

Premier's Reserve Bank of Australia Economics Scholarship

Diversity, Inclusion and Engagement in Secondary Economics Education

Implications for Pedagogy

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# Introduction

In 2015, Higher School Certificate (HSC) economics candidates made up 13.3% of the total candidature. This compares to 39% in 1989. Over the last five years, economics candidate numbers have fallen by 16% points.

If this wasn’t concerning enough, over the last five years the number of female candidates in economics has fallen by 21%. In 2015, females made up only 35% of all economics candidates.

This statistical trend has implications not only for secondary education but will flow on to tertiary sector enrolments. It will also directly impact on the cohort of economists that are being produced. Economics, the language of power, policy, and change, requires a balanced gender representation and diversity of perspectives and insights to enable higher credibility, quality and robustness within the profession.

The decline in the number of students studying HSC economics, together with the decline in the proportion of female students, requires us to re-evaluate our economic pedagogy, and the ways it may deter female participation.

What is required is not just the encouragement of female students into the field of economics, but the adoption of innovative, best practice pedagogy to encourage all students to embrace the field. Inclusive economics is the way forward.

As educators, we need to learn innovative techniques to encourage and motivate the next generation of learners to engage in our discipline. Best practice inclusive economic pedagogy, can facilitate stronger participation among females as well as other underrepresented groups.

# Focus of Study

My report will:

* broaden existing knowledge of gender inclusive, innovative pedagogy in secondary education
* articulate strategies that have been used successfully overseas to increase engagement and diversity in economics education.

The following actions are required to address current decline in numbers and gender imbalance by:

1. giving a clear understanding of the broad nature of economics as a discipline
2. teaching economics as a method of social inquiry
3. embracing a gender inclusive curriculum
4. embracing economics for the masses-To inspire and persuade the uninitiated. We do not want to dilute the standard of economists we are producing, just cast the net wider to include talent that is going elsewhere
5. providing a greater presence of female role models
6. networking/mentoring programs
7. Tertiary Outreach Programs
8. providing gender neutral resources that reflect the gender spectrum.
9. providing teacher professional development
10. embracing inclusive pedagogy.

I acknowledge that addressing this issue will require a multifaceted approach. However, at the request of the RBA, this report will focus solely on inclusive pedagogy.

# Significant Learning

## What does inclusive pedagogy look like?

Economics has traditionally been taught as a sage on the stage or the talking head approach. Instead, we need to engage in active, collaborative, experiential pedagogy. The role of the teacher should be to inspire, guide and encourage – to be the guide on the side. Learning should be student led.

To provide a level playing field for female students, we need to employ gender inclusive pedagogy. Inclusive pedagogy, will successfully engage all groups within society. Inclusive pedagogy removes bias and caters for all student learning styles. Gender inclusive pedagogy necessitates an active, collaborative, inclusive, experiential classroom.

I have identified 15 characteristics required in the inclusive economics classroom.

### Minimise implicit Bias

Implicit bias affects the language, illustrations and examples used in the classroom. It has a detrimental impact on both expectations and observations. Research shows that it affects the picture of what an economist looks like, and the expectations of career aspirations of young women. The picture of what an economist looks like needs to be altered. Role models, mentoring and networking are important to change this. Specific strategies to minimize stereotype threat by:

1. Implicit Association Test
2. referring to, quoting women in the profession
3. providing more female role models
4. removing bias from teaching resources. Avoid stories, jokes and comments
5. characterising group students by gender, race or ethnicity. According to Sandler and Hall's research, biased language used by faculty resulted in low rates of participation by women
6. engaging a gender inclusive curriculum.

### Foster a growth mindset

Female students judge their competency in challenging subjects at around the age of ten years. Male students are more likely to persevere as they view challenges as a lack of effort or learned skill as opposed to a lack of ability.

To overcome this, we need to emphasis to female students that:

1. intelligence is malleable
2. maths ability can be developed
3. economic intuition can be acquired
4. gender is a social construct
5. hard work and perseverance will improve results.

We need to praise effort and persistence not performance, even if the performance is good. Praising effort rather than performance, alters children’s intrinsic theories and motivation to learn can increase.”

### Wise criticism

Evidence shows that young women are particularly sensitive to feedback style. Telling students “I have high standards, and I know you can meet them” builds their trust and helps them excel. When teachers clarify why they are giving feedback, students feel more engaged, focus on their work, and improve outcomes.

