

USQ Promoting a Sustainable Culture of Assessment September 2009

Strategic use of SPARK^{Plus}

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Teaching Challenge

Develop learning-oriented approach to encourage:

- Design assessment to emphasise and consolidate learning
- Involve students in assessment
- Opportunities for attributes to be continually developed and assessed in various contexts.
 - Transfer of skills developed in one subject, to other subjects and contexts
 - Move students from novice to more expert in the way they apply learnt material in different contexts
- Ability to assess and track development



Learning-oriented assessment

- Alignment between assessment, learning objectives and content essential (Biggs)
- To promote deep learning design tasks to require sustained effort
- Feedback essential component
 - Must be timely, focused, encourages students to self reflect
 - Having students deliver feedback improves graduate skills



Collaborative Group Work Promotes development of skills essential for successful career

- Peer learning
- Develop collaboration skills
- Interpersonal skills
- Critical thinking
- Opportunities to practise and reflect
- Transfer and testing of Knowledge
- Allows broad scope of work to be experienced.
- Your assessment criteria will guide their learning.
 - If you are not assessing it, they are generally not learning it.



Students need to see value

- Opportunities to expose students to problems they will encounter in industry:
 - People protecting their work / not sharing
 - Having to assess their work and others
 - Having to both give and received feedback
 - Having to work in an environment that does not function
 - Having to work in an environment with poor or difficult leadership



Group Work Unfair

- Students often complain that group work is unfair.
- Common complaints include:
 - Equal marks for unequal contributions
 - Good students are inadequately rewarded for their efforts and often lose motivation.
 - Groups focus on result not on teamwork.
 - One student may manage dysfunction by choosing to do all the work.
 - Assessment typically only for one semester
 - performance is not tracked, students with poor team skills typically don't see the need to improve skills as long as they pass.



Self and Peer Assessment More than just Fairer Assessment



- Often difficult for academic to fairly assess the contribution of individual students to team project
- Assists students to develop important professional skills including reflection and critical thinking
- Feedback to:
 - complete the learning cycle
 - encourage the ongoing development
 - improve subsequent contribution
- Develop skills for lifelong learning

Self and Peer Assessment promotes:



- Need appropriate design to motivate
 - Academic honesty
- Need appropriate criteria to motivate
 - Group work
 - Graduate Attributes development
 - Provision of Feedback
 - Collaborative learning
- Summative guides / motivates learning
- Formative useful but more non or measured participation (especially in large classes)

Self and Peer Assessment



- Common attribute categories allows graduate attributes (discipline and generic) development to be monitored assessed and tracked
- Assist institutions in demonstrating accreditation compliance

Personally used S & PA to promote, develop, assess and provide feedback on the following:



- Teamwork
- Reflection and critical evaluation skills
- Ability to both give and receive feedback
- Problem solving
- Project management
- Discipline specific technical ability
- Professional judgement / assessment
- Improve subsequent contribution
- Motivate collaboration in Peer learning
- Oral and written communication skills

Acknowledgements



- Original SPARK (Freeman)
- SPARK V2 was a joint research project
 - The University of Technology, Sydney
 - The University of Sydney
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 - Mr Darrall Thompson UTS
- SPARK^{Plus} my creation
 - Mr Mike Howard
 - Anne Gardner

SPARK^{Plus} Tool



- SPARK^{Plus} is just a tool
- For best results need to carefully plan and design assessment tasks
- Self and peer assessment
 - Team contribution
 - Individual work
 - Benchmarking (Students and Tutors)
 - Feedback
 - Attribute Development

SPARK^{Plus} Tool

- Students confidentially rate their own and their peers' contributions to a team project against criteria which can be written to include specific project tasks and/or good team practices.
- Automatically generated both formative and summative assessment factors.

SPARK Factors

- 1 SPA Factor $\approx \frac{\text{Total ratings for individual team member}}{\text{Average of total ratings for all team members}}$
- 2 SAPA Factor = $\sqrt{\frac{\text{Self ratings for individual team member}}{\text{Average of ratings for individual by peer team members}}}$
- 3 Mark or grade

The screenshot shows the SPARK interface with a navigation bar (Preparation, Setup, Monitoring, Results, Evaluation) and a sidebar with 'Active Subjects'. The main content area displays details for '48240 - Design Fundamentals', including semester, instructor, active dates, and student enrollment. A red arrow points to the 'Tasks within subject' section, and another points to the 'Subject instructors' list.

