REF2021

Institution: The Open University	
Unit of Assessment: C23 Education	
Title of case study: Innovative methods for supporting professional development and organisational learning	
Period when the underpinning research was undertaken: 2012-2017	

Details of staff conducting the underpinning research from the submitting unit:

Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Anne Adams	Professor	2006- present
Gill Clough	Research Fellow	2005-2019
Elizabeth Fitzgerald	Senior Lecturer	2011-present

Period when the claimed impact occurred: August 2013 - August 2020	
Is this case study continued from a case study submitted in 2014? No	

1. Summary of the impact

The research underpinning this case study developed two innovative methods for supporting professional development and organisational learning in a range of contexts. The use of these methods has resulted in impacts on: i) **public services** in that the approach to professional development and organisational learning within four public service organisations in the UK and Africa has been shaped by the research and ii) the delivery of the **professional services** of 43 police forces in the UK and **practitioners**, through the professional development of 2,249 practitioners in UK, Portugal, Thailand, Myanmar, Kenya, Nigeria, Ghana and Mozambique.

2. Underpinning research

The research underpinning this case study has explored and developed innovative approaches to professional development and organisational learning; particularly in relation to activities that require a deep understanding of complex issues. Working collaboratively with practitioners in education and policing contexts, OU researchers have developed and tested two innovative solutions, which can be implemented independently or collectively: The Tricky Topic Process and Evidence Cafés.

The Tricky Topic Process: The premise of the EU-funded Juxtalearn project was that, in order to develop pathways to deep learning, STEM teachers need to understand not just what it is that students need to learn, but what it is that students don't understand. The research sought to develop an approach that would enable teachers to identify key gaps in students' understanding of a threshold concept ('Tricky Topic'). A series of five co-design workshops with 23 teachers and four students were undertaken. Two key outcomes of these workshops were: i) a taxonomy of tricky topics and their constituent stumbling blocks ii) a process which supported teachers to: *Identify* a tricky concept and break it down into smaller, more manageable 'chunks' or stumbling blocks; *Capture* the problem examples and uncover why students find these tricky and *Assess* the stumbling blocks and develop and evaluate interventions which help overcome these stumbling blocks. An online environment called CLIPIT was developed which supported teachers to engage with the taxonomy and work through the Tricky Topics Process. Included in CLIPIT were two tools. Firstly, a problem-distiller tool which prompted teachers to reflect on why students struggle with a particular Tricky Topic. Teachers used the tool to make selections from a pedagogically grounded set of prompts linked to stumbling blocks identified in the taxonomy. Secondly, a diagnostic quiz tool supported teachers, through scaffolding, to assess the stumbling blocks. The Tricky Topic Process (and associated technological tools) was tested in two UK schools, across three subject disciplines with 26 students aged 16-18 and two teachers **[O1]** and two elementary schools in Portugal (1,572 school and HE students and 109 teachers and trainee teachers) **[O2]**. Results revealed that using the Tricky Topic process to scaffold formative assessment design can support teachers to develop their understanding of student barriers to learning, which in turn can support learning re-design and help teachers to develop appropriate strategies to help students overcome misunderstandings.

Evidence Cafés: The overarching focus of this body of work was methods for promoting knowledge exchange. More specifically, the research team explored the enablers and barriers to the sharing of knowledge within and between police forces and between police forces and partners, including the public. A series of 42 in-depth interviews and focus groups were completed and combined with 47 survey responses (collected from across 11 police forces). The survey responses showed a trend, across the police, towards a motivation for sharing in order to develop a deeper understanding of issues. Results from the interviews and focus groups indicated that police sharing was deeply motivated to support 'good practice' in the prevention and detection of crime. However, a sharing barrier was identified in the parity of value given to different types of knowledge, for example, between professional judgement and research evidence knowledge. Sharing was achieved when there were reciprocal benefits **[O3]**. Informed by these results, the research team developed and justified the rationale for a technique called 'Evidence Café' in order to try to close the conceptual gap between academic researchers and frontline police by supporting the application of findings from research into practice contexts. A key component of an Evidence Café, that differentiates it from other approaches (e.g. World Café) is that a 'champion' from the practice context collaborates with a 'champion' from the research context to develop a discussion object that is then shared with practitioners within a workshop format to facilitate knowledge-exchange. The aim of an Evidence Café is to: i) develop a deeper understanding of evidence used in practice; ii) support the translation between specific research evidence into practice; iii) give academics the opportunity to both share their research and learn practical applications and issues from a critical audience of practitioners; iv) give practitioners an accessible way to explore how research might influence their daily work; v) provide a forum for knowledge exchange between practitioners and academic researchers research **[O4]**. Drawing on data from 15 Evidence Cafés run across the UK with police forces, involving 378 participants, the research team sought to understand the differences between those Evidence Cafés. Using an Evidence Typology as a lens to interpret three exemplar Evidence Café Case Studies, analysis revealed that conflicting motivations, timing and the role adopted by evidence champions influenced whether or not the Evidence Café' resulted in one-way knowledge transfer or a more two-way, equitable knowledge exchange **[O5]**.

