

Impact case study (REF3b)

Institution: University of Sunderland
Unit of Assessment: 25
Title of case study: Professor Stephanie Atkinson's Research in Design and Technology (D&T) Education in the Secondary and Tertiary Phases of Education.
1. Summary of the impact

Stephanie Atkinson has a long track record of research into aspects of D&T education, focusing particularly on how people design, and the significance of factors such as creativity, motivation, designing styles, gender and achievement which has had considerable impact on government policy and practice, in the training of D&T teachers, on practice in secondary schools, public examinations, and amongst the international D&T education community more widely. Her students (over 1000 since 1990) have either gone on to either become successful industrial and engineering designers or they have become teachers, Heads of Department, University Lecturers & officials in Ministries of Education in several countries, where the impact of her research can be seen in how designing is taught in numerous secondary schools throughout the UK, Cyprus, Botswana, Bahrain, & Brunei.

2. Underpinning research

Atkinson has a longstanding interest in the relationship between how people learn and how they design, and the factors that influence this relationship. This is reflected in a number of publications and conference publications concerning the significance of motivation, passion, creativity, learning styles, gender, prior experience, achievement, and preferred information processing and designing style. Specific findings with relevance to D&T education policy and practice include

- The importance of the relationship that exists between the development of high order thinking such as creative and problem solving skills and the need to achieve high levels of performance in assessment processes (Atkinson 2000)
- Research undertaken on assessment in D&T (Atkinson, 2005, 2007, 2013), which, according to the Design and Technology Association (DATA) continues to have significant impact on thinking and practice in the D&T Community.
- That prior experience is related to achievement amongst Initial Teacher Training (ITT) D&T trainees, and that both gender and learning style are significant factors in achievement in design activities (Atkinson, 2006)
- The discovery and significance of a mismatch between a student's designing style, information processing style and the requirements of successful design activity where designing is a central aspect of the D&T curriculum for D&T ITT trainees (Atkinson, 2007)
- That ITT trainees in Food Technology tend to have different information processing and designing styles from those in other D&T specialisms, which impacts on their understanding and achievement within their own design activities and thus upon their confidence and ability in terms of future professional practice (Atkinson, 2008)
- That the time spent studying subject knowledge has a significant impact on trainee teachers' attitudes to the subject they will teach - the longer exposure on undergraduate programmes compared to 1-year PGCE programmes has significant positive impact, particularly in relation to design activities (Atkinson, 2009; Atkinson 2011, Atkinson 2012)
- The importance for D&T ITT trainees of the relationship between creativity, intrinsic motivation and passion during design activity leading to better informed and improved pedagogical practice for academics teaching the trainees and for the trainees once they become teachers of D&T (Atkinson & Sandwith, 2012, 2013)

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- The effectiveness of a new self-assessment and feedback tool designed to monitor and develop the level of understanding of elements of designing carried out by D&T students studying on a programme training them to become D&T teachers (Atkinson, 2013)

The body of work referred to has been conducted over a twenty-year period, throughout which Atkinson has been employed at the University of Sunderland after a four-year period lecturing at Loughborough University. Professor Atkinson completed a PhD at Newcastle-upon-Tyne University in 1997. It was concerned with pupil motivation in KS4 Design and Technology GCSE disseminating her PhD research to the wider D&T community from 1993 at international conferences (x4), at a presentation to HMI in 1995 and in journals from 1998 (x3).

