

Pedagogies for Critical Thinking: Implications of project findings for higher education policies and practices in Ghana, Kenya and Botswana

February 2019

Critical thinking is considered crucial for participation in the global ‘knowledge economy’, as it enables the adaptation of technology to local needs and allows individuals to make determinations about the quality and reliability of the wide range of evidence now available online. As a result, critical thinking is frequently cited as one of the most important outcomes of a contemporary university education, and yet employers around the world, including across sub-Saharan Africa, often decry a marked lack of critical thinking skills in university graduates. These concerns have prompted a growing recognition that pedagogical reform is an urgent priority. However, in the African context, this focus on the need to reform teaching practice is supported by limited contextually-specific empirical evidence.

The *Pedagogies for Critical Thinking* (PCT) project, funded by the UK Department for International Development (DFID) and the Economic and Social Research Council (ESRC), has attempted to fill this gap by investigating these issues in 14 universities in Botswana, Ghana and Kenya, eight of which are employing some ‘innovation’ in their pedagogical approach. More specifically, the study aimed to: (1) expand our empirical knowledge of how different pedagogies affect the development of critical thinking in African university contexts, and (2) explore how African universities approach and manage complicated processes of pedagogical change.

The project followed a mixed methods approach, comprising a longitudinal study of student ‘gains’ in critical thinking over a two-year period and a qualitative investigation of the teaching and learning environment within the participating universities.¹

This research brief provides a summary of the main findings from the study.

1. Student ‘gains’ in critical thinking vary by institution

Improvement in critical thinking could be seen in the sample as a whole. This, in itself, is an important finding, as it suggests that many students are developing these skills in most of the universities in the sample. However, these ‘gains’ vary by institution, as illustrated in Figures 1-3.

Figure 1: Student progress by institution, Ghana²

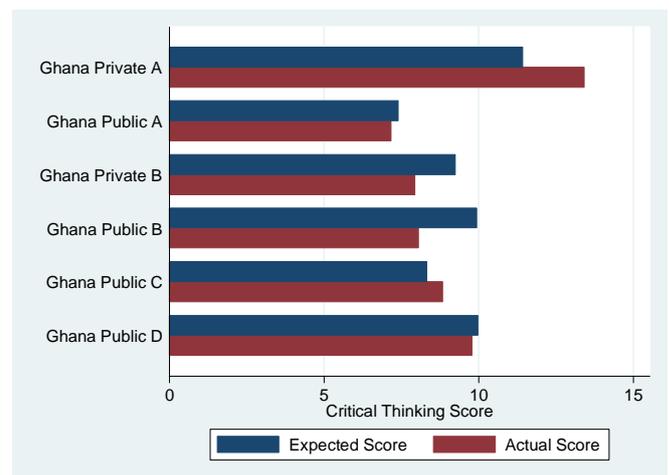
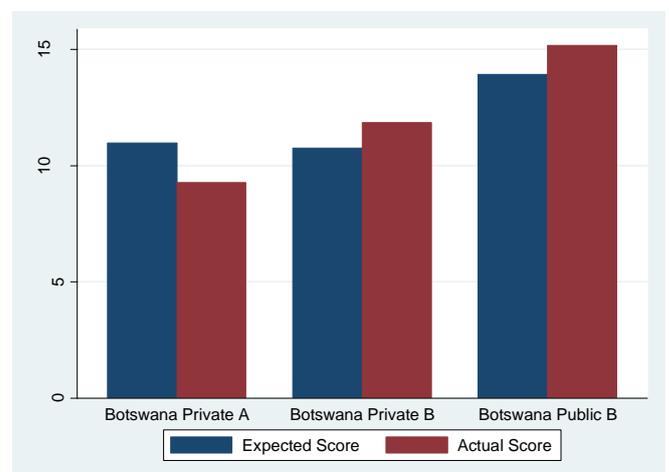


