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THESIS

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EXPLORING AN UNDERGRADUATE ECONOMICS CURRICULUM: AN INVESTIGATION OF LECTURERS IN THE UK AND SINGAPORE

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Declaration and Word Count

I hereby declare that, except where explicit attribution is made, the work presented in this thesis is entirely my own. Word count (exclusive of appendices, the list of references and bibliographies but including footnotes, endnotes, glossary, maps, diagrams and tables): 45,809 words

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Abstract

This investigation of economics education in the UK and Singapore aims to explore an undergraduate economics curriculum. My premise is a belief that young adults have the right to access an excellent economics education at university so that they can better understand the world around them to make informed choices as participants in society. Although the 2008 global financial crisis and subsequent Euro-zone crisis have contributed to a resurgence of economics at both secondary school and university level, neo-classical economics was limited in its ability as to explain the crisis. Both students and teachers have since combined to synthesise and enact a change in the undergraduate economics curriculum. My thesis investigates one such curriculum innovation in undergraduate level economics; the CORE project, which has been piloted at UCL from September 2014. Taking an analytical approach, I investigate the CORE project and its implications on the teaching of undergraduate economics at a Singapore-based American University. I utilise qualitative data by way of primary data; collected using group interviews and email surveys with professors in economics and education and secondary data, by way of curriculum artefacts. I collected, transcribed, coded and analysed this qualitative data manually, allowing for a holistic discussion around the critiques, features and educational implications of the CORE project and non-CORE undergraduate economics curriculum. I observed that while the CORE project is a positive step, it represents an evolutionary change towards a revolution in undergraduate level economics. I argue that the ontological and epistemological basis of neo-classical economics is limited, needs critiquing and possibly reconceptualising. By challenging economics' reliance on over-simplified theories, concepts and economic models, teachers can create an engaging, dynamic learning environment where students' understanding of the subject can be deepened. My study recommends the incorporation of the Bhaskarian notion of 'critical realism' as the conceptual framework in Economics and in particular, the adoption of a 'retroductive' approach (Bhaskar, 1979) to improve the teaching of undergraduate level economics.

(249 Words)

Acknowledgements

My thesis represents the culmination of my learning journey on the EdD (International) programme at the UCL Institute of Education and combines the key elements I am most passionate about in academic research, namely: Pedagogy, Curriculum and Economics.

I am not only lucky but extremely grateful that I have a supervisor who not only matches my enthusiasm, drive and energy for this area of research, but surpasses it. This thesis would not have been possible without my supervisor, Dr Jacek Brant at the Department of Curriculum, Pedagogy and Assessment. I would like to thank him for providing me with his assistance through his supportive and helpful comments, suggestions, recommendations and ideas. Through Dr Jacek Brant's expert guidance throughout the entire EdD process, I have been able to absorb these 'nuggets' of information which in turn allowed me to produce this substantial piece of writing which I can be forever proud of.

I would also like to thank my lecturers and EdD colleagues at the UCL IOE for their support and encouragement at all times throughout the EdD course, particularly during the taught courses and IFS process. I am also grateful to Professor Wendy Carlin at the UCL Department of Economics for allowing me to gain first-hand insight into the CORE project through her support and encouragement. I am indeed thankful to all of the lecturers in the UK and Singapore that participated in my study by sharing their insights, curriculum material, thoughts, frustrations and opinions to aid me with my data collection.

I extend my gratitude to my family and friends who have been very supportive by making me laugh and more importantly in exercising restraint and patience with me while I was facing the challenge of researching and writing up a paper of this magnitude. I dedicate my thesis to the late Roy Bhaskar, former IOE World Scholar and founder of critical realism for his theory which serves as the epistemological foundation of my thesis. Lastly, I want to express my love and gratitude to my dear wife and soul-mate Nadya, whom I was lucky to meet at the UCL IOE on this doctoral course. Unwavering in her love, support and care throughout the doctoral process, she serves as a continuous source of inspiration to me.

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List of acronyms

ACT	American College Testing
AO	Assessment Objective
AP	Advanced Program
AQA	Assessment and Qualifications Alliance
BERA	British Educational Research Association
CAAP	Collegiate Assessment of Academic Proficiency
CAQDAS	Computer Assisted Qualitative Data Analysis Software
CORE	Curriculum Open-access Resources in Economics
DREIC	Description, Retroduction, Elimination, Identification & Correction
GCSE	General Certificate of Secondary Education
ECB	European Central Bank
JCQ	Joint Council for Qualifications
IB	International Baccalaureate
IFS	Institute Focused Study
IGCSE	International General Certificate of Secondary Education
IMF	International Monetary Fund
INET	The Institute for New Economic Thinking
ISIPE	International Student Initiative for Pluralism in Economics
METAL	Mathematics for Economics: enhancing Teaching and Learning
MOOC	Massive Open Online Course
NCHEMS	National Center for Higher Education Management Systems
OCR	Oxford Cambridge and RSA
PBL	Problem Based Learning
SEAB	Singapore Examinations and Assessment Board
SMIRK	Simple Media-Integrating Resource Creator
TMSA	Transformational Model of Social Activity
UCAS	Universities and Colleges Admissions Service
WEA	World Economics Association
YEN	Young Economists Network

