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Assessment for Social Justice: insights from chemistry and chemical engineering

Dr Jan McArthur
Senior Lecturer
Department of Educational Research
Lancaster University

j.mcarthur@lancaster.ac.uk
@JanMcArthur

#assessmentforsocialjustice

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Assessment shapes learning

What is at stake here is the nature of higher education itself. Assessment, rather than teaching, has a major influence on students' learning. (Boud & Falchikov, 2007, p. 3).

Knight (1995) insists: 'Assessment is a moral activity. What we choose to assess and how shows quite starkly what we value' (13)

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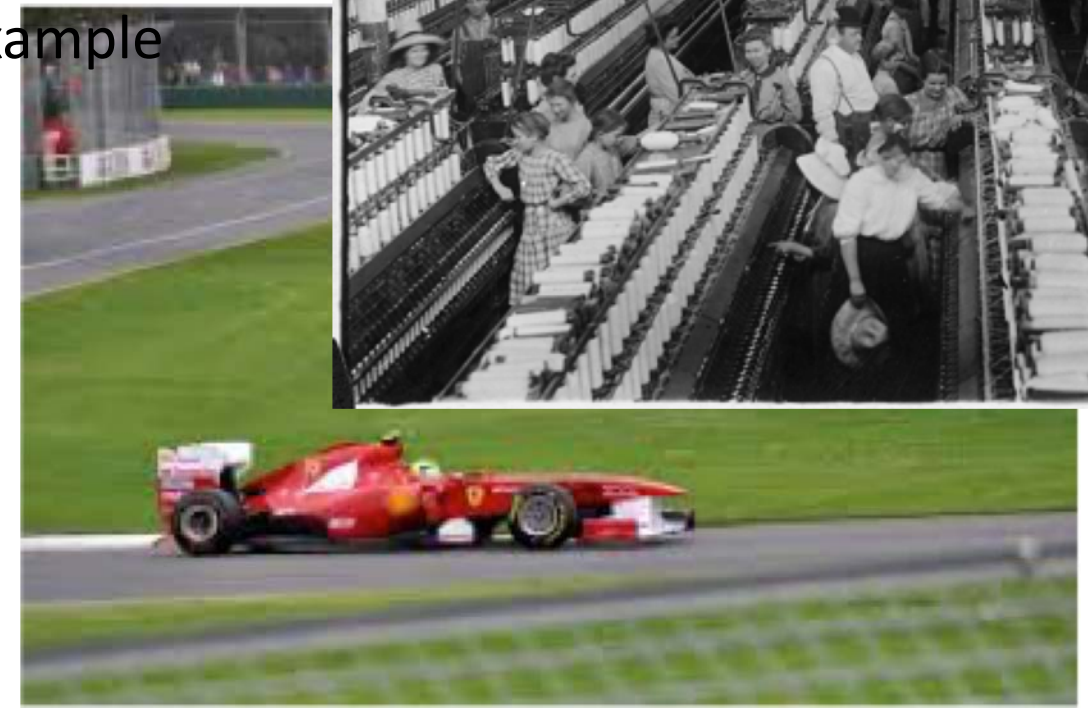
Student called Pauline