Figure 2: Student progress by institution, Botswana³



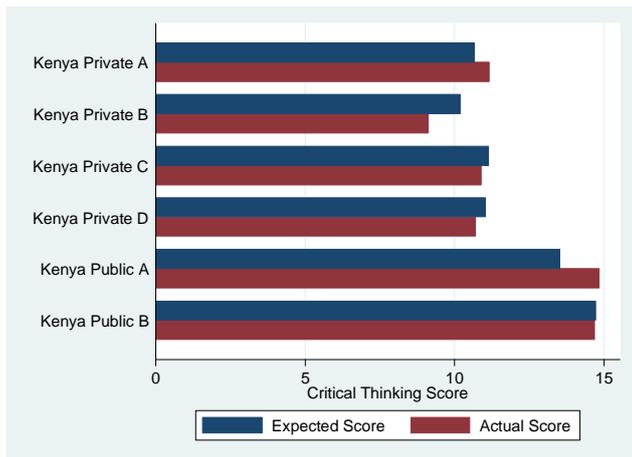
¹ Further methodological details are available at the end of the brief.

² In Figures 1-3, the ‘expected’ score is the predicted endline critical thinking score based on baseline scores, taking account of student backgrounds (i.e. secondary school examination scores, parental education levels and socio-

economic backgrounds). These ‘expected’ scores were estimated separately for each country context.

³ Due to low recruitment and high levels of attrition, one of the two public university sites in Botswana has not been included in the longitudinal analysis.

Figure 3: Student progress by institution, Kenya



This analysis reveals that, **although progress can be identified in a number of sites, three institutions (Kenya Private A, Kenya Private B and Kenya Public A) experienced gains significantly beyond what would be expected, given participant backgrounds and incoming critical thinking ability.** These are the sites, therefore, that warrant particular attention, as the academic environment provided within these sites appears to be fostering *more* progress in critical thinking than one would expect based on background characteristics alone. The result for Kenya Public A is particularly impressive, given that the student population within this institution is significantly more disadvantaged than any of the other research sites in Kenya.

2. The mere introduction of more 'learner-centred' teaching methods is not sufficient for encouraging the development of critical thinking skills

Much of the published literature on higher education in Africa presents a picture of 'outdated' traditional pedagogy. What is clear from the results of this study, however, is that this is no longer an accurate portrayal of teaching practices within African universities.

Although eight of the research sites in the study were selected because of their support for a particular pedagogical 'innovation', **nearly all of the included sites, including those included for comparative purposes, have (at least in principle) moved away from traditional 'chalk and talk' lecturing and an exclusive reliance on end-of-term examinations.** All of the sites use a continuous assessment system, and the vast majority have implemented methods generally associated with 'learner-centred' pedagogy, such as

class discussions, group assignments and open-ended assessment formats (e.g. presentations, projects). Most of the institutions have worked hard to incorporate more 'practical' elements of the curriculum, such as project-based assignments and industrial attachments. Lecturers across all of the research sites were clearly comfortable with the rhetoric of 'learner centredness', and many talked at length about how teaching had changed within their university to 'allow' for more student feedback and more interaction between students and lecturers.

In many respects, this is a positive finding. However, this also means that many institutions in the sample have successfully incorporated more 'learner-centred', active teaching methods but have not seen an improvement in student critical thinking skills.

3. Institutions must foster a shared understanding of teaching in order to support the development of critical thinking skills in their students

Improvement in critical thinking requires a learning environment in which students are exposed to a variety of viewpoints and perspectives (and have the opportunity to engage in dialogue with them). They must also learn to view 'knowledge' as something that is constantly changing as new understandings emerge. A belief that knowledge is static and unchanging does not motivate critical thinking, as there is no need to critique knowledge that is fixed. Rather, it is sufficient to simply memorise what is known.

There are, clearly, some **infrastructural barriers** which affect institutions' ability to effectively create such a learning environment (e.g. large class sizes, insufficient classroom space). However, these challenges offer an insufficient explanation for our results, as one of the 'stand out' institutions is a public university with at least some large class sizes and some challenges with infrastructure.