Reflective statement

Since 2011, I have embarked on a journey of self-discovery afforded by my part-time study of the EdD (International) at the IOE. The EdD is a professional doctorate which has provided a framework for me as a classroom practitioner, to examine and develop my own practice through research and engagement with relevant theoretical perspectives and professional and academic literature. Through the EdD programme, I have been able to combine my academic studies and educational research work through a number of elements: The taught courses of foundations of professionalism in education (FOP), methods of enquiry (MOE) I and II, Institution Focused Study (IFS) and thesis. My journey of self-discovery through the EdD programme at the IOE has culminated in the conduct of my thesis, a piece of research which I believe, forms a distinct contribution to professional and academic knowledge and has clear implications for professional practice.

Contextual background

Setting off on the EdD (International) programme at the IoE had all the elements of embarking on an enriching and adventurous personal journey of discovery. Maybe it was the sheer magnitude of international perspectives of educational practices and research work from multinational colleagues, or the learning and sharing of always interesting and sometimes innovative ideas that takes place during the intensive, yet highly enriching taught courses - it has all been absolutely uplifting and invigorating for me. Now, at this latter stage of my EdD, I feel that I am due to begin another journey. In 2011, when starting the EdD programme this personal journey was one that began as an International school teacher to become a lecturer of Economics. Now I feel a sense of confidence, provided by the thorough academic and professional grounding afforded by the EdD, to continue my professional and personal development as a lecturer with the main long term goal of gaining full professorship.

Introduction

The purpose of this reflective statement is to indicate how my ideas have developed throughout the EdD (international) programme and how each of the assignments or elements relate to each other and my professional practice. I take into consideration issues, where relevant, such as how I see myself as a learner at this stage in the programme, whether my views of learning have changed, any professional or academic connections made and any other aspects of my experience and thinking that I feel have helped provide an analytic overview of what I have achieved in completing the three taught courses and thesis and how the culmination of my EdD has set the stage for my subsequent research and practice as a teaching professional. I proceed to reflect on my EdD (International) as follows.

Firstly, I provide a brief description of and reflection on the content of the assignments including any new insights and understandings I have gained from writing the assignments. Secondly, I reflect on the relationship between the assignments and on my progression across the taught courses and assignments. Thirdly, I look back on how my academic thinking has been influenced and developed as a result of the feedback I have received. Furthermore, I consider how the relationship between my work on the degree programme and professional practice have changed, not only as a result of my work but from engagement with different perspectives and people around me on the EdD programme. Lastly, I provide some evidence of the development of my ideas and how the FOP, MOE, IFS and thesis relate to these ideas.

The assignments

The three taught modules completed in Year 1 of the EdD (International) programme: FOP, MOE I and MOE II have allowed me to widen my perspectives of educational research work conducted around the world. The demands of the various modules have exposed me to scholarly articles through a range of spheres - from the fundamental theories and concepts of professionalism to the methods of enquiry and analysis that research work lends itself to. For the first module, FOP, I wrote in my now previous role

as an educator at a tertiary institution in the Middle-East. I investigated the attempts made by the institution to nurture professional qualities to develop 'graduateness' in its learners'. I made links with how my work aligns with the organisation's overarching aim of producing graduates for the local economy that are 'work ready'. The institution uses Problem Based Learning (PBL) as its primary method of instruction and I looked at how this method of instruction can lend itself towards appropriately nurturing professional skills in its graduates. This first module served as a refresher for me, as it represented my return to academic writing after an eight year hiatus and therefore presented me with a steep learning curve. Nonetheless, through the support provided by my tutor, I managed to constructively reflect and improve my work based on her valuable feedback. I managed to gain some new insights and new understandings from this module particularly around professionalism in teachers and the extent to which this notion of professionalism can be 'passed on' to students. I looked at the role that an 'entrepreneurial university' can play in order to nurture 'graduateness' which may in turn provide the local economy with the professional qualities they are seeking in its workers. I also learnt about the scope and role that PBL can possibly play in achieving this outcome.

My second module, MOE I, proposed a research design to appropriately elicit students' perