# Using team work and authentic peer-based assessments to improve learning and employability skills

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# Key graduate skills for employability

- "Can you work well on a team, make decisions and solve problems? Those are the skills employers most want when they are deciding which new college graduates to hire." www.forbes.com

- "Communication, Teamwork, Initiative, Project Management, Flexibility, Interpersonal, Organisation" www.jobs.ac.uk

# Authentic Assessment – quote from HEA "A marked Improvement"

Poor validity in assessment methods can also damage student confidence. For example, if examinations do not assess what they are supposed to be assessing, perhaps measuring memory as much as knowledge and understanding, then students may become dissatisfied. ***Students should experience assessment as a valid measure of their programme outcomes using authentic assessment methods, which are both intrinsically worthwhile and useful in developing their future employability.***

A greater emphasis on student engagement with assessment, its guidance and feedback, is also likely to reduce student frustration when faced with low grades. ***Involving students in assessment has the potential to help them understand the nature of complex professional judgement***, grasp the required standards of their discipline and better recognise their own levels of achievement.

# The need for a new more holistic module

- In summer 2002, I was asked to attend a Year 3 Donegal field class, where it became apparent that the students were ignorant in several areas.

- I designed a 7.5 credit Year 2 module to run in 2002-3 that combined study of acid/mafic plutonic intrusions, contact metamorphism and aspects of mineralisation - a systems approach that included a 5-week teamwork-based practical project. **The teams are seeded to be "equal".**

- The project was designed so that the initial data collection and analysis parts could be split up between team members, but also required teams to discuss on a regular basis to synthesise, evaluate and reconsider data collection.

- In this setting, students could talk to each other within teams, and it was easier for me to get around 7-10 teams rather than 40-50 individuals.

- The practical sessions were much more manageable and enjoyable.

# Positives – from my perspective

- Teams are naturally protective of their own intellectual copyright. I didn't have to be a policeman, I could be a friend.

- The module atmosphere was a collaborative one rather than a closed one.

- The standard of work was high, with reports being well organised and thorough.

- Less time spent marking.

- More time for feedback in a team viva; in which they can talk their team mark up or down.

# Typical positive student view

- "I liked the idea of the team work, not wanting to let people down pushed me on to do more work, and really helped in mineral identification and analysis."

# Negative student views – the loner

- "The module has been weighted unfairly.

  35% of the module was based on a team exercise, this is far too high percentage.

  An individual could produce good work but be let down by the input of other members of the team.

  A third of the marks of this module were dependent upon who you ended up getting in your team."

# Real Time Team Dynamics 1

- "We're having problems within our team that have only become apparent today."

- "XXXXX has just sent us a message while we were finishing our report to say the only thing he is coming back to the department for is to tell you he's leaving."

# Real Time Team Dynamics 2

- "I just emailed to say that only 2 of our team[of 5] turned up to write up our project and so it is going to be difficult for just the two of us to write up the whole thing as we don't have full sets of information."

- "The other 2 are not including us in their discussions and we are worried they will submit something without us."

- "I think everything is back on track now; I think there was just a lot of confusion!"

# Some important points

- I provide guidance and training in teamwork at the start and always choose the teams, making them as equal as possible (academic ability, gender, ethnicity…)

- I set the team project up so that it is as <u>authentic</u> as possible:
  - The data collection can be divided up into member-size chunks.
  - Preliminary analysis and some synthesis can take place before all data are collected.
  - Teams have to meet up to discuss evidence, synthesise models and decide what further data to collect to test their developing model.
  - There is a way to evaluate reasonableness of the solution – in this case use of Heat-3D numerical modelling software to test the reasonableness of the PT conditions.
  - Tightly constrain the report (word and page limits) so that teams have to think hard about what is important to include. The report is structured like a Year 3 dissertation.
  - Make the team **self-assess** their project (including individual contributions) and use this as a starting point for an end-project team interview.

# BUT, getting students to peer-assess each other and agreeing individual marks was difficult…

**Thus, team members typically had the team mark – unless somebody was a no-show freeloader.**
**(I keep attendance registers for all module sessions)**

# WebPA (JISC) – 2012 onwards

- In 2011, I learned that an Engineering colleague had this set up at UoLiv.
- It is an online system in which students can (and do) answer apparently disarming likert-scale questions about their peers:
  - *Attendance where and when it matters?*
  - *Level of commitment to the project?*
  - *Taking the initiative?*
  - *Completed allotted tasks on time?*
  - *Overall contribution to the success of the project?*
- WebPA calculates a coefficient (F) from these questions.
  - F = 1 they get the team mark;
  - F < 1 less than the team mark;
  - F > 1 more than the team mark.

# WebPA example outcome in 2013

- Used CTL so ran with 6 teams of ~6-7

- 5 teams had essentially the same mark (success?)

- One team outperformed.

- The raw marks give little indication of individual performance [40% of module).

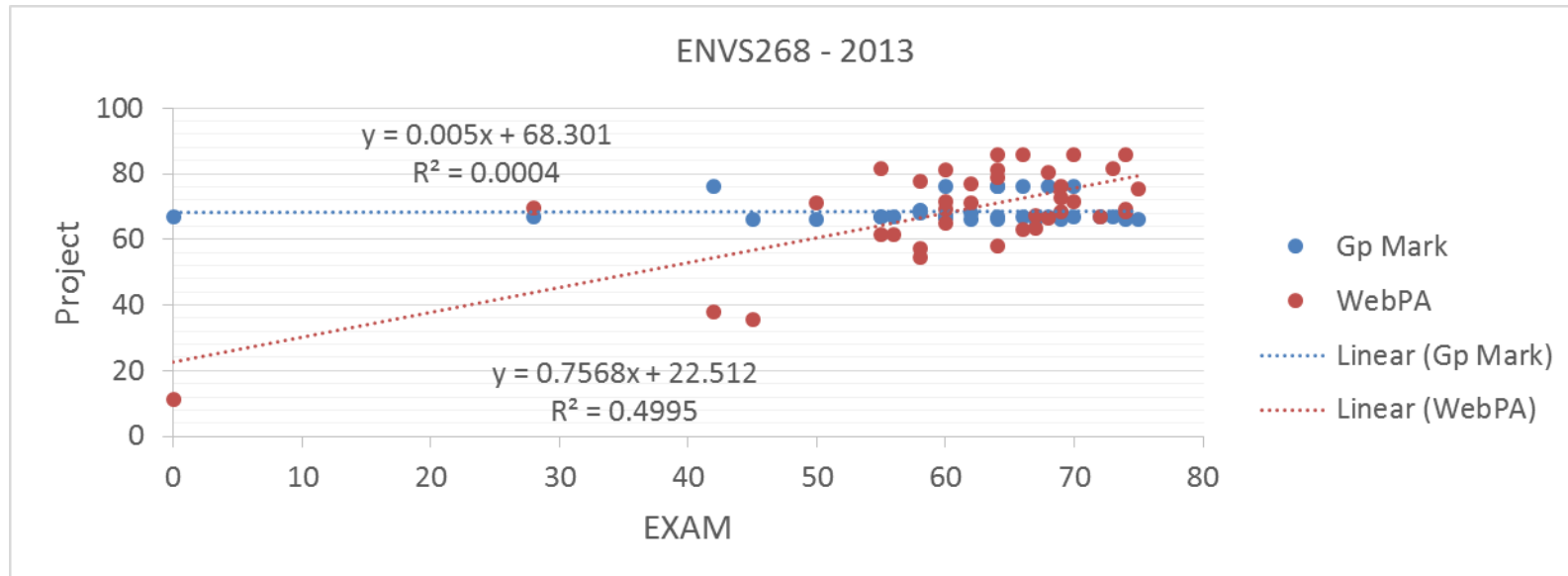- An individual component comes from traditional written exam [60%]
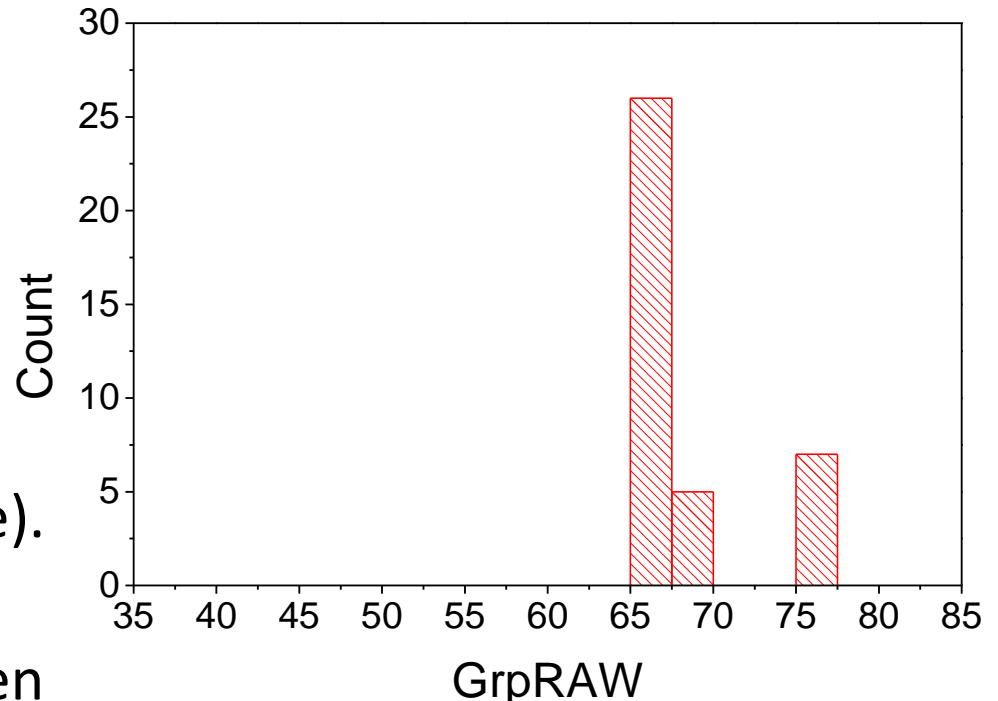
# WebPA example outcome in 2013

