

Imperial College
London

Educational Development Unit

Supporting a world-class educational community

Embedding collaborative active learning & team working

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Centre for Higher Education Research and Scholarship (CHERS)

Learning outcomes

By the end of this workshop you'll be better able to:

- Select and successfully implement a range of active learning strategies
- Manage learner dynamics in an active learning environment
- Address team working challenges both proactively and responsively
- Develop learner self-efficacy through active and team learning

Collaborative active learning

“... students must do more than just listen: they must read, write, discuss, or be engaged in solving problems. Most important, to be actively involved, students must engage in higher-order thinking tasks such as analysis, synthesis, and evaluation.”

Bonwell, C. & Eison, J. (1991). *Active Learning: Creating Excitement in the Classroom*, ERIC Clearinghouse on Higher Education, Washington, D.C.

“**Collaborative** learning is where the students work together for shared outcomes and are assessed as a group, whereas **cooperative** learning refers to group work where a common goal is produced, but students are assessed individually.”

Sharing experiences

In your teams:

Share your experiences of implementing collaborative active learning at Imperial.

Collectively identify 2-3 examples of **successful** implementation.

5 mins

Sharing experiences

In your teams:

Share your experiences of implementing collaborative active learning at Imperial.

Collectively identify 2-3 **challenges**, concerns or barriers to success.

5 mins

Intention



Implementation

- Curriculum design
- Learning plans
- Aims and intended outcomes, etc.

- Learning activities
- Teaching practice
- Group dynamics
- Inclusivity, etc.

Intention

Designing a collaborative learning activity

Learning type: Acquisition

Learning through acquisition is what learners are doing when they are listening to a lecture or podcast, reading from books or websites, and watching demos or videos



Learning type: Collaboration

Learning through collaboration embraces mainly discussion, practice, and production. Building on investigations and acquisition it is about taking part in the process of knowledge building itself



Learning type: Discussion

Learning through discussion requires the learner to articulate their ideas and questions, and to challenge and respond to the ideas and questions from the teacher, and/or from their peers



Learning type: Investigation

Learning through investigation guides the learner to explore, compare and critique the texts, documents and resources that reflect the concepts and ideas being taught



Learning type: Practice

Learning through practice enables the learner to adapt their actions to the task goal, and use the feedback to improve their next action. Feedback may come from self-reflection, from peers, from the teacher, or from the activity itself, if it shows them how to improve the result of their action in relation to the goal



Learning type: Production

Learning through production is the way the teacher motivates the learner to consolidate what they have learned by articulating their current conceptual understanding and how they used it in practice



Intention

Designing a collaborative learning activity

In pairs:

- Design a **collaborative** learning activity for first year undergraduate students that would enable them to successfully achieve this ILO.
- What factors would you need to consider to encourage student participation in this activity?

10 mins

Implementation

Exploring student experiences of collaborative learning





Rich pictures

Ground rules

- Drawing only – no text other than in speech bubbles representing student voices – (feelings, attitudes, concerns, etc.)
- Co-create – everyone has a pen and can draw.
- Don't worry about drawing skills!

Implementation

Exploring student experiences of collaborative learning

In your teams:

Co-create a rich picture that graphically explores the following question:

What encourages or prevents students from participating in social or collaborative learning?

20 mins

Defining inclusive teaching and learning

“inclusive learning and teaching recognises all student’s entitlement to a learning experience that respects diversity, enables participation, removes barriers and anticipates and considers a variety of learning needs and preferences”

[HEA framework for student access, retention, attainment and progression](#)

“Our students benefit in an environment where they feel included, and where they are taught in ways that recognise and support their needs as individuals, and as part of a learning community.”

Plymouth University’s Guide
on Inclusive Learning &
Teaching

Diversity dimensions	Examples
Educational	Level/type of entry qualifications; skills; ability; knowledge; educational experience; life and work experience; learning approaches.
Dispositional	Identity; self-esteem; confidence; motivation; aspirations; expectations; preferences; attitudes; assumptions; beliefs; emotional intelligence; maturity; learning styles; perspectives; interests; self-awareness; gender; sexuality.
Circumstantial	Age; disability; paid/voluntary employment; caring responsibilities; geographical location; access to IT and transport services; flexibility; time available; entitlements; financial background and means; marital status.
Cultural	Language; values; cultural capital; religion and belief; country of origin/residence; ethnicity/race; social background.