Rather, the key difference appears to be the **orientations towards teaching** evident within the institution. The kind of learning environment likely to foster critical thinking requires a particular orientation to teaching. Teachers who view knowledge as fixed are likely to perceive their role as being primarily about transmitting knowledge to students. In contrast, teachers who want to foster critical thinking must see teaching as being more about facilitating students to

come to their own understanding of knowledge. They must see themselves, not as sources of knowledge, but as more experienced guides, who can support their students to question and construct their own understandings.

Although individual lecturers within all of the research sites demonstrated such a ‘facilitation’ orientation towards teaching, this was generally an individual characteristic. In other words, most research sites included a mix of lecturers, with some demonstrating more of a ‘facilitation’ orientation and some demonstrating more of a ‘transmission’ orientation. However, in three of the sites, it was evident that *all* of the teaching staff interviewed for the project viewed teaching as being primarily about ‘facilitation’. This suggests that there is a shared understanding (or philosophy) of teaching within these three sites. These three sites are also the sites experiencing the largest gains in critical thinking.

A key implication for other universities interested in pedagogical reform is that **teaching orientations will affect the likely impacts of any pedagogical reform**. If a pedagogical reform requires a fundamentally different understanding of teaching from the understanding held by most of the teaching staff, then the staff must be intentionally supported to modify their teaching orientations in order for the intended impact to be realised.

4. Universities must grant teaching staff sufficient time to discuss and improve their practice, in order to foster pedagogical change

Two of the ‘stand-out’ institutions in the study (Ghana Private A and Kenya Public A) have the advantage of having been founded with an explicit mandate to teach in a different way from other institutions in the country. As such, it is likely that these institutions have been able to recruit lecturers who are inherently interested in teaching (and may perhaps have come to the institution with a predisposition towards a ‘facilitation’ orientation). However, both of these institutions have also worked to *create* a **shared teaching culture**, by:

- Explicitly articulating the institutional (or departmental) teaching philosophy – and intentionally orienting both new staff and students to the teaching approach/philosophy when they first arrive

- Providing regular, ongoing development for teaching staff, including both formal and informal opportunities for discussion about teaching with institutional/departmental colleagues

Botswana Public B – which implemented a process of pedagogical reform within faculties at an *existing* institution – followed a similar strategy.

As a result of these sustained efforts, lecturers are able to articulate a shared ‘way of doing things’. For those entering the institution/department with a predisposition towards a ‘facilitation’ approach, this shared understanding can sustain their inherent motivation, even in the face of resistance and other challenges; for those entering with more of a ‘transmission’ approach, such a holistic induction to a particular teaching philosophy is likely to result in an individual change in approach over time.

In addition to granting sufficient time for staff to work together, the study results suggests that **it is a worthwhile investment to orient students to an institutions’ teaching approach – and to outline what will be expected of them as a result**.

5. The structure of the curriculum and the content/format of final examinations also affect critical thinking skills

Another key factor emerging from the PCT study is that all three of the ‘stand-out’ institutions have ensured that critical thinking is a **required skill across the curriculum**. In other words, students are not expected to demonstrate critical thinking in one or two modules alone; they must do so in all modules in order to successfully progress. The key implication is that **critical thinking should be ‘infused’ across the curriculum, with lecturers in all modules giving explicit thought as to how they are expecting students to both develop and demonstrate such skills**.

Two of the ‘stand-out’ institutions also benefited from political capital (given their particular histories), which allowed them to make some **changes to more ‘traditional’ norms around assessment**. As a result, they were able to negotiate with the relevant government agencies and any accrediting/regulatory bodies to modify their assessment structure to allow for better alignment between assessment format and their teaching approach. This appears to have been a crucial factor, as other institutions in the sample have struggled

with a clear lack of alignment between the teaching methods used in the classroom and the content/format of final examinations. Governing bodies responsible for higher education should take note of this finding and **consider the ways in which assessment norms may be restricting the ability of institutions to modify pedagogy and better support the development of critical thinking skills in their students.**

Study Methodology

The PCT project was guided by the following research questions:

1. Which of the pedagogical approaches currently being implemented at universities in Kenya, Ghana and Botswana are having a significant impact on student critical thinking ability?
2. Why have particular interventions been successful – or unsuccessful – at improving critical thinking ability?
3. What contextual factors within the participating institutions have affected the process of pedagogical change?