- Application of WebPA peer assessment factors spread the individual marks.

- Some students in the 'standard' teams outperformed students in the 'outperform' team.
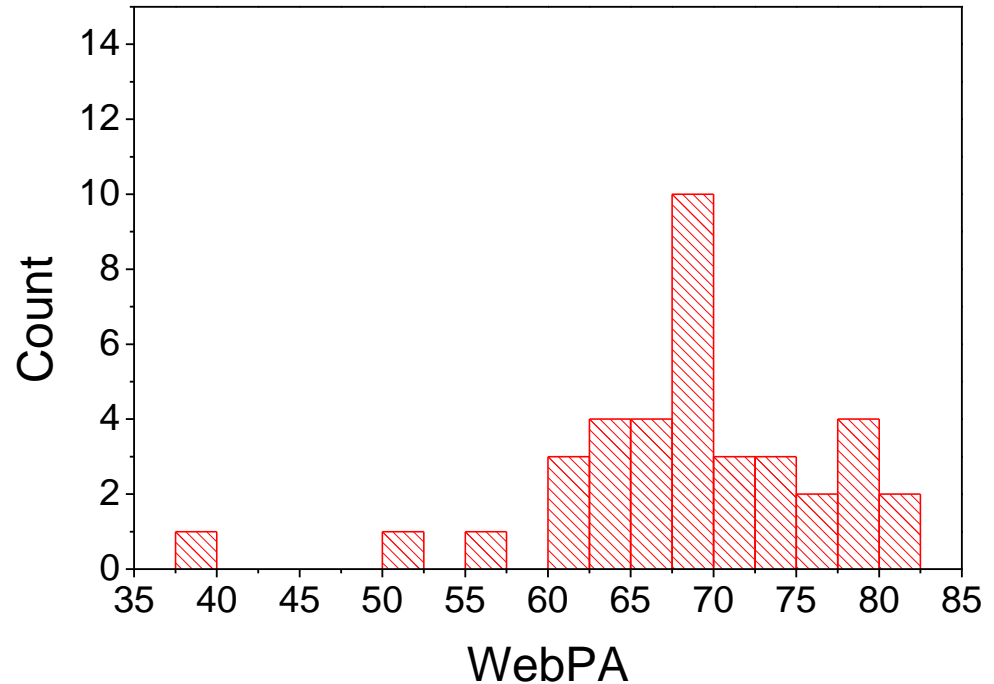
# Within-module comparison of team marks and exam marks

- Bearing in mind correlations between exam and CW modes can be lower than expected, the correlation (Pearson $R^2$=0.5 is encouraging).
- Suggests peer-assessment by students is could be as good as assessment of the same students by academics



ENVS268 - 2013

$y = 0.005x + 68.301$
$R^2 = 0.0004$

$y = 0.7568x + 22.512$
$R^2 = 0.4995$

Legend:
- Gp Mark
- WebPA
- Linear (Gp Mark)
- Linear (WebPA)

Axes: Project (y-axis), EXAM (x-axis)

**In 2015-16, I discarded the terminal exam making the Team Project with peer assessment the entire module assessment…**

Ties in neatly with subsequent UoLiv Education Strategy Vision 2026 - "Hallmarks"

1. Research-connected teaching
2. Active learning
3. Authentic assessment

"Our aim is to enable students to get the most out of their time by adding value to what they gain through their studies. Not only to improve their career prospects but to develop essential skills for life beyond University."