3. References to the research

The underpinning research has been funded by The European Commission and HEFCE. O1-2, O4-O5 were peer reviewed.

O1. **Adams, A**., and **Clough, G**. (2015) The e-assessment burger: supporting the before and after in e-assessment systems. Interaction Design and Architecture(s), 25, 39–57. http://oro.open.ac.uk/44380/

O2. Cruz, S., Lencastre, J.A., Coutinho, C., **Clough, G**., and **Adams, A**. (2016) Threshold Concepts Vs. Tricky Topics - Exploring the Causes of Student's Misunderstandings with the Problem Distiller Tool. In: Proceedings of CSEDU 2016, (Uhomoibhi, J; Costagliola, G; Zvacek, S and McLaren, B.M. Eds.). Science and Technology Publications, Rome, 1, 205-215. https://doi.org/10.5220/0005908502050215

O3. **Adams, A**., **Clough, G**., and **FitzGerald, E**. (2018) Police Knowledge Exchange: Full Report 2018. The Open University, UK. http://oro.open.ac.uk/56100/

O4. **Clough, G**., **Adams, A**., and Halford, E. (2017) Evidence Cafés and Practitioner Cafés supported by online resources: A route to innovative training in practice based approaches. European Police Science and Research Bulletin, 3(3), 115-122. http://oro.open.ac.uk/48469/

O5. **Clough, G**., and **Adams, A**. (2020) Evidence Cafés: Overcoming conflicting motivations and timings. *Research for All*, 4(2), 220-241. https://doi.org/10.14324/RFA.04.2.07

4. Details of the impact

The beneficiaries of the research into Tricky Topics have been schools, initial teacher education providers, universities and the teachers and lecturers working with those organisations. The work on Tricky Topics and its impact on technology-enhanced learning was awarded a WISE Technology Innovation Award 2017 (sponsored by Goldman Sachs and given by HRH Princess Anne). The Tricky Topic research has had an impact on **public services** by informing

organisational approaches to the professional development of educators in Africa and on **practitioners** by influencing the knowledge understanding and practice of educators in the UK, Europe, Thailand, Myanmar and Africa.

Beneficiaries of the research into Evidence Cafés have been those responsible for the training and development of the overall police force (e.g. College of Policing); individual police forces (e.g. constabularies); those working within the police force such as front-line officers and performance analysts; and NGOs in Africa. The evidence café research has had on impact on **professional services** by shaping approaches to professional development within UK policing and an impact on **public services** by influencing approaches to organisational learning in NGOS in Africa.

Informed organisational approaches to the professional development of educators:
Although the Tricky Topics Process was originally developed in the context of STEM education in schools, it has since been adapted (i.e. removed the technological tools) and implemented in a range of organisations that have a responsibility for the professional development of educators who work in a wider range of contexts. Within higher education, the research team have worked with the Partnership for African Social Governance and Research (PASGR), an independent non-profit organisation that (amongst other things) facilitates the development of collaborative higher education programmes. The research team initially engaged with PASGR through the delivery of two Tricky Topics workshops for trained teaching staff in 2017 and 2018. One outcome of this engagement is that Tricky Topics was embedded as a core element for a professional development programme across Africa called Pedagogic Leadership in Africa (PedaL). Led by PASGR, PedaL is seeking to produce a step-change in pedagogical training, with Tricky Topics as one key element. In August 2019, the Director of the Higher Education Programme at PASGR testified that six PedaL training courses had been undertaken in Kenya, Uganda, and Nigeria (all incorporating Tricky Topics) with a total of 605 university teaching staff. Course evaluation data reveals that participants found Tricky Topics highly relevant to their practice. For one course held in February 2019, 40% of participants indicated an intention to apply Tricky Topics in their practice, and 40% said they would take action to enable others to apply it. For a course held in March 2019, 35% of participants indicated an intention to apply Tricky Topics in their practice, and 40% said they would take action to enable others to apply it. The Director concluded that: "*incorporation of tricky topics has strengthened our PedAL professional development course by enriching its content and broadening its approaches*" **[C1]**.