The screenshot shows the 'Student Assessment Screen' for a group named 'SAPQA'. It includes a 'SELECT SUBJECT' dropdown, a 'GROUP NAME' dropdown, and a 'Task 1 - Peer Assessment' section. The 'LEADERSHIP' section lists team members (anne gardner, David Lowe, Joe Willey) with rating buttons (WB, BA, AV, AA, WA). The 'EFFICIENT FUNCTIONING OF GROUP' section has similar rating buttons and a comment box.

The screenshot shows the 'Spark Radar Diagram' for 'Group - 1'. The radar chart compares 'Self rating (criteria)' and 'Avg Peer rating (criteria)' across four dimensions: Knowledge Base, Engineering Ability, Professional Attitudes, and Overall. The 'Self rating (criteria)' is consistently higher than the 'Avg Peer rating (criteria)'. A red arrow points to the 'Feedback from Peers' section, which contains a comment from peers: 'You need to work more consistently. George needs to apply himself more to his work. He let the team down on several occasions. When he delivered his work late it put pressure on the rest of the team.'

Assessment of contribution to team task

- Students assess themselves and their team peers contribution to team task against criteria
- Results used to moderate group mark to produce individual mark
- Factors and comments used for feedforward

Feedback Process (Peers)

- Students given both SPA and SAPA factors for each group members.
- Self Reflection (facilitated by the tutor)
 - Students asked to
 - reflect if marks fair
 - provide positive feedback
 - share their own self-evaluation
 - conclude by providing honest but initially gentle negative feedback.
- teams agree how to improve overall and individual performance for the remaining parts of the project and in future group work opportunities.

Benchmarking

- assessment of an exemplar piece of work, activity or task against which students can compare their own understanding and/or judgement.
- can choose predefined rating scales or create your own
- typically use Standard Assessment (Unsatisfactory (Z), Pass(P), Credit (C), Distinction (D) and High Distinction (HD))

Benchmarking Enter Assessment

	Z	P	C	D	HD
1. Overview, Problem Statement, Operational Description etc					
2. Requirements					
3. Test Plan					
4. Design Deliverables, Implementation Considerations etc					
5. Presentation					
6. Overall					

Your ratings for you

Benchmarking

- Students enter their assessments by moving the sliders against criteria
- Instructors enter their own assessments and a report explaining their marking against each criterion.
- student's score generated using a weighted mean squared error of the differences between theirs and the instructors assessments.

Benchmarking Results

	Z	P	C	D	HD
1. Overview, Problem Statement, Operational Description etc					
2. Requirements					
3. Test Plan					
4. Design Deliverables, Implementation Considerations etc					
5. Presentation					
6. Overall					

Score: 59

Overall: Score: 59

Instructor's comments
 Problem Statement: does not really describe the specific problem the product is meant to address.
 Requirements: most are not traceable to the problem statement (see comment above), many are ambiguous and so not verifiable.

Self rating
 Instructor's rating
 View my radar diagram

Benchmarking

- Moderation of results by adjusting the scores to fit within to specified boundaries.
- SPARK^{PLUS} anonymously provides Instructors with student submission that differ the most and closest to their own.
- Instructor rates the student's judgement against each criterion.
 - total bar allows instructors to fine tune their marking encouraging a holistic approach

Benchmarking Moderation

Group Marking of Individual Work

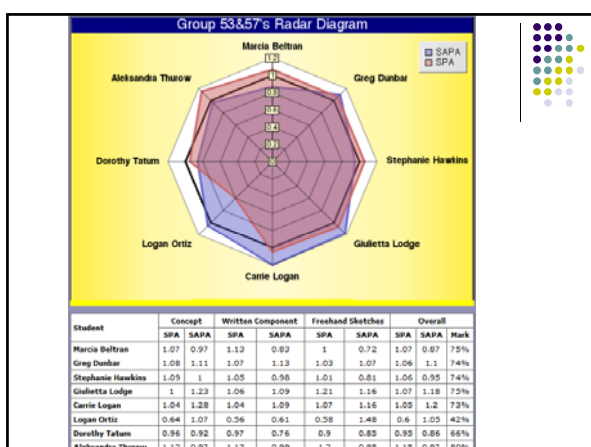
- Students use SPARK^{PLUS} to assess their own and their peer's submissions
- This assessable part of the overall task is completed individually by students outside of class.
- In tutorial group debate the merits of each individual submission and collectively place them in order from best to worst awarding a mark for each.