In each country, the institutional sample included two to three research sites (generally a faculty or department within an institution), which were chosen explicitly because they have implemented a pedagogical innovation that is likely to improve student critical thinking ability. For comparative purposes, we also included two to three additional research sites in each country, where no similar innovation had been implemented. The final institutional sample in each country comprised both private and public institutions and represented a range of academic subjects (including health sciences, engineering, business, IT, education and social sciences).

Table 1 presents key characteristics of the institutions in the sample.⁴

Table 1: Institutional sample⁵

Country	Institution	Innovation
Botswana	Faculty within public university (Botswana Public A)	
	Faculty within public university (Botswana Public B)	Problem-based learning; community placements
	Faculty within private institution (Botswana Private A)	Faculty development programme
	Faculty within private institution (Botswana Private B)	
Ghana	Private liberal arts institution (Ghana Private A)	Liberal arts model; community placements; faculty development programme
	Private institution (Ghana Private B)	
	Faculty within public university (Ghana Public A)	Community placements
	Department within public university (Ghana Public B)	Problem-based learning; community placements
	Department within the same public university as Ghana Public B (Ghana Public C)	
	Faculty within public university (Ghana Public D)	
Kenya	Faculty within private institution (Kenya Private A)	Faculty development programme
	Faculty within private institution (Kenya Private B)	
	Private university (Kenya Private C)	Faculty development programme
	Private university (Kenya Private D)	
	Faculty within public university (Kenya Public A)	Problem-based learning; community placements
	Faculty within public university (Kenya Public B)	

⁴ As some of the institutions participated on condition of anonymity, no institutional names appear in this report.

⁵ Although there were 16 research sites included in the PCT project, please note that this sample comprises 14 universities, as two of the sites in Ghana (and another two in Botswana) were faculties within the same university.

Within each of the selected research sites, a random sample of 170 incoming students was invited to complete a critical thinking assessment⁶ during their first year - and again during their third year - at university. In addition, student participants completed a number of other quantitative instruments, intended to measure a range of relevant individual and institutional characteristics.⁷

Between the first and second round of quantitative data collection, the project team conducted qualitative case studies of all of the participating institutions. At each research site, interviews were conducted with lecturers and administrators responsible for teaching and learning, and focus group discussions were held with second-year students. Relevant documents (e.g. teaching and learning strategies) were also reviewed.

Project Team

Principal Investigators: Tristan McCowan (University College London, UK) and Rebecca Schendel (University College London, UK, and Boston College, USA) *

Quantitative Research Lead: Caine Rolleston (University College London, UK)

Botswana Team Lead: Richard Tabulawa (University of Botswana)

Ghana Team Lead: Christine Adu-Yeboah (University of Cape Coast)

Kenya Team Lead: Mary Omingo (Aga Khan University)

Research Officers: Mercy Atieno (Strathmore University, Kenya); Christopher Kwaah (University of Cape Coast, Ghana); Dorcas Molefe (University of Botswana)

Research administration for the *Pedagogies for Critical Thinking* project was provided by William Nicholas (University College London). Professor Andy Tolmie (University College London), Emmanuel Amuah (University of Cape Coast) and Ana Grijalva-Espinosa (Inter-American Development Bank) contributed to the quantitative analysis. Scoring support for the critical thinking assessment was provided by Edwina Peart, Marika Tsolakis and Alex Larmour.

**Any questions regarding the study can be directed to Tristan McCowan (t.mccowan@ucl.ac.uk) or Rebecca Schendel (schendel@bc.edu).*



Research jointly supported by the ESRC and DFID

⁶ The assessment took the form of 'performance task', which asked participants to use a range of evidence to support a 'real world' decision. The focus of the assessment, therefore, was on students' ability to analyse evidence and use it when making a decision.

⁷ Participation rates varied by institution, with the final sample in each site generally ranging between 90 and 140. The one exception was one of the faculties in the Botswanan public university (Botswana Public A), where less than 50 students participated.