3. References to the research**Key Research Outputs**

- 2000 'Does the need for high levels of performance curtail the level of high order thinking skills in design and technology project work' in: M. De Vries (Ed.) *International Journal of Technology and Design Education*, 10 (3) 225-281 – [hard copy available](#)
- 2006 'Factors influencing successful achievement in contrasting design and technology activities in Higher Education' in: M. De Vries (Ed.) *International Journal of Technology and Design Education*, 16 (2) 193-213 – [hard copy available](#)
- 2009 'Are Design and Technology teachers able to meet the challenges inherent in the theme for this conference 'D&T – A Platform for Success'?' in: E. Norman (Ed.) *Design and Technology Education: International Journal*, 14 (3) 8-20. ISSN 1360-1431 - [hard copy available](#)
- 2011 'The relationship between the time spent studying subject knowledge and the attitude of trainee teachers to the subject they will teach' in: D. Cheek & J. Streichler (Eds.) *The Journal of Technology Studies*, 37 (1). Pp.17-30. ISSN 1071-6084 - [access to the article at the following website:
http://scholar.lib.vt.edu/ejournals/JOTS/v37/v37n1/](#)
- 2013 'Passionate about designing' In: M. J. de Vries (Ed.) *International Journal of Technology and Design Education*, DOI 10.1007/s10798-013-9251-y - [electronic copy available](#)

Grants awarded

- 2011 Internal Research Grant from University Research Fund £3180
- 2012 Internal Research Grant from University Research Fund £4270
- 2013 Internal Research Grant £1500

4. Details of the impact

Atkinson's research outputs have informed her own professional practice in her university teaching and research roles, and impact on practice in D&T education in secondary schools and initial teacher training courses nationally (Source 2; 4; 7) and internationally (Source 1; 3; 7; 9). The beneficiaries include trainee teachers at Sunderland and in other universities, schoolteachers, fellow ITT tutors, members of DATA (Source 6), the Design Technology Examination team at the International Baccalaureate Organisation (Source 5), and the wider international D&T community (Source 1; 3).

Her major contribution and impact on D&T education has been recognised nationally and internationally;

- She was awarded an MBE in 2011 for Services to Higher Education,
- The Design and Technology Association awarded her for Outstanding Contribution to Design and Technology Education in 2010
- Epsilon Pi Tau, the International Honour Society for Professions in Technology, based in America, awarded her a Certificate for Distinguished Services on the Board of Editors of the Journal of Technology Studies 2002-2011
- She is frequently invited to be the keynote speaker at national and international conferences.

Specifically, the impact of her work can be seen in:

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Changed practice for specific groups.

Atkinson's research on the factors influencing designing style and effective practice in teaching design have influenced her teaching on ITT and other HE programmes, and have thus had an impact on her students' design practice. Many of these subsequently entered the teaching profession, where their approach to teaching D&T has been influenced by their ITT experiences, with consequent impact on pupils (Source 6).

Influence on professional standards, guidelines or training.

Atkinson's research on the factors influencing designing style and effective practice in teaching design has been influential in the training of D&T teachers nationally and internationally.

- Atkinson (2000) was reprinted in a standard textbook for ITT D&T students (2002 'Creativity versus the need for high levels of performance' in: G. A. Owen-Jackson, (Ed.) *Teaching Design and Technology in Secondary Schools*, London: Routledge Taylor Francis. 161-176), used extensively on PGCE programmes (Source 2; 7), and for research assignments at Masters Level (Source 7).
- Atkinson's work was extensively cited in an influential literature review on the impact of D&T in schools commissioned by the Department of Education and Skills (Harris and Wilson, 2003) and in *What is wrong with D&T?* (Miller, 2012) (Source 6).
- DATA reports that Atkinson's research has made a considerable contribution to developments in pedagogical and assessment practice in secondary D&T (Source 6).
- DATA also report that her work on the training and continuing professional development of D&T teachers (Atkinson 2006, 2008, 2009, 2011, 2012, 2013) has been influential in the D&T community. The issues she raised have been subsequently addressed in OFSTED publications (OFSTED 2008, 2011) (Source 6).
- Her research has had an impact at an international level in several countries including Israel (Source 3) Botswana, Cyprus (Source 7) Brunei, Australia (Source 1), New Zealand and Slovakia (Source 9).