Influenced the knowledge, understanding and practice of educators: The Tricky Topic Process and Tools have helped educators to develop their deep understanding of students learning needs and supported them to assess if their students have developed an in-depth of understanding of a topic. A teacher testifies to the impact of the Juxtalearn project on himself and colleagues whilst working as an Advanced Skills Teacher at an Oxfordshire school: "*The Tricky Topics Process has been invaluable in unpacking the what and why of pedagogy, and how we subsequently sequence the learning process […]. The effect of using Tricky Topics on teaching practice has been seismic in terms of the shift in developing colleagues' real understanding of what, how, why students stumble and hence we as teachers need to unpack and teach in a different ways with some topics*" **[C2]**. A mathematics and science teacher in a school in Portugal was also introduced to Tricky Topics in 2016, through the Juxtalearn project. As a result, they have incorporated it into their teaching and used it with 200 9th grade (14 years old) students over the last 4 years. Using the Tricky Topics diagnostic tools. The teacher testifies that they are able to show that following the Tricky Topic Process, contributes to an improvement in student understanding but also that the students find the process itself engaging and motivating: "*For all of the 8 steps, the students were fully engaged, there was not a student who quit at any time. They were working on the Tricky Topic in the class and in their own time. They were also asking me about when we will do this again [...]. They were engaged, it was perfect*" **[C2]**. As part of the TIDE project, Tricky Topics has also been introduced to university lecturers in Myanmar. Funded by the UK government, TIDE brings together universities in the UK and Myanmar to improve the quality of distance learning to result in more employable graduates. The OU is the lead partner of TIDE, and one of the many initiatives that they have co-

ordinated is the running of two Tricky Topics workshops in October 2019 with 27 lecturers from the University of Yangon, Yangon University of Distance Education and Yadanabon University. Follow-up interviews indicate that the workshops increased the lecturers understanding about how to raise student's awareness of difficult concepts and engage them in more student-centred critical thinking: "*Before the seminar, teachers never had chance to discuss with students about complicated theories and concepts. Now students can be drawn to get to understand concepts and let them think*". Some lecturers were also adapting their practices in order to engage students, by for example, using feedback tools and processes suggested in the workshop: "*I always try to use TIDE training and concepts into my classroom. Although student numbers in class is high, now [I am] using student-centred approach and feedback from them was taken as well*" **[C3]**. In Thailand, a tricky topic workshop was run with 50 lecturers within the Faculty of Nursing at Payap University in February 2019. Follow up interviews indicates that lecturers were using Tricky Topics concepts to clarify why they were having problems in their teaching and trigger discussions with colleagues. They were also incorporating the Tricky Topics process into their teaching in order to find out the level of student understanding and adapt lectures accordingly. For example, by introducing activities that would enable students to define problems and dig down to the solution. This was having a transformative effect because: "*In Thailand we have to lecture a lot, about one hour, at least one hour for one lecture. But the Tricky Topics is just like a flipped classroom*" **[C3].** In August 2020, working in partnership with the African Council for Distance Education, the team contributed to a COVID-19 response project funded by GCRF which delivered a range of online workshops designed to support educators in schools, tertiary education and Teacher Education in Africa to transition to online teaching. One of those workshops focused on instructional and learning design and included an introduction to the Tricky Topics Process. 319 educators from countries that included Kenya, Nigeria, Zambia, and Mozambique engaged in the online workshops. Evaluation evidence indicates that a substantial majority of respondents stated that the course had changed their thinking about student-centred learning 'a lot' (87.6 (n=92), with a further 12.4% (n=13) stating it had changed their thinking 'a moderate amount'. 77% intend to use Tricky Topics in their own practice (n=105) and 85% intended to develop their understanding further (n=98) **[C4]**. Finally, the team has created a free online course called: 'Connecting tricky topics to learning design' that is endorsed by the CPD Standards Office. Launched in July 2018, the course has had 677 enrolled and active learners, with 69 badges awarded for completion of a non-compulsory assessment. Survey results from 87 participants regarding impact on knowledge and understanding indicate that 72% (n=86) reported a significant increase in their knowledge and understanding of the Tricky Topics process and that 98% intended to share what they had learnt with their employer (n=80) **[C5]**.