Inclusive learning and teaching in higher education. Full report available from:
https://www.heacademy.ac.uk/system/files/inclusivelearningandteaching_finalreport.pdf

Guiding principles: An inclusive curriculum

- Is explicit about what is expected of students in terms of learning and assessment and helps them prepare for this.
- Creates opportunities for all students to engage and participate in ways that support their learning.
- Acknowledges that the curriculum has an impact on the way that people see themselves (including their identity as a learner and future professional).

See: Inclusive Learning and Teaching Toolkit:

<https://www.imperial.ac.uk/staff/educational-development/teaching-toolkit/inclusive-learning-and-teaching/>

What is the educational intention of team learning?

- When you ask students to work in groups or teams what are the goals and learning outcomes?
- How do students know this?
- What mixed messages might students get?

3 mins



Defining inclusive teaching and learning in the Imperial context

“We will foster an inclusive and diverse community where different backgrounds and cultures in staff and students are cherished and celebrated, and **their different cultural experiences and identities are embraced in order to better prepare all students for an increasingly diverse and complex future work environment.** We will **foster a culture that understands and embodies the values of diversity and inclusivity**, ensuring this is reflected in campus life, in the curriculum, and in the application of knowledge to real-life problems in a global context.”

- Imperial College, Learning and Teaching Strategy, June 2017

www.imperial.ac.uk/media/imperial-college/about/leadership-and-strategy/vp-education/public/LearningTeachingStrategy.pdf

Defining inclusive teaching and learning in the Imperial context - Imperial Graduate Attributes

Our aim for our graduates is that they will:

- Demonstrate deep conceptual understanding of their chosen discipline
- Work effectively in multi-cultural, international teams and across disciplinary boundaries
- Approach challenges with curiosity, critical thinking and creativity
- Innovatively apply their skills to tackling complex real-world problems
- Understand and value different cultures and perspectives
- Have developed into independent learners with high self-efficacy
- Display a strong sense of personal and professional identity