Richardson, 2004

Studying Economics

Opportunity Cost
– real world example



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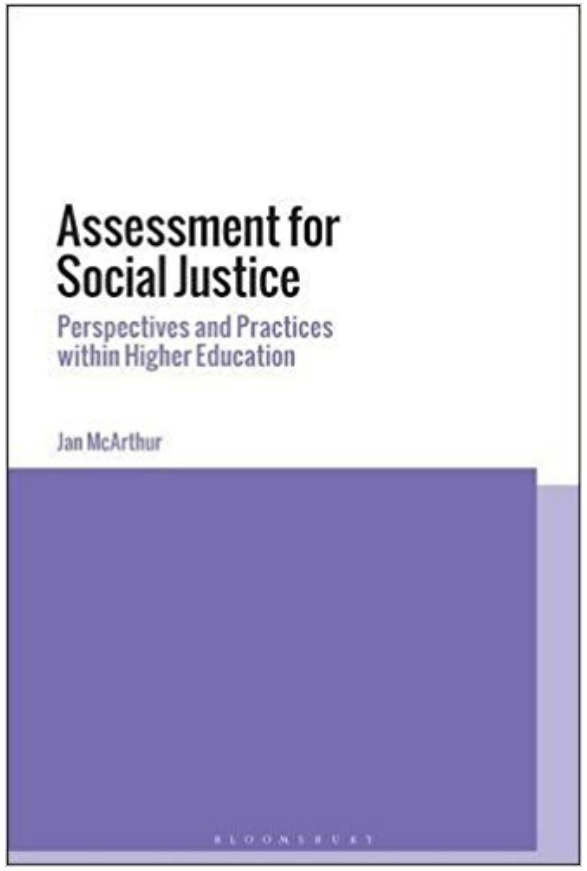
Assessment for Social Justice



(McArthur, 2018, 2016)

Socially just experiences of assessment

Nurturing of dispositions, skills and forms of engagement with knowledge conducive to greater social justice

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What do we mean by social justice?

Assessment literature often

taken to mean *fairness*

– but its meaning can also go unexamined

Dominant understanding of social

justice as fair process

Assessment as fair process

- Predetermined learning outcomes
- Bloom's taxonomy
- Constructive alignment
- Marking rubrics
- Moderation systems
- Quality Assurance

Procedure is important, but not as an end in itself

Procedural vs Outcomes-based approach to Social Justice

Capabilities approach – Sen and Nussbaum

Critical Theory

Focus on lived realities

Place far less faith in people being rational, independent and free

Social Justice as Mutual Recognition

Axel Honneth

We know what is just by:

‘that which allows the individual member
of our society to realize his or her own
life’s objectives, in cooperation with others,
and with the greatest possible autonomy’ (Honneth, 2010, p. 13)

Interplay individual and the social

Misrecognition – injustice

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3 Realms of Recognition

Respect/Rights Recognition

Love/care Recognition

Esteem/ Merit Recognition

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Social Practice Theory

Theodore Schatzki (1996, 2002)

Practices are ‘embodied, materially mediated arrays of human activity centrally organized around shared practical understanding’ (Schatzki, 2001a, p. 2).

A practice is ‘a “bundle” of activities, that is to say an organised nexus of actions’(Schatzki, 2002, p. 71).

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Social Practice Theory

4 elements to practices:

- Practical understandings
- Rules
- Teleoaffective structures
- General understandings

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Social Practice Theory

4 elements to practices:

- Practical understandings
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Senses of worth

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Senses of worth		*Forms of recognition*
TRUST	}	CARE
HONESTY		
RESPONSIBILITY		RESPECT
FORGIVENESS	}	ESTEEM
RESPONSIVENESS		

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TRUST

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TRUST

‘if I do not recognize my partner in interaction as a certain type of person, his reactions cannot give me the sense that I am recognized as the same type of person’ (Honneth, 1996, p 38)

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Trust

When students offer work for assessment it is an act of trust on many levels

To demonstrate trust need not involve naiveté

Consistent across three realms of recognition: care, respect, esteem

Cheating is an act of self-misrecognition

Trust relates to the extent to which students value their own work

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TRUST

Independent student
Critical thinking
Reflexivity
Self-directed learner
21st century graduate

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Industrialised distrust

Growth of the plagiarism detection ***industry***

Distrust on an industrialised scale

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Turnitin©

140 countries

15,000 institutional customers

More than 26 million students work passed through (Turnitin, 2015b)

“As education moves to greater use of technology, Turnitin is becoming a core component of the writing instruction process around the world” (Turnitin 2015a) – Jason Chu, education director