**Did it work?**

# Student vs Lecturer grading
## Pearson correlation coefficients

**2015-16**

| | | | skills | met | gp | sed | volc | struc | | map | pal | strat |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Overall | ENVS200 | ENVS212 | ENVS216 | ENVS219 | ENVS262 | ENVS263 | ENVS268 | ENVS269 | ENVS281 | ENVS283 |
| Overall | Pearson Correlation | 1 | .781** | .879** | .854** | .863** | .740** | .823** | .667** | .577** | .762** | .798** |
| | Sig. (2-tailed) | | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 |
| | N | 75 | 68 | 58 | 65 | 68 | 71 | 68 | 75 | 75 | 66 | 66 |

**2016-17**

**Correlations**

| | | Overall | ENVS200 | ENVS212 | ENVS216 | ENVS219 | ENVS262 | ENVS263 | ENVS268 | ENVS269 | ENVS281 | ENVS283 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Overall | Pearson Correlation | 1 | .750** | .854** | .788** | .876** | .862** | .794** | .468** | .574** | .826** | .841** |
| | Sig. (2-tailed) | | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 |
| | N | 60 | 60 | 49 | 56 | 53 | 58 | 53 | 60 | 59 | 53 | 52 |

# ENVS268 project mark vs Overall year mark



**2016 +5%**

**2017 +6%**
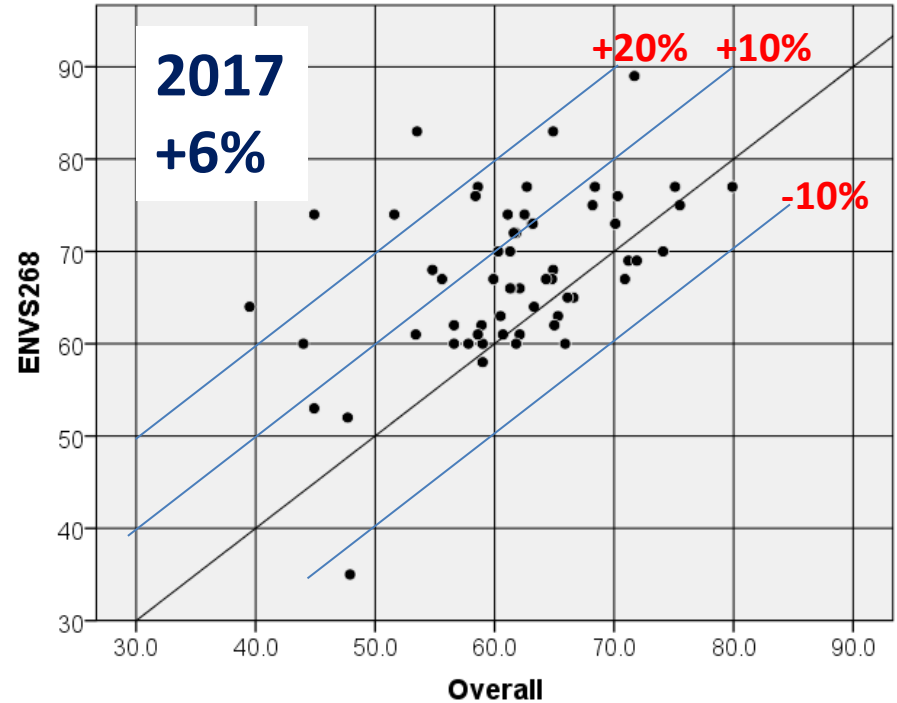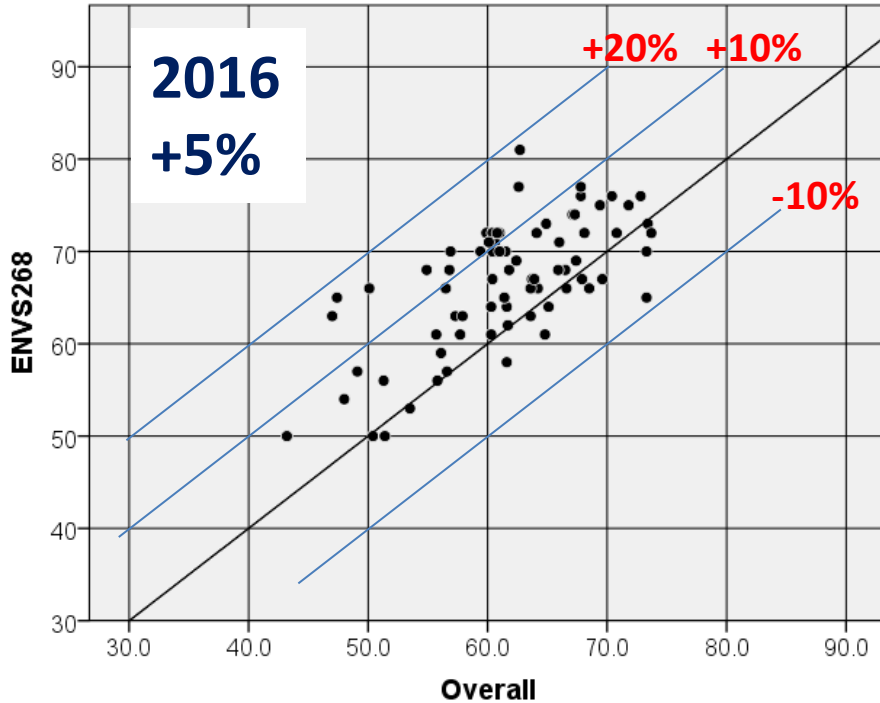
**Similar distributions in each year to Gawen's distribution over 5 years.**