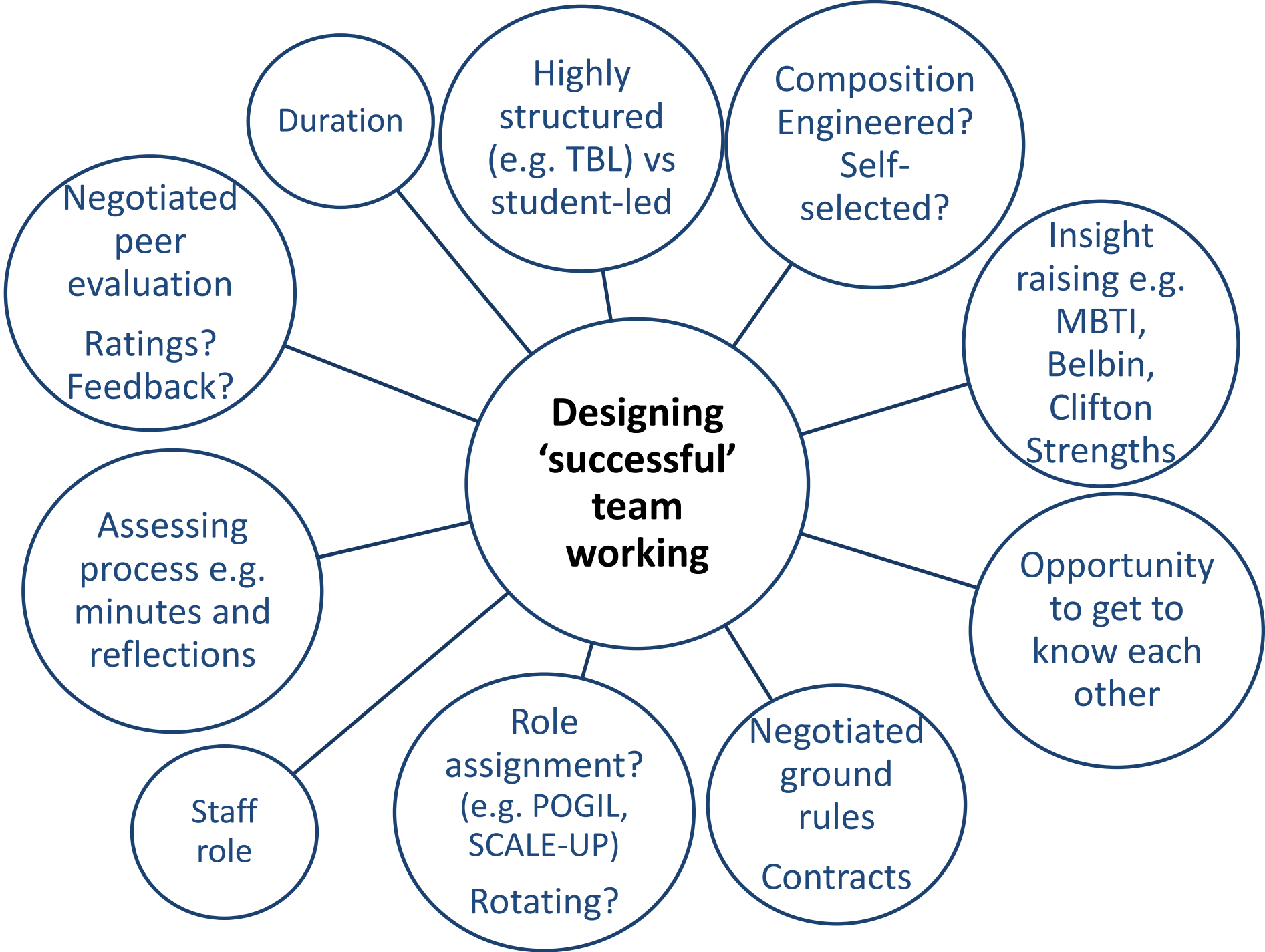
Designing 'successful' team working

Based on your team's collective experience, please discuss and list:

- What considerations need to be taken into account?
- What decisions should be taken and communicated with students?

5 mins





Designing 'successful' team working

Duration

Highly structured (e.g. TBL) vs student-led

Composition Engineered? Self-selected?

Insight raising e.g. MBTI, Belbin, Clifton Strengths

Opportunity to get to know each other

Negotiated ground rules Contracts

Role assignment? (e.g. POGIL, SCALE-UP) Rotating?

Staff role

Assessing process e.g. minutes and reflections

Negotiated peer evaluation Ratings? Feedback?

When Group Work Doesn't Work: Insights from Students ([Chang & Brickman, 2018](#))

“Introducing group work in college science classrooms can lead to noticeable gains in student achievement, reasoning ability, and motivation. To realize these gains, students must all contribute. Strategies like assigning roles, group contracts, anonymous peer evaluations, and peer ratings all encourage student participation...

...Students in both high- and low-performance groups still complained of unequal contributions while praising the social support provided by groups. Students who scored highly on tests were more likely to recognize the benefits of group work, regardless of their groups' overall performance levels, while lower-scoring students perceived group work as time-consuming “busy work” with little cognitive benefit...

...However, students in lower-performance groups assigned harsh [anonymous peer evaluations] ratings to their low-scoring members, while students in higher-performance groups were more generous in their ratings for low-scoring members” (Chang & Brickman, 2018: p1)

Designing more 'successful' and inclusive team working

- Engineer diverse teams (not always alphabetical) that avoid isolated members.
- Incorporate groups that involve individuals with different strengths, including dispositional attributes.
- Acknowledge the challenge and value of working in diverse and multicultural teams.
- Don't under-estimate the preparation students may need to get them started with effective team working and peer learning.
- Give students time to get to know each other's interests and strengths (and areas for development?) before the academic pressure begins.
- Include opportunity for students to discuss individual differences in approach to academic tasks.
- Reward group working processes not just the output of group work. e.g. using peer feedback and assessment that captures reflection on the experience.

Authentic assessment design

“Authentic assessment aims to replicate the tasks and performance standards typically found in the world of work, and has been found to have a positive impact on student learning, autonomy, motivation, self-regulation and metacognition; abilities highly related to employability.

