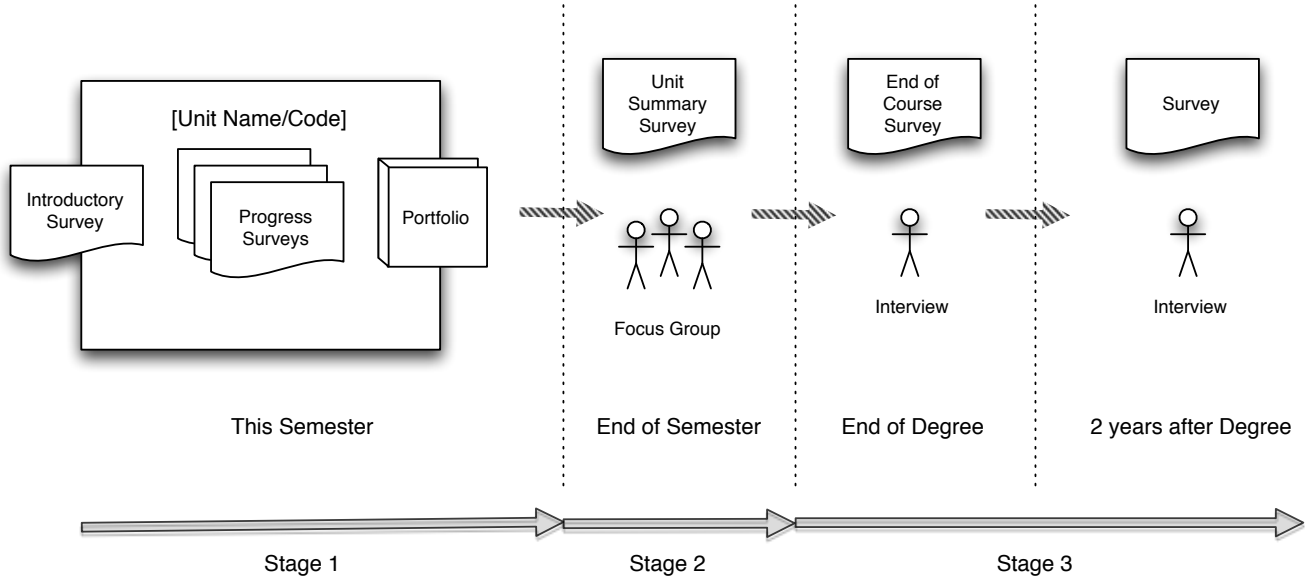


Figure 1: Overview of the research project

With your permission, we would like to use your portfolio work and survey responses from the subject in this research. While these surveys are primarily used as part of the subject, your responses will provide the researchers with valuable information on your expectations, goals, and on how you progressed during the subject. If you agree to participate your portfolio work and survey responses will be made available to the researchers for analysis. Additionally, we would like to ask for your permission to include quotes from your portfolio work and survey responses in publication from this research.

Please note that your portfolio work and survey responses will include details that will enable the researchers to identify you, however your identity will be kept confidential by the researchers and it will not be possible to identify individual participants in any publications resulting from this research.

We are also interested in knowing if you would be willing to participate in the surveys and interviews in Stages 2 and 3 of this research. You do not need to commit to participating in these stages at this time, and you are only indicating you are willing to be contacted and asked to be involved in these stages when they occur. If you are interested in participating in Stage 2, we will contact you by email to invite you to participate in the focus group at the end of the semester. If you are interested in participating in Stage 3, we will email you links to the online survey, and contact you to see if you are still interested in participating in the Interviews.

Please use the attached form to indicate your willingness to be involved in the different stages of this study. Please read, complete, sign, and return the attached form. These will then be kept securely until after results are published, at which time they will be made available to the researchers involved in the project. It is important to note that your results for the subject will **not** be affected by your decision to participate, or not to participate, in this study.

Any questions regarding the project entitled *"Evaluating the effectiveness of Constructive Alignment in Teaching Introductory Programming"* can be directed to the Senior Investigator:

Prof. John Grundy
Faculty of Information and Communication Technologies
Swinburne University of Technology
Phone: (03) 9214 8731.

Privacy Protection

The results of this study may be published in an education journal or conference, however no individual will be identifiable. If you agree to allow us to quote your work, the quotes used will be associated with code numbers that will be known only to the researchers involved in the project, your personal details will not be published.
Your participation in this study is completely voluntary. Your initial agreement to participate does not stop you from discontinuing participation and you are free to withdraw from this study at any time.