Emphasise the idea that “even if it’s not right, it doesn’t mean you’re not smart.” It’s all part of the learning process. Making female students aware that the struggle of recall is the learning process will foster greater resilience. This process is more effective if done in a transparent way, creating awareness that the struggle isn’t indicative of natural talent but the process of learning. Encouraging female students to explore the solutions is crucial, as is fostering “Bravery in the face of confusion”.

The altered response to orthodox criticism feeds into the altered risk aversion amongst female students. Female students cannot see the reward pay off in a more academically challenging subject, as there is no clear-cut career path. There is an inequality of likely benefits and risks to actions between male and female students. This could be moderated with more female role models in the media, providing a greater perceived reward, combined with a reduced risk profile, via teacher education on feedback sensitivity.

### Collaborative/cooperative learning techniques

Female students perceived competency and interest levels are positively influenced by collaborative learning.

Collaborative lessons relate to the Harkness and Socratic method. There is only occasional or minimal teacher intervention, after introducing the main concepts. What Barnes and Mercer call ‘exploratory talk’ is crucial for female students to ‘talk themselves into understanding’ specifically in economics education. Jenson and Owen 2001 related the findings that collaborative learning encouraged more students to engage in the study of economics. Their findings conclude that allocating more time to discussion and topics that are traditionally considered to be of interest to women will encourage female students into economics.

Equally important is that this collaboration is reciprocal. Female students commented on the effectiveness of lessons where teachers allowed a learning dialogue. “...How you learn, what you are not understanding, the purposes of activities… the need to continually ask questions to clarify learning”. In other disciplines, peer instruction was shown to increase understanding for all students and to decrease the gender gap.

### Active learning

Active learning enables students to construct their own understanding, training them to become problem solvers and critical thinkers. In contrast to classic chalk and talk lessons where instructors deliver information to students, active lessons enable students to gather, analyse, and evaluate information themselves.

Students are required to move from passive information reception to inquiry and desire to understand. With passive learning, students only learn what they know. In active learning they learn what they don’t know and then rectify it.

There is evidence of classroom interactive engagement reducing the gender gap within other disciplines, particularly physics. The National Academies Summer Institutes on Undergraduate Education suggests that active learning improves all students' comprehension of materials and may be particularly beneficial to female students.

Research has shown that active learning improves learning outcomes, particularly in short answer responses, as well as increasing student enjoyment, satisfaction and perception of learning’s usefulness.

### The art of questioning

Research shows that female students and minorities benefit when wait time is increased. Benefits are maximised through strategy transparency, as well as tracking class participation in discussions.

Alarmingly, studies have shown that wait time allocated between students varies depending on gender. One study hypothesised that this differentiation in wait time conveyed a “vote of confidence” in male students, and therefore increased male participation. This notion is supported by Professor Stahl. Stahl showed that increasing wait time to three or more seconds results in positive effects for both teacher and student. Typically, teachers wait between 0.7 and 1.4 seconds after a question before beginning to talk again. Stahl proposes increasing wait time optimally to between three and six seconds. With this wait time, accuracy, length of responses and academic achievement increases. The positive externality provided from this change is seeing higher quality questions, varied question strategies and more challenging questions requiring more complex information processing skill.

When students contribute to classroom discussions, it is vital to identify the value in their comments. This is particularly true of female students. The emphasis on a culture of exploration, freedom and risk in the economics classroom is crucial. Emphasising a single correct answer to a question discourages student involvement and discourages critical thinking.

Strategies:

1. No hands up classroom
2. Add wait time for responses
3. Note patterns of interruption
4. Ask the same kinds of questions (critical thinking vs. factual) to different kinds of students.

### Leverage emotion and choice

Use adolescents’ natural predisposition to high emotion to engage them in learning. With the adolescent development of a personal identity, the provision of options within the range of learning can increase female motivation. Even if the options presented are only choice A or B, or the choice of order of task completion, this is enough to increase personal agency within the learner.

### Use case studies

To improve engagement, case studies can provide a greater context for learning and improve the understanding of underlying concepts. This strategy enables the illustration of simple theoretical paradigms with real world significance.