Shaped approaches to professional development and organisational learning within UK policing: Current changes in the police service in England and Wales are being driven by movements to adopt an evidence-based practice (EBP) approach to policing. At the heart of EBP is the sharing of knowledge. This had led those with a responsibility for professional development and organisation learning within policing to realise the value of the Evidence Café method and to commission Anne Adams and other OU colleagues to deliver Evidence Cafés to policing practitioners. Between March 2016 and June 2018, 21 Evidence Cafés were run with 449 participants from police forces across England and Wales including Gwent, Lancashire, Humberside and Somerset **[C6]**. In 2017 two Evidence Cafés were run for 45 practitioners within Hertfordshire Constabulary: one with a focus on demand management and one with a focus on evidence typologies. For the demand management evidence café, The Performance Manager for Hertfordshire Constabulary indicates that: "*The evidence shared within the Evidence Café pointed us towards the conclusion that a lot of the demand within the system was a 'failure' demand. This was a powerful challenge to some of our organisational thinking and forced us to confront a performance failure. A major consequence of this is that after the event, we commissioned a detailed piece of demand analysis. This resulted in a significant resource uplift to our control room of several million pounds.*" For the Evidence Typology evidence café, they testify that: "*a typology was developed that allowed people to see two important points. Firstly, how different types of less quantitative data could be admitted into the canon of knowledge. Secondly, the journey from bits of data to more powerful organisational learning. These two insights were both powerful and challenging for the organisation as it had tended to value more*

positivist sources of knowledge. The Evidence typology introduced a way of recognising, valuing, and categorising a whole range of information. This contributed to a change in the way that some of our performance processes are managed. We asked the organisation to consider which of the metrics that were being monitored were of value and we ultimately cut about a third of the data recording within the organisation" **[C7]**. The Evidence Café work also led to the research team being commissioned by the Police Reform and Transformation Board (PRTB) to review national knowledge exchange and feed into the national reshaping of police transformation programmes. The resultant report made eleven strategic recommendations including sharing networks and training. The Lead for Knowledge, Research and Practice at the College of Policing (one of the stakeholders represented on the PRTB) testifies that the report provided an understanding that in order to change the culture of the police force towards engaging in independent knowledge sharing [it] needed to create a framework in order to help this happen and to help practitioners to share knowledge. One outcome of this was that the report was used to put forward a business case to PRTB to create formal mechanisms for knowledge exchange. One of these mechanisms was the creation of a network of 43 Innovation Brokers, one for each police force in the country. Their role is to help and encourage front line officers and staff to share their ideas and knowledge. Another was to begin work, with the Police ICT Company, to develop an online Knowledge Sharing Hub **[C8]**.

Shaped approaches to organisational learning within NGOs in Africa: Between 2017 and 2018 the research team delivered four Evidence Cafés for 120 participants in the Migration for Inclusive African Growth' (MIAG) project. This project involved partners from four countries in Africa- Kenya, Nigeria, Ghana, and Mozambique. The partners included two Non-Government Organisations with a focus on policy research and dialogue: The Network of Migration Research on Africa (NOMRA) based in Nigeria and the African Migration and Development Policy Centre (AMADPOC), based in Kenya. An employee of NOMRA testifies that the Evidence Café run in Nigeria "*reflected the voices of migrants in a way that we would not have been able to capture if we had used other methods. It also uncovered lots of assumptions and preconceptions about migrants and migration and forced people […] to ask where the evidence was to support their assumptions.*" They were so impressed by the Evidence Café method that they volunteered to undergo training into order to become an Evidence Café Champion within NOMRA and their wider work **[C9]**. A senior manager at AMADPOC, testifies that the Evidence Café method was attractive because it allowed participants from all backgrounds to easily engage in policy discussions and that using Evidence Cafés as a method in their migration policy work has enabled them to use a different lens to try and understand the issue of migration in Kenya **[C9]**.

5. Sources to corroborate the impact.

C1. Letter. Impact on organisational approaches to the professional development of educators. Director of Higher Education Programme at PASGR.

C2. Letters. Impact on the knowledge, understanding and practice of educators. School teachers.

C3. Interview data. Impact on the knowledge, understanding and practice of educators. TIDE Workshop participants.

C4. Survey data. Impact on the knowledge, understanding and practice of educators. GCRF funded Workshop participants.

C5. Survey data. Impact on the knowledge, understanding and practice of educators. Badged Open Course participants.

C6. Training Event data. Impact on professional development and organisational learning within UK policing.

C7. Letter. Impact on professional development and organisational learning within UK policing Performance Manager, Hertfordshire Police.

C8. Interview transcript. Impact on professional development and organisational learning within UK policing. Lead for Knowledge, Research and Practice at the College of Policing.

C9. Letter and Interview transcript. Impact on approaches to organisational learning within NGOs in Africa. Members of the MIAG project.