Complaints Procedure

This project has been approved by or on behalf of Swinburne's Human Research Ethics Committee (SUHREC) in line with the *National Statement on Ethical Conduct in Human Research*. If you have any concerns or complaints about the conduct of this project, you can contact:

Research Ethics Officer, Swinburne Research (H68),
Swinburne University of Technology, P O Box 218, HAWTHORN VIC 3122.
Tel (03) 9214 5218 or +61 3 9214 5218 or resethics@swin.edu.au

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Dr. James Hamlyn-Harris, Faculty of Information and Communication Technologies, Swinburne University of Technology

Agreement

1. I consent to participate in the project named above. I have been provided a copy of the project information statement and this consent form and any questions I have asked have been answered to my satisfaction.

2. ***Please circle your response to the following:***

- I agree for the researchers to include my *survey responses* to the surveys in [unit name] in this project. **Yes** **No**
- I agree for the researchers to include my *portfolio work* from [unit name] in this project **Yes** **No**
- I agree for quotes from my *survey responses* and *portfolio work* to be published, as long as these quotes cannot be used to identify me personally. **Yes** **No**
- I agree to being contacted to participate in a focus group meeting for Stage 2 of this research (at the end of the semester). **Yes** **No**
- I agree to being contacted to participate in the longitudinal study for Stage 3 of this research. **Yes** **No**

3. I acknowledge that:

   a. my participation is voluntary and that I am free to withdraw from the project at any time without explanation;

   b. the project is for the purpose of research and not for profit;

   c. any personal information about me which is gathered in the course of and as the result of my participating in this project will be (i) collected and retained for the purpose of this project and (ii) accessed and analysed by the researcher(s) for the purpose of conducting this project;

   d. my anonymity is preserved and I will not be identified in publications or otherwise without my express written consent.

By signing this document I agree to participate in this project.

Name of Participant: ……

Signature & Date: ……

[Informed Consent for permission to use assessment items from prior students. This page will be printed on Swinburne stationary, with appropriate logos used in accordance with the style guides.]

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As a prior student of one of these subjects we would like to use your portfolio work as part of this study. If you agree to participate your portfolio work will be made available to the researchers for analysis, and with you're agreement quotes from this work may be published. Results from this study may appear in publications such as journal articles and conference papers, however, it will not be possible to identify individual participants.

Please use the attached form to indicate your willingness to include you portfolio work in this study. Please read, complete, sign, and return the attached form. These will then be kept securely until after results are published, at which time they will be made available to the researchers involved in the project.

Any questions regarding the project entitled *"Evaluating the effectiveness of Constructive Alignment in Teaching Introductory Programming"* can be directed to the Senior Investigator:

Prof. John Grundy
Faculty of Information and Communication Technologies
Swinburne University of Technology
Phone: (03) 9214 8731.

Privacy Protection

The results of this study may be published in an education journal or conference, however no individual will be identifiable. If you agree to allow us to quote your work, the quotes used will be associated with code numbers that will be known only to the researchers involved in the project, your personal details will not be published.
Your participation in this study is completely voluntary. Your initial agreement to participate does not stop you from discontinuing participation and you are free to withdraw from this study at any time.

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Dr. James Hamlyn-Harris, Faculty of Information and Communication Technologies, Swinburne University of Technology

Agreement
To agree to participate in this research please include the following sentences into the body of your email.

1. I consent to participate in the project named above. I have been provided a copy of the project information statement and this consent form and any questions I have asked have been answered to my satisfaction.

2. ***Please indicate the following, removing any lines you do not agree to:***

- I agree for the researchers to include my *assessment work* from [unit name] in this project

- I agree for quotes from my *portfolio work* published, as long as these quotes cannot be used to identify me personally.

3. I acknowledge that:

   e. my participation is voluntary and that I am free to withdraw from the project at any time without explanation;

   f. the project is for the purpose of research and not for profit;

   g. any personal information about me which is gathered in the course of and as the result of my participating in this project will be (i) collected and retained for the purpose of this project and (ii) accessed and analysed by the researcher(s) for the purpose of conducting this project;

   h. my anonymity is preserved and I will not be identified in publications or otherwise without my express written consent.

By responding to this email I agree to participate in this project as outlines above.

Name of Participant: ……

Date: ……

[Informed Consent for Opinio Survey – Unit Summary Survey.]

Project Title

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You have indicated that you would be interested in participating in this study by responding to a call for participants. This part of the study consists of an online survey that includes a total of 49 multiple choice questions, 29 on your thoughts about the teaching and learning activities and assessment tasks used in the subject, and 20 on your general approach to study.

We estimate that this questionnaire will take 15 to 20 minutes to complete. The questionnaire needs to be completed in one sitting. You will not be asked any questions that require you to provide information that can be used to identify you. Results from this study may appear in publications such as journal articles and conference papers, however, it will not be possible to identify individual participants.