### Embrace creativity

Creative learning activities improve motivation, engagement and understanding. Presenting non-negotiable components of the syllabus in a creative way will engage female participation.

### Make the most of multimedia.

“Using media engages students, aids retention of knowledge, motivates interest in the subject matter, and illustrates the relevance of many concepts” Learning outcomes are improved when both verbal and visual media is used. Content is more accessible, deep learning is promoted and learned material recall improved.

#### When using media:

##### Avoid duplication

Jamet and Le Bohec showed that presenting students with a PowerPoint presentation directly mirroring the instructor's lecture resulted in lower information recall.

##### Concise is better.

Research by Bartsch and Cohern showed that elaborate PowerPoint features such as unrelated images, sounds, and extraneous information reduced student learning outcomes.

##### Draw graphs in class.

Research by Stern, Aprea and Ebner showed that groups presented with a graph that was ‘actively illustrated’ performed better in recall tasks than groups passively presented with the same graph. 'Actively illustration' meaning students developing graphs themselves rather than having a graph shown to them.

##### Use media related to Pop culture.

Relating syllabus concepts to pop culture is a way of bridging the divide in relevance of syllabus content and student’s lives.

Media can illustrate how the theory relates to the real world and promotes independent learning. It aids in motivating student interest and attention. Analysing the media using the theories they have been taught and concepts they are studying can also improve students’ analytical skills. The breaking down of the barriers between formal learning and understanding enables students to more easily see economic concepts within the scope of their everyday life.

### Use simulations, models and games

Simulations, models and games allows a deeper understanding of the concepts being delivered and provide opportunities for active, experiential learning. Examples may include running mock RBA Board meetings, trade game, classroom markets.

### Use music

Studies cite the positive benefits to learning from increased use of music within the classroom. Music can be used at the start of the lesson, as well as throughout the content, such as projects such as Rockonomix and Econbeats.

### Context rich problems-embrace the narrative

Research concludes that economics taught as a ‘means of social enquiry’ is more engaging for female students. Teaching the bigger picture application, before the statistical/mathematical applications have been found successful in Science, Technology, Engineering and Mathematics (STEM), particularly Engineering.

Programs such as the CORE Project (University College London) aim to achieve this. Use of the narrative is crucial in showing economic application to real world social issues.

### Vary assessment and retrieval exercises

Cumulative assessments, focusing on concepts as opposed to facts, involving multiple, low risk quizzes and retrieval exercises have been shown to improve female engagement. Long-term retention of information was better when they were given multiple exams rather than a single, large one and when professors consistently reviewed and connected to concepts and skills from earlier in the course. Evaluating students in ways other than exams and doing a warm-up activity at the beginning of the semester will also help students of both sexes but is particularly beneficial for female students.

### Explicitly structured lessons

Stated goals at the beginning of the lesson and a clear coherent summary at the end together with the facility and flexibility for questioning, discussion and active learning improve female student engagement.

# Conclusion

To address diversity in the economics profession, we need to improve motivation and interest for the subject within the secondary sector.

What is required is not just the encouragement of female students in the field of economics, but the adoption of innovative, best practice pedagogy to encourage all students to embrace economics.

If we want to encourage and motivate the next generation of learners to engage in our discipline, we need to teach economics as a means of social inquiry. Teaching economics that relates to the real world; that answers the global questions and concerns of the next generation and which caters to a wider spectrum of students can not only help facilitate stronger participation amongst females and other minority groups, but the general population at large. We need to cast our net wider to ensure a stronger discipline in the future.

To achieve this, we need to promote bigger picture economics. environmental sustainability, global and domestic inequality, gender parity, the issues that appeal to all people, particularly women, need to be the focus. The empirical aspect of our discipline is inevitable, however, if we foster a love of the subject, we will have students more willing to persevere.

Increasing the inclusion, interest, motivation and learning outcomes of students, will therefore strengthen the economics profession as a whole.