Development of resources to enhance professional practice

In addition to *Owen-Jackson (2002)*, cited above, Atkinson was invited to write a chapter on *Encouraging Imagination in Design Education: A vision for the future* (Source 8) and has co-authored, with Professor Paul Black, a chapter on assessment in D&T in *Design and Technology: for the next Generation*, edited by David Barlex (2007) which has impacted upon D&T ITT students across the UK.

Use of research findings in the conduct of professional work or practice

Atkinson's work has impact across the full breadth of the D&T community (UK, Germany, Holland, Botswana, Israel, Sweden, Australia, New Zealand) through the presentation of her research findings at national and international conferences, including WOCATE (World Council of Associations of Technology Education) Conference (2000); the International Pupils' Attitudes to Technology Conferences (2001; 2003; 2007; 2008; 2011; 2012; 2013), European Learning Styles Information Network Conferences (2003; 2004; 2005); DATA International Research Conferences (2004; 2005; 2009), and conferences in Botswana (2000) Slovakia (2002; 2009), Cyprus (2009) Australia (2012) and New Zealand (2013). Atkinson is an external advisor for International Baccalaureate D&T examinations and a member of their curriculum review team specifically because of her research into best practice in D&T (Source 5). She also has impact internationally as an external advisor and resource contact for PhD students researching design activity at Old Dominion University Norfolk Virginia USA, and as an External Evaluator for The

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Hong Kong Institute of Education of Research Grant applications.

Influence on planning or management of services

Atkinson has presented papers to management teams and other ITT providers on the planning, subject content and implementation of ITT D&T programmes with particular reference to design activity based upon her research findings in the UK to HMI (Source 6), and internationally in Botswana, Slovakia (Source 9), Cyprus (Source 7) and Australia (Source 1).

Use of research findings by professional bodies to define best practice, formulate policy, or to lobby government or other stakeholders

Atkinson's work has been used by DATA officials in lobbying the TDA about the training of D&T teachers, in discussion with HMI concerning length of study time to gain subject knowledge in D&T, and in shaping DATA policies and resources. It has recently included her work in a review of the latest research in D&T, and in its response to the National Curriculum Review Consultation (Source 6). The significant impact on public policy and in changing the government's National Curriculum proposals for D&T is also corroborated by Baynes (Source 8).

Practitioner debate has been informed or stimulated by research findings

As described above, Atkinson's work has stimulated debate in many countries amongst student teachers, practicing teachers, teacher educators, and DATA officers through workshops and conference presentations and through its inclusion in widely used publications.

Research has challenged conventional wisdom, stimulating debate among stakeholders

Atkinson gave the Keynote John Eggleston Memorial Lecture at DATA Annual Conference 2009, in which she challenged some aspects of the training of D&T teachers, based upon her research into design activity. This was subsequently published (Atkinson 2009), and was used in discussions between DATA and HMI regarding the future training of D&T teachers (Source 6). She also conveyed her provocative message to an international audience in Australia as the keynote presenter at the 7th biennial ITCE (2012) (Source 1)

5. Sources to corroborate the impact

People contactable to corroborate the impact of Professor Atkinson's work:

1. Associate Professor Institute for Educational Research, School of Education and Professional Studies, Griffith University, Australia
2. Deputy Director of Initial Teacher Education, Manchester Institute of Education, Manchester University
3. Head of ICT Unit, School of Education, Beit Berl College, Israel
4. Senior Lecturer and Degree Course Leader Edge Hill University
5. Curriculum and Assessment Manager, International Baccalaureate Organisation

People who have provided a written statement:

6. Assistant Chief Executive, Design and Technology Association (DATA)
7. Director of the Centre for Research and Curriculum in Primary Technology (Recently retired) Birmingham City University
8. Editorial Director Loughborough Design Press, Author & Designer, formerly Visiting Professor at Loughborough Design School
9. Head of Department, Faculty of Education, Constantine the Philosopher University Nitra, Slovakia