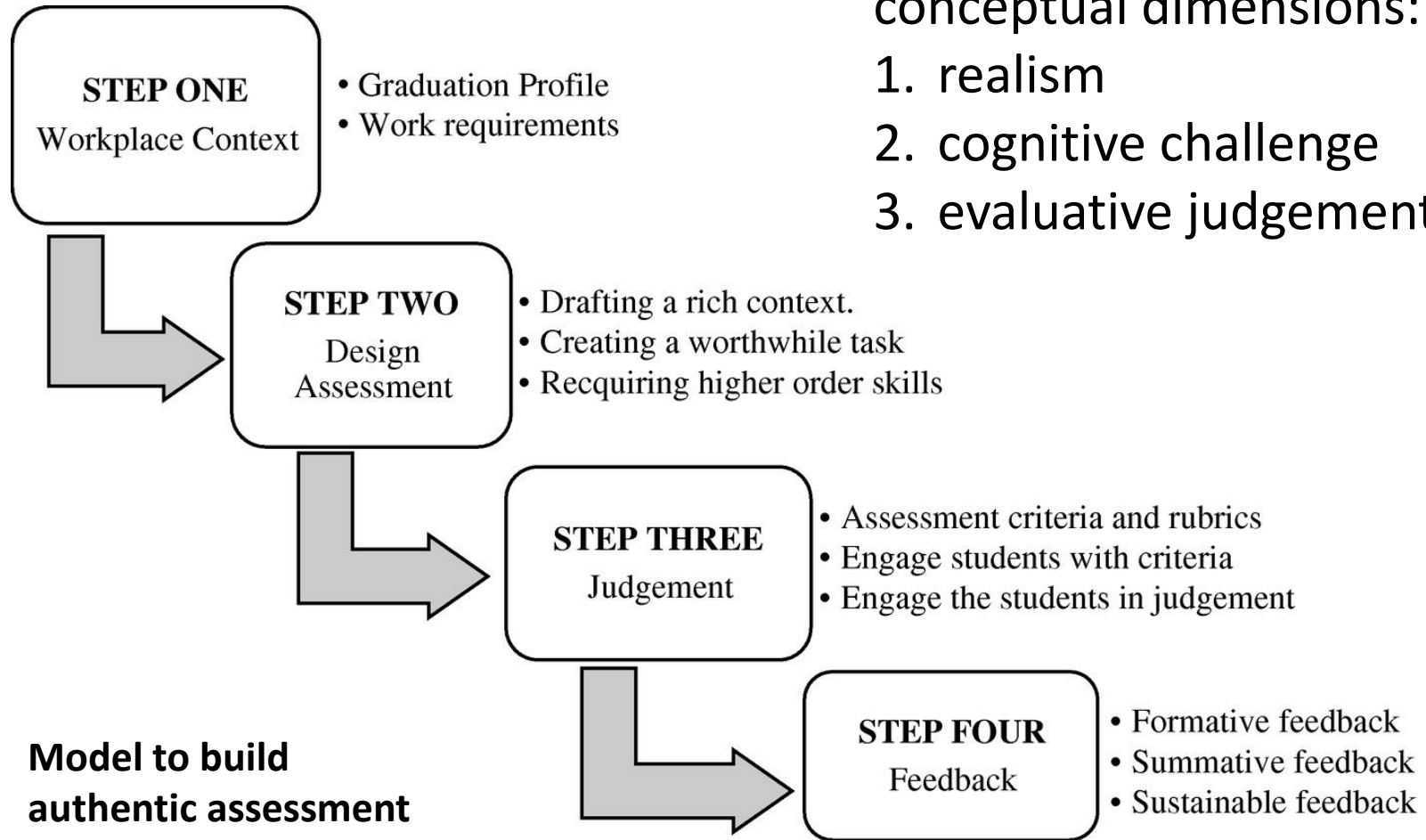
Despite these benefits, there are significant barriers to the introduction of authentic assessment, particularly where there is a tradition of ‘testing’ decontextualised subject knowledge. One barrier may be the lack of conceptualisation of the term authentic assessment sufficient to inform assessment design at the individual course level.”

Verónica Villarroel, Susan Bloxham, Daniela Bruna, Carola Bruna & Constanza Herrera-Seda (2018) Authentic assessment: creating a blueprint for course design, **Assessment & Evaluation in Higher Education**, 43:5, 840-854, DOI: 10.1080/02602938.2017.1412396

Authentic assessment design

Systematic literature review led to categorisation of three conceptual dimensions:

1. realism
2. cognitive challenge
3. evaluative judgement



Verónica Villarroel, Susan Bloxham, Daniela Bruna, Carola Bruna & Constanza Herrera-Seda (2018) Authentic assessment: creating a blueprint for course design, **Assessment & Evaluation in Higher Education**, 43:5, 840-854, DOI: 10.1080/02602938.2017.1412396

Feelings about team working

Individually:

- When your students are working in teams how do you think they feel and why do you think they feel this way?
5 mins
- As you watch the [video of students](#) talking about their team working experiences add to this list

In your teams, discuss:

- What is your role in managing this emotional dimension?
5 mins

Student perceptions of teamwork

“The key findings showed that, although students understood the importance of developing teamwork skills for their future, a substantial proportion did not feel sufficiently prepared with these skills by their science degree. To develop teamwork skills, more students valued working in teams during laboratory sessions, team sports and informal study groups than non-laboratory based formal teamwork assessment. In support of previous teamwork studies across disciplines, the most cited factors contributing to poor teamwork experiences were difficulties scheduling meetings and unequal contribution among team members.”