# Written Feedback 2016 ☺

- *Assessment*: I hate group work, but I cannot argue that the group work assessment tested not only our knowledge of the module content but drawing on other modules and linking our knowledge as well as being able to work with other people you didn't necessarily know and work to each other's strengths.

- *Personal Development*: Forced communication on a personal level with other members of the group.

- *Personal Development*: Having to overcome problems when working in a group, gave a more life-like situation which was good.

- *Personal Development*: Feel more confident working with other people. Meant that when we did group work in Almeria, it was less daunting.

# Written Feedback 2016 ☹

- *Assessment*: Half was on something I have never done and had to rely on other people the whole group should have a fair chance at completing the whole task.

- *Assessment*: Some of the content I was unable to understand due to the lack of previous modules (e.g. Metamorphism).

- These would be GPG students who opted to take the module not having done a prior metamorphic geology module.

- No issues with the peer-assessment and final marks…

# Written Feedback 2017 ☺

- *Assessment*: I liked how the project brought in elements of previous modules and forced you to re-read material from previous semesters.

- *Assessment*: understood the rationale behind having groups mixed from the different courses, allowed for there to be a variety of viewpoints on situations.

- *Feedback*: Receiving both feedback via VITAL and then meeting as a group with Alan directly allowed us to question marking points and also reinforce constructive comments. I found this really helpful!

- *Feedback*: The [30 minute team] feedback was a good session where we could discuss the reasons why we did things.

- *Personal Development*: I now know what I will do in situations where I need to take control more to ensure the best possible results.

- *Personal Development*: Nice use of bringing together knowledge from different modules and how they apply to the 'real world'.

# Written Feedback 2017 ☹

- *Assessment*: I didn't like the use of group work to entirely mark the module as I received a lower grade than usual. The peer assessment did make a slight improvement. I don't feel the mark I got was what I deserved.

- *Assessment*: Change the way everything is group work. Although the group work is there to prepare us for future careers, I feel it is unfair to judge ones ability on how they work in a group.

- *Assessment*: No group assessment. I felt let down by my group in some aspects.

- *Feedback*: Did we need the talk afterwards? [this is the 30 minute team feedback session]

# Key graduate skills for employability

- "Can you work well on a team, make decisions and solve problems? Those are the skills employers most want when they are deciding which new college graduates to hire." www.forbes.com

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# Summary

- From my experience:
  - Teams are affective, which makes them effective.
  - Teams facilitate better quality feedback.
  - WebPA (or similar) can be an effective way of assessing individual performance in teams through peer-assessment.
  - Team-based projects with peer-assessment make large practical classes more productive, more manageable and more enjoyable.
  - <u>Team-based projects are authentic and develop key employability skills</u>.

  - How do we get students to see beyond the mark?
  - What to do about inauthentic terminal exams?
  - Are the students who do well at inauthentic assessments better?