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Social justice implications

Students say it positions them as cheats

Clever marketing to be both detection and prevention

No payment to students for their work – used for commercial gain

Mirage of supporting academic writing – better done in other ways

Student asked if Turnitin encouraged redrafting:

I think it did but not always for the better I think because I would change something that I was quite happy with because Turnitin said it wasn't happy with it

(Penketh and Beaumont, 2014, p 100)

Instrumentalisation\industrialisation of a pedagogic relationship

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RESPONSIVENESS

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Responsiveness

Involves a dialogue between positions and an openness to have one's thoughts and actions shaped by encounters with the world in which one exists

Looking outwards

Levels of interconnectivity

Mess and the social world

Can we, should we, predetermine what students learn?

Alternate path between tightly prescribed and entirely aimless

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Open & Closed Aims

- Hardarson (2016)

Learning to use Newton's inverse square law to calculate the gravitational force between two masses may be understood as a closed aim … but understanding gravity is better seen as an open aim that cannot be conclusively reached.

When has a student understood gravity? When she has learned to do simple calculations based on Newton's formula? Is able to explain how massive objects affect space-time? Has mastered the concepts used to describe black holes? Knows what the long search for the Higgs boson was all about? Can participate in debates about the differences between gravity and the other fundamental forces of nature? Understanding gravity is an endeavour which, arguably, cannot be completed (Hardarson, 2016,7).

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Responsiveness

In order to appreciate the social usefulness of their knowledge students must be able to see it in its social context

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Responsive assessments

To what the student brings to the practice

To the social world in which it is situated

In order to enable esteem recognition

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Esteem Recognition

The development of skills and attributes through which one makes a positive contribution to the social whole

To be recognized for this by others

To recognize this in oneself

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Understanding Knowledge, Curriculum and Student Agency

CGHE project 3.3

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Professor Paul Ashwin (Project PI)
Dr Janja Komlijenovic
Dr Jan McArthur
Dr Kayleigh Rosewell

Longitudinal and comparative

UK, South Africa and US

Chemistry and Chemical Engineering

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Our two UK universities

University 1

- Research intensive
- Teaching Excellence Framework (TEF) – GOLD
- Ranks highly in major UK league tables

University 2

- Teaching focused
- Teaching Excellence Framework (TEF) – GOLD
- Ranks highly as a university for work placements in industry

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Interim results:

- only 1st year
- only student interviews

	Chemistry	Chemical Engineering	All
UNI1	14	16	30 (B18, M12) (10 Female, 20 Male)
UNI2	17	19	36 (23B, 10M) (16 Female, 20 Male)
All	**31** (22BSc, 10MSc) (15 Female, 16 Male)	**35** (22BEng, 12MEng) (11 Female, 24 Male)	**66** **(44B, 22M)** (26 Female, 40 Male)

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Assessment Context

Small lab reports
Large lab reports
MCQs
Progress Tests
Poster project
Reports/Essay
Final Exam

Assessment is built-in to nearly every stage in the curriculum

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STEM and social justice

Our focus on Biglan (1973) non-life disciplines. What does this mean? Is social justice relevant?

Some research suggests STEM students in general have upon commencement of their degrees less of an orientation towards social justice issues than non-STEM students (Garibay 2018, Nicholls et al. 2007)

Less of a sense of social agency, that is of being able to effect positive social change, upon completion of their degrees (Garibay 2015, 2018).

Where STEM students do connect with social justice, they do so in terms of their research contribution rather than political or social activism (Garibay 2018)

What would contribute to the conditions for esteem recognition among our first year students?

How do students self-identify in terms of achievement?

What counts as achievement – academically and/or socially?