Laura Wilson, Susie Ho & Rowan H. Brookes (2018) Student perceptions of teamwork within assessment tasks in undergraduate science degrees, **Assessment & Evaluation in Higher Education**, 43:5, 786-799, DOI: 10.1080/02602938.2017.1409334

Suggestions for over-coming these teamworking issues:

- Discussion of teacher and team-mate expectations of contribution
- Team discussion about competing schedules and priorities at the outset
- Provide time for face-to-face collaboration within class
- Use supportive technologies such as Microsoft Team
- Peer assessment of contribution, designed in partnership with students

Developed from Wilson, Ho & Brookes (2018) with Imperial colleagues

“People would try to show authority by speaking louder or talking over each other, ...I always felt like I had to be careful not to make mistakes around them.”

THE WORK ISSUE

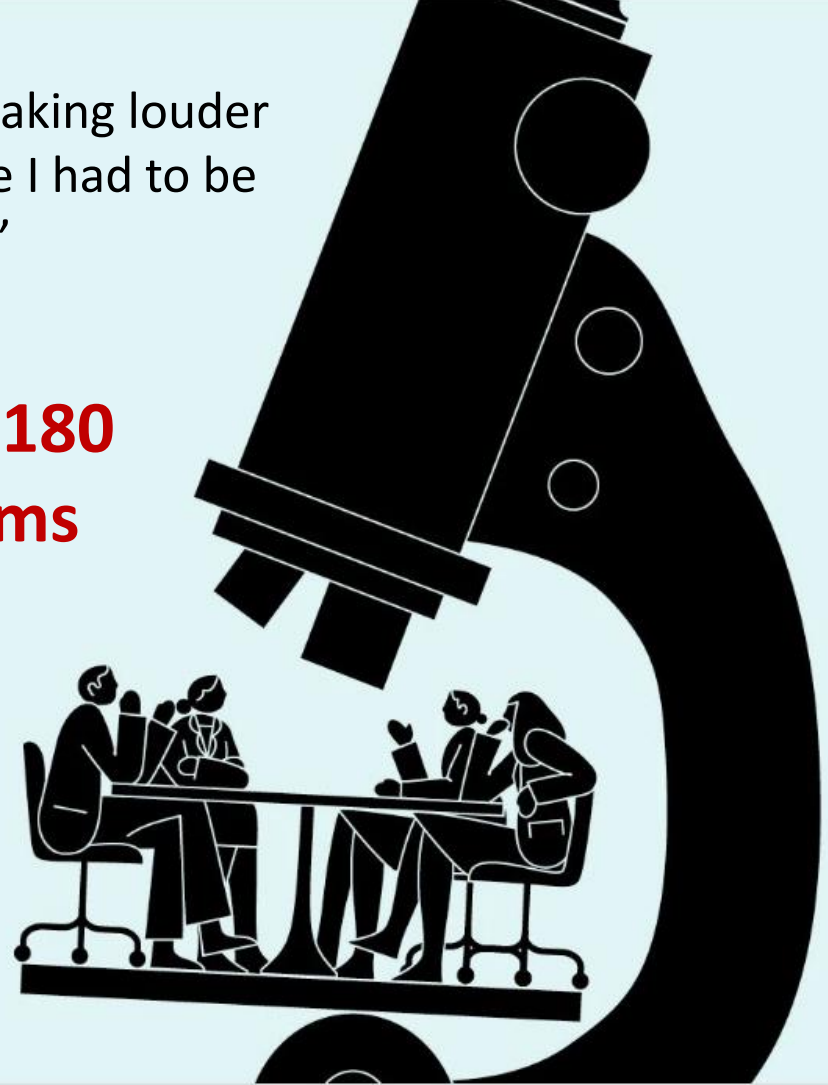
What Google Learned From Its Quest to Build the Perfect Team

New research reveals surprising truths about why some work groups thrive and others falter.