Group Marking of Individual Work

- Tutors then distribute the results from SPARK^{PLUS} (radar diagram) students reflect on differences between results produced from their individual assessments and those produced collectively.
- tutor marks best report from each group and determines marks for other reports using the weighting produced by SPARK^{PLUS}.

Group Marking of Individual Work

- students required to do individual thinking and engage with assessment criteria before tutorial, allowing discussions to quickly focus on differences in opinion.
- While not assessable collaborative reflection makes major contribution to learning.
- motivation
 - Groups required to select concepts to work on for the rest of the semester
 - in group's interest to identify 'best' concept to maximise their mark



Moderation of tutor marking

- Benchmarking tool used by tutors to mark exemplar pieces of work and report feedback.
- Course coordinator marks work and provides feedback
- Tutors logon on to see difference in marking against each criterion (between themselves and course coordinator and themselves and average of other tutors) and feedback
- Feedback LANGUAGE important for student satisfaction

Strong Implementation Recommendations

- Plan Task carefully to integrate Assessment
 - Include all details in Subject Handout / Outline
- Thoughtfully choose criteria to promote learning outcomes and meet desired objectives
 - Make criteria available before assessment starts
- Share factors, feedback between team members preferably simultaneously and in person
 - Before end of semester / Radar Diagram + Table



Strong Implementation Recommendations

- Award marks / penalty for exercise
 - If you want students to engage you need to make it assessable
- Tutors and Students need training
 - How to give feedback, team work skills, conflict resolution
 - Without training-support tutors without required skills may choose to opt out of the process
- Consider using formative exercise first
- Level of support provided dependant on Subject Stage
 - Move from novice to more competent



Graduate Attributes

- Often both Students and Academics see as desirable but non assessable outcomes
 - Not frequently considered in designing assessment tasks
- Useful exercise to get all academics to map their assessable tasks to specified attributes
 - Often Knowledge category most assessed



Graduate Attributes Mapping

- Opportunity to focus curriculum development and learning outcomes
- Attribute development can be recorded and tracked across different subjects and throughout degree
- Vision to see two statements Academic + Attribute Development



SPARK
Self & Peer Assessment Resource Kit

Hi,
Due Date: 2 Feb 2009 1:00pm
Instructor: Keith Wiley

Period: Post-Assessment

You have not joined any group during the group formation period. Please contact your subject instructor.

Key for rating:
WB = Well Below Average
BA = Below Average
AV = Average
AA = Above Average
WA = Well Above Average

Assessable Attributes

SELECT SUBJECT: 48240 Design Fundamentals
GROUP NAME:
SELECT TASK: Task 3 - Requirements Specification Group Submission

ENGINEERING ABILITY

- Using Judgement to evaluate your teams individual Product Concepts and choosing the best one.
- Production of the Problem Statement and deciding what the customer actually needs.
- Translation of customer needs into Requirements written as concise statements.

ENGINEERING KNOWLEDGE

- Ensuring the Engineering Requirements meet the specified validation criteria.
- Ensuring the Requirements cover all aspects of the project including performance, reliability, energy and environmental factors etc.
- Ensuring the tests associated with the Requirements have measurable limits and clearly identified pass fail criteria.

PROFESSIONAL SKILLS

- Resolving and Managing team conflict and disagreements
- Organising the team and ensuring that things got done
- Level of enthusiasm and participation in team activities

Feedback from your peers
People Comment

Self rating
View my radar diagram

Spark Radar Diagram

GROUP NAME: Group - 1

SPA: 0.96 SAPA: 1.2
WB BA AV AA WA

SPA: 1 SAPA: 0.91
WB BA AV AA WA

SPA: 0.99 SAPA: 1.22
WB BA AV AA WA

Overall: WB BA AV AA WA
Overall: SPA factor: 0.97 SAPA factor: 1.18

Comment from your peers
You need to work more consistently.
George needs to apply himself more to his work. He let the team down on several occasions. When he delivered his work late it put pressure on the rest of the team.

Self rating
Your average rating from peers
View my radar diagram

Logout

Recommendations



- Walk before you can run
- Effort, Training and resources required
- Focus on provision of opportunities to learn, practice, feedback , reapply.
- Need to over come free-rider deterrent attitude
- Choose criteria carefully to guide learning
- Be creative
- Record in e-portfolio and assess