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Spectrum of responsiveness to social world

Achievement represented by:

- grades obtained
- knowledge learned
- practical application of knowledge
- future application of knowledge in social sphere
- future application of knowledge in social sphere towards the social good

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Achievement represented by grades obtained

if you get 40%, you probably don't understand it. The person who gets 100% is clearly better at it in some way than you. (U1-E-22)

For an assessment, for example, when I was in high school, I used to think the purpose of an assessment was just to show the teachers that you can do it. Look I'll get this mark. Since I've come to university, I've seen that it's about making the knowledge stronger in your head (U2-E-22)

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Achievement represented by knowledge learned

I think the problem with exams is you learn to pass an exam, you don't learn the subject matter whereas I've learnt more in physical chemistry from doing the coursework. I've learnt so much more than I have probably revising for any test I've ever done (U2-C-27).

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Achievement represented by practical application of knowledge

I quite like working in a lab, and I enjoy working accurately and making sure everything happens that is meant to happen…I also like doing the lab reports because I like to see how things that I've learnt in the lectures actually work, physically. I can actually see it happening (U1-C-29).

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Achievement represented by practical application of knowledge in social sphere

It was my manufacturing module, and I think I got cellulose. So I had to do three-page report on cellulose, so I wrote about how it's manufactured and where it comes from, and something called the celluloid fibres. Celluloid, in itself, isn't actually that good to use in industry, but you can make something called celluloid fibres, which are quite useful (U1-E-23).

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Achievement represented by practical application of knowledge in social sphere for social good

Stops short – fairly instrumental

Question – is there scope for further development?

How will this change with future years?

How will this change as relationship to disciplinary knowledge changes?

International comparisons

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Two examples: responsive assessments

Towards esteem recognition

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The transport project – solving real problems

We had to think up a transport system for getting students from the city to the campus without using buses. We had to go through all the costing, all of the specific Engineering principles of it, so how big the motor needed to be, how much energy it required, and all of that kind of thing. That was quite interesting. (U1-E-22)

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The transport project – solving real problems

Solidarity – local problem, own town and university

Uncertainty – choose from three options

Hardarson (2016) open and closed aims

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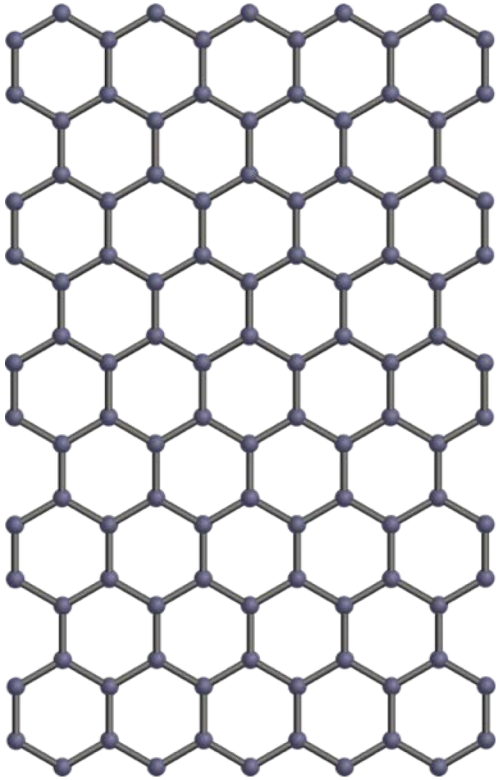
The Graphene Project – being part of a research community



we did four weeks in the lab growing graphene and testing that. You had to make your own labs, what concentrations to use, what volumes of gas and pressure and then you went through the CVD machine, you grew your own graphene on some copper or nickel - Then you dissolve that in your own concentration of ammonium sulphate which you had to make up from your own calculations then tested it yourself on the infrared and UV-vis (and) see what you made. Then you write your own four page report with detail from other research and other theories (U2-C-5).

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The Graphene Project – being part of a research community

Independence and responsibility

Cutting edge research

Active engagement with research literature

Professional community: Royal Society of Chemistry

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Assessment for Social Justice

Complex understandings of social justice have been missing from scholarship on assessment

This belies the centrality of assessment to the student experience, and to the functions of the university.

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