Key to improving Google’s teams – “Understanding and influencing group norms” “Norms can be unspoken or openly acknowledged, but their influence is often profound.”

“The right norms could raise a group’s collective intelligence.”

n = 180 teams



conversational turn-taking and **average social sensitivity/empathy** = aspects of **psychological safety** - “shared belief held by members of a team that the team is safe for interpersonal risk-taking.”
[\(Duhigg, 2015\)](#)

Psychological safety

“a sense of confidence that the team will not embarrass, reject or punish someone for speaking up...

...It describes a team climate characterized by interpersonal trust and mutual respect in which people are comfortable being themselves.”

[Edmondson, 1999](#)

“By adopting the data-driven approach of Silicon Valley, Project Aristotle has encouraged emotional conversations and discussions of norms among people who might otherwise be uncomfortable talking about how they feel.”

[Duhigg, 2015](#)

When Group Work Doesn't Work: Insights from Students ([Chang & Brickman, 2018](#))

- “Groups in which a few people dominated the conversation were less collectively intelligent than those with a more equal distribution of conversational turn-taking” ([Woolley et al., 2010](#), cited in [Chang & Brickman, 2018](#), p14).
- “Students who indicate higher levels of comfort with their group members achieve higher learning gains, whereas lower learning gains occur in groups with a reported conversation dominator” ([Theobald et al., 2017](#), cited in [Chang & Brickman, 2018](#), p14).
- The establishment of collective group efficacy may be well worth the effort to promote group-learning performance ([Gully et al., 2002](#), cited in [Chang & Brickman, 2018](#), p14).

What is our role in managing this emotional dimension?

- Acknowledging and raising awareness of the emotional dimension of a learning task/experience
- Encouraging students to recognise and attribute their emotional responses – **How do you feel about this experience and why do you think you feel this way?**
- Sometimes responding means not reacting by taking action that is obvious to students but holding their emotional responses, in particular ‘holding the tension’ (Gilmore and Anderson 2016)
- Building self-efficacy

Self-efficacy and its relevancy

Self-efficacy (Bandura, 1997) is:

- An individual's belief in their capability to plan and perform actions to attain a specific goal.
- It influences how they will cope, how long effort will be sustained in face of obstacles and how they recover from setbacks.
- Studies have found that self-efficacy correlates with academic performance (Ferla, Valcke, & Cai, 2009; Luszczynska, Guitiérrez-Doña, & Schwarzer, 2005; Richardson, Abraham, & Bond, 2012; Zimmerman, Bandura, & Martinez-Pons, 1992), demonstrating that students who are high in academic self-efficacy participate more readily, work harder, persist longer when they encounter difficulties, and achieve at a higher academic performance level (Schunk & Pajares, 2002).

What influences self-efficacy? (Bandura 1994)

Four sources of influence:

- 1.) Mastery experiences** – successes build belief in self-efficacy. Early failure undermines it. Overcoming obstacles through perseverance and effort builds resilient sense of efficacy.
- 2.) Social modelling** - seeing people we perceive as **similar** to ourself succeed by putting in effort builds self-efficacy. **Both** ‘mastery models’ who possess the competencies aspired to and ‘coping models’ are important (Schunk & Hanson, 1985).
- 3.) Social persuasion** - being persuaded verbally (+ congruently) that we have capabilities to achieve a specific activity. Emphasis on self-development; comparison to others is unhelpful.
- 4.) Emotional and physiological states** - pre-empting or experiencing a given task stimulates emotional and physiological reactions. Individuals with high self-efficacy are less likely to experience overwhelming anxiety and interpret their state of affective arousal more positively eg. as energising.

Measuring self-efficacy

See Imperial's Education Evaluation Toolkit:

<https://www.imperial.ac.uk/education-research/evaluation/what-can-i-evaluate/>

The screenshot shows the 'Education evaluation toolkit' page for 'Self-efficacy'. The page has a dark blue header with the title 'Centre for Higher Education Research and Scholarship' and a navigation menu. A left sidebar contains a table of contents for the toolkit, with 'Self-efficacy' highlighted in orange. The main content area features a breadcrumb trail, a title 'Self-efficacy', and three sections: 'What is self-efficacy?', 'Why does self-efficacy matter?', and 'How can we assess self-efficacy?'. The 'What is self-efficacy?' section includes a definition and a reference to Bandura (1997). The 'Why does self-efficacy matter?' section discusses the correlation between self-efficacy and academic performance, citing several studies. The 'How can we assess self-efficacy?' section is partially visible at the bottom.

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Self-efficacy

What is self-efficacy?

Self-efficacy is the belief in one's own capability to plan and perform actions to attain a specific outcome (Bandura, 1997). In the context of Imperial College London, self-efficacy is how much students believe they can succeed in achieving academic outcomes.

Why does self-efficacy matter?

Research has found that self-efficacy correlates with academic performance (Ferla, Valcke, & Cai, 2009; Luszczynska, Guitierrez-Doña, & Schwarzer, 2005; Richardson, Abraham, & Bond, 2012; Zimmerman, Bandura, & Martinez-Pons, 1992), demonstrating that students who are high in academic self-efficacy participate more readily, work harder, persist longer when they encounter difficulties, and achieve at a higher academic performance level (Schunk & Pajares, 2002).

With this understanding, we are particularly interested in students' self-efficacy in the Imperial setting. In particular, we are interested in general self-efficacy (how confident are students in their ability to achieve goals and perform well in various tasks in their lives?), educational self-efficacy (how empowered are students to engage with independent learning, collaboration, and other goals set out in the [Learning and Teaching Strategy?](#)), and self-efficacy in academic and/or professional discipline (how confident are students with their performance within their discipline?).

Bandura's conceptualisation of self-efficacy is grounded in the capability to achieve specific tasks or outcomes (Nielsen, Makransky, Vang, & Danmeyer, 2017) and ability to master challenges (Scholz, Doña, Sud, & Schwarzer, 2002; Schwarzer & Jerusalem, 1995), and for us at Imperial, it is interesting to look at different academic and discipline-related tasks of students, and the degree of confidence with which students feel they can accomplish those tasks.

How can we assess self-efficacy?

Applying self-efficacy theory to team work planning and facilitating

In your teams, discuss:

- How can we create the conditions to help students build their self-efficacy whilst working in teams?
- What approaches do you take / could you take to help students build their self efficacy.
- What might be some of the barriers?

10 mins

See the Imperial examples on your table for inspiration. These are also available via the Teaching Toolkit <https://www.imperial.ac.uk/media/imperial-college/staff/education-development-unit/public/Inclusive-practice-at-Imperial.pdf>

Helping to build self-efficacy

Mastery opportunities

- Provide lots of opportunities for practice, including possibility for facing obstacles and setbacks. Are students aware of this?
- Plan for mastery experiences to become increasingly difficult and create sufficient opportunity to recover from set backs.

Social modelling

- Consider whether learners have enough opportunity to identify, observe and engage with 'mastery models' and 'coping models'.
- Identify how can students be encouraged to invest in peer teaching and learning. What are the benefits / rewards?

Helping to build self-efficacy

Social persuasion

- Create early opportunity to give feedback on team achievement and team-working approach (e.g. TBL)
- Good quality, valued peer feedback can be an important source of social persuasion.
 - One thing that you did to really help our team was...
 - One thing that you could do more to help our team is...
 - Please tell us how you used the peer feedback

Emotional and physiological states

- Can we develop learners' (and teachers') emotional awareness so that they are better aware of how they perceive, interpret and manage physiological and emotional reactions to learning situations?

Helping to develop 'psychological safety'

- Highlighting the value of conversational turn-taking
 - Knowing names, revolving chair.
- Encouraging 'emotional conversations' e.g. talking about what's happening in their lives and how they feel about it (initially regarding impact on team working and study e.g. Elizabeth Hauke)
- Developing empathy - notice when someone is feeling excluded or down
- Giving students permission and strategies to challenge excluding behaviours e.g. active bystander 4 D's

▶ Direct action

Directly intervene, for example, by asking the person to stop. Immediately act or call out negative behaviour, explaining why it is not OK.

▶ Distraction

Indirectly intervene, for example, de-escalating by interrupting or changing the subject or focus. Useful where the direct approach may be harmful to the target or bystander.

▶ Delay

Wait for the situation to pass and check in with individual. Take action at a later stage when you have had time to consider. It's never too late to act.

Active Bystander Zone

The 4D's

Strategies for intervention

▶ Delegation

Inform a more senior member of staff, for example, your Head of Department, Director or Manager. Use someone with the social power or authority to deal with it.

Action points

- What action are you going to take as result of this afternoon's learning?