It is important to note that your results for the subjects you are studying will **not** be affected by your decision to participate, or not to participate, in this study, nor will it be affected by the answers you provide. Your answers are **confidential** and **anonymous**; we are interested in understanding how you approached studying for this subject and how the teaching and learning activities helped you learn the subject material.

If you wish to participate in this study, your informed consent is granted by selecting the button *"I wish to participate"* at the bottom of this page. This will lead you into the questionnaire. However, there is no obligation, and if you no longer wish to participate in the study, please select the *"I no longer wish to participate"* option.

Any questions regarding the project entitled *"Evaluating the effectiveness of Constructive Alignment in Teaching Introductory Programming"* can be directed to the Senior Investigator:

Prof. John Grundy
Faculty of Information and Communication Technologies
Swinburne University of Technology
Phone: (03) 9214 8731.

Privacy Protection

Your responses will be completely anonymous and confidential. The Opinio software generates your code automatically and not even the researchers will know which code corresponds to which participant. The results of this study may be published in education journals, conferences, and thesis, however only group data will be presented and no individual will be identifiable.

Your participation in this study is completely voluntary and you do not have to fill in the questionnaire if you no longer wish to participate.

Complaints Procedure

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Tel (03) 9214 5218 or +61 3 9214 5218 or resethics@swin.edu.au

Informed Consent

☐ I wish to participate
☐ I no longer wish to participate

[Informed Consent for Focus Group – end of Unit. This page will be printed on Swinburne stationary, with appropriate logos used in accordance with the style guides.]

Project Title

Evaluating the effectiveness of Constructive Alignment in Teaching Introductory Programming.

Investigators

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You have indicated that you would be interested in participating in this study by responding to a call for participants. This part of the study consists of a focus group meeting consisting of approximately ten participants. In the focus group you will be asked to discuss the assessment tasks and teaching and learning activities used in the subject. The meeting will be digitally recorded and later transcribed for analysis. We estimate that the focus group meeting will take between one and two hours to complete. Results from this study may appear in publications such as journal articles and conference papers, however, it will not be possible to identify individual participants.

If you wish to participate in this study please read, complete, and sign the attached consent form to grant your informed consent. You are free to withdraw your consent and participation in the study at any stage without question or explanation. Your results for the subjects you are studying will **not** be affected by your decision to participate, or not to participate, in this study, nor will it be affected by what is discussed in the focus group.

Any questions regarding the project entitled *"Evaluating the effectiveness of Constructive Alignment in Teaching Introductory Programming"* can be directed to the Senior Investigator:

Prof. John Grundy
Faculty of Information and Communication Technologies
Swinburne University of Technology
Phone: (03) 9214 8731.

Privacy Protection

The results of this study may be published in education journals, conferences, and thesis, however no individual will be identifiable. Where quotes are used they will be associated with code numbers that will be known only to the researchers involved in the project. The recorded focus group meeting will be transcribed into electronic format and stored under code numbers. All original, identifiable data will be destroyed at the conclusion of the study.

Your participation in this study is completely voluntary. Your initial agreement to participate does not stop you from discontinuing participation and you are free to withdraw from this study at any time.

If you have concerns or questions about this study, please contact either John Grundy (9214 8731) or Swinburne's Research Ethics Officer (9214 5218), or the Swinburne Development and Counselling Services (http://www.swinburne.edu.au/stuserv/counselling/) who are able to provide counselling to participants who experience an adverse reaction following their participation.

Complaints Procedure

This project has been approved by or on behalf of Swinburne's Human Research Ethics Committee (SUHREC) in line with the *National Statement on Ethical Conduct in Human Research*. If you have any concerns or complaints about the conduct of this project, you can contact:

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Dr. James Hamlyn-Harris, Faculty of Information and Communication Technologies, Swinburne University of Technology

Agreement

1. I consent to participate in the project named above. I have been provided a copy of the project information statement and this consent form and any questions I have asked have been answered to my satisfaction.

2. I understand that the purpose of this study is to hold a group interview to find out about the effectiveness of the teaching method used in [unit of study]. In this group interview we will discuss our general ideas about how we engaged with the teaching and learning resources and activities, and the assessment in this and other units. I understand that the person leading the discussion will attempt to keep the discussion focused on this research topic but I am aware that myself, and others in the group may act individually or collectively, wanting to discuss issues outside of these topics.

3. I understand my participation in this study is entirely voluntary and that if I wish to withdraw from this study or to leave, I may do so at anytime, and I do not need to give any reasons or explanations for doing so. If I do withdraw from this study, I understand that this will have no affect on my relationship with Swinburne University or any other organisation or agency.

4. I understand that because of this study there could be violations of my privacy. To prevent violations of my own or others privacy, I have been asked not to talk about any of my own or other private experiences that I would consider too personal to reveal.

5. I also understand that I have an obligation to respect the privacy of the other members of the group by not disclosing any personal information that they share during our discussion.

6. I understand that all information I give will be kept confidential to the extent permitted by law, and the names of all people in the study will be kept confidential by *the researchers. I also understand that there are limits on confidentiality as there are no formal sanctions on other group participants from disclosing my involvement, identity or what I say to others in the focus group. I am aware of these risks, and by taking part in this focus group research I acknowledge that I am willing to assume these risks.*

7. I agree to participate in the focus group meeting and for the meeting to be recorded by electronic device.

8. I acknowledge that:

    i. the project is for the purpose of research and not for profit;
    j. any personal information about me which is gathered in the course of and as the result of my participating in this project will be (i) collected and retained for the purpose of this project and (ii) accessed and analysed by the researcher(s) for the purpose of conducting this project;

By signing this document I agree to participate in this project.

Name of Participant: ……

Signature & Date: ……

[Informed Consent for Opinio Survey – end of degree and two years later. This page will be printed on Swinburne stationary, with appropriate logos used in accordance with the style guides.]

Project Title

Evaluating the effectiveness of Constructive Alignment in Teaching Introductory Programming.

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Explanation of Project

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You have indicated that you would be interested in participating in this study by responding to a call for participants. This part of the study consists of an online survey that includes [details to be provided once final questions are determined. This will list the number and type of questions and the areas being analysed.]

We estimate that this questionnaire will take [details to be provided once final questions are determined] minutes to complete. The questionnaire needs to be completed in one sitting. You will be asked to provide your student number in this survey so that your responses can be linked with the longitudinal study you participated in during your studies. Results from this study may appear in publications such as journal articles and conference papers, however, it will not be possible to identify individual participants.

If you wish to participate in this study, your informed consent is granted by selecting the button *"I wish to participate"* at the bottom of this page. This will lead you into the questionnaire. However, there is no obligation, and if you no longer wish to participate in the study, please select the *"I no longer wish to participate"* option.

Any questions regarding the project entitled *"Evaluating the effectiveness of Constructive Alignment in Teaching Introductory Programming"* can be directed to the Senior Investigator:

Prof. John Grundy
Faculty of Information and Communication Technologies
Swinburne University of Technology
Phone: (03) 9214 8731.

Privacy Protection

Your responses will be completely anonymous and confidential. The Opinio software generates your code automatically and not even the researchers will know which code corresponds to which participant. The results of this study may be published in education journals, conferences, and thesis, however only group data will be presented and no individual will be identifiable.

Your participation in this study is completely voluntary and you do not have to fill in the questionnaire if you no longer wish to participate.

Complaints Procedure

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Tel (03) 9214 5218 or +61 3 9214 5218 or resethics@swin.edu.au

Informed Consent

☐ I wish to participate
☐ I no longer wish to participate

[Informed Consent for Interview – end of degree and two years later. This page will be printed on Swinburne stationary, with appropriate logos used in accordance with the style guides.]

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You have indicated that you would be interested in participating in this study by responding to a call for participants. This part of the study consists of an interview where we will ask you to discuss your student experience at Swinburne and your approach to study and work in general. We estimate that it will take around half an hour to complete. The interview will be digitally recorded and later transcribed for analysis. Results from this study may appear in publications such as journal articles and conference papers, however, it will not be possible to identify individual participants.

If you wish to participate in this study please read, complete, and sign the attached consent form to grant your informed consent. You are free to withdraw your consent and participation in the study at any stage without question or explanation.

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Dr. James Hamlyn-Harris, Faculty of Information and Communication Technologies, Swinburne University of Technology

Agreement

1. I consent to participate in the project named above. I have been provided a copy of the project information statement and this consent form and any questions I have asked have been answered to my satisfaction.

2. ***Please circle your response to the following:***

- I agree to participate in the interview and for it to be recorded by electronic device. **Yes** **No**
- I am interested in being contacted to participate in the future surveys and interviews **Yes** **No**

Contact email address: ……

3. I acknowledge that:

   k. my participation is voluntary and that I am free to withdraw from the project at any time without explanation;

   l. the project is for the purpose of research and not for profit;

   m. any personal information about me which is gathered in the course of and as the result of my participating in this project will be (i) collected and retained for the purpose of this project and (ii) accessed and analysed by the researcher(s) for the purpose of conducting this project;

   n. my anonymity is preserved and I will not be identified in publications or otherwise without my express written consent.

By signing this document I agree to participate in this project.

Name of Participant: ……

Signature & Date: ……