# References

1. **Reducing the Effects of Stereotype Threat on African American College Students by Shaping Theories of Intelligence** - ScienceDirect Sciencedirect.com. (2017). Reducing the Effects of Stereotype Threat on African American College Students by Shaping Theories of Intelligence - ScienceDirect. [online] Available at: <http://www.sciencedirect.com/science/article/pii/S002210310191491X>
2. **Main Page - Diversifying Economic Quality: A Wiki for Instructors and Departments**
Diversifyingecon.org. (2017). Main Page - Diversifying Economic Quality: A Wiki for Instructors and Departments. [online] Available at: http://diversifyingecon.org/index.php/Main\_Page
3. **NCGS: Home** – Ncgs.org. (2017). NCGS: Home . [online] Available at: <http://www.ncgs.org/>
4. **Delusions of gender: How our minds, society, and neurosexism create difference**, Fine, C, 2010, Norton, New York.
5. **Gender and decision making in the workplace.** Gender and decision making in the workplace SoundCloud. (2017). <https://soundcloud.com/melbournebusinessschool/gender-and-decision-making-in-the-workplace>
6. **Exploring talk in school: Inspired by the work of Douglas Barnes.** Mercer, Neil & Hodgkinson, Steve. (2008). 10.4135/9781446279526.
7. **International Handbook on Teaching and Learning Economics** Ed. Gail M. Hoyt, and KimMarie McGoldrick
8. **Women and the Choice to Study Economics** Tisha L. N. Emerson, KimMarie McGoldrick, and Kevin J. Mumford Krannert.purdue.edu. (2017). [online] Available at: <http://www.krannert.purdue.edu/faculty/kjmumfor/papers/Women%20and%20the%20Choice%20to%20Study%20Economics.pdf>
9. **Pedagogy, Gender, and Interest in Economics** Elizabeth J. Jensen and Ann L. Owen Aeaweb.org. (2017). [online] Available at: <https://www.aeaweb.org/content/file?id=750>
10. **“Does cooperative learning improve student learning outcomes?”** (Yamarik, S. (2007), Journal of Economic Education, 38(3), 259–77)
11. **Making Cooperative Learning Effective for Economics** (McGoldrick, Rebelein, Rhoads and Stockly, in Teaching Innovations in Economics: Strategies and Applications for Interactive Instruction, Michael K. Salemi and William B. Walstad (eds.), Northampton, MA: Edward Elgar, 2010, pp. 65-94).
12. **Reducing the gender gap in the physics classroom** (2006). American Journal of Physics, [online] p. Available at: <http://aapt.scitation.org/doi/abs/10.1119/1.2162549>
13. **Gender Equity: Still Knocking at the Classroom Door** David Sadker Educational Leadership, Vol 56 April 1999 Sadker.org. (2017). [online] Available at: <http://www.sadker.org/PDF/GenderEquity.pdf>
14. **“Using "Think-Time" and "Wait-Time" Skillfully in the Classroom.”** Stahl, Robert J. 1994-05-00 ERIC Clearinghouse for Social Studies/Social Science Education Bloomington IN. Ericdigests.org. (2017). [online] Available at: <https://www.ericdigests.org/1995-1/think.htm>
15. <http://educationmattersmag.com.au/are-teenagers-crazy/?utm_source=EDUMATTERS&utm_campaign=a30268c83b-Education_Matters_eDM_22_February&utm_medium=email&utm_term=0_a0ba9bd941-a30268c83b-165554029> Jared Cooney Horvath, cognitive neuroscientist.
16. **The effect of redundant text in multimedia instruction** <https://www.researchgate.net/publication/223078244_The_effect_of_redundant_text_in_multi> Eric Jamet ¤, Olivier Le Bohec Laboratoire de Psychologie Expérimentale, CRPCC, Université Rennes 2 Haute Bretagne, place du recteur Henri Le Moal, CS 24307 35043 Rennes Cedex, France 1 November 2006
17. **Effectiveness of PowerPoint presentations in lectures** Bartsch and Cohern, School of Human Sciences and Humanities, University of Houston Department of Behavioral Sciences, University of Texas 15 April 2003.
18. <https://www.rockonomix.com/starting-point>
19. <http://teachbetter.co/blog/2017/05/03/music-in-the-classroom/>
20. <http://www.core-econ.org/>
21. **The "Testing" Phenomenon: Not Gone but Nearly Forgotten** John A. Glover Teachers College and Bums Laborato Journal of Educational Psychology 1989, Vol. 81, No. 3, 392-399
22. **Research conducted by the National Coalition of Girl’s Schools** <http://www.ncgs.org/Pdfs/Resources/gdst-effective-pedagogies-for-girls-learning-research-report-mike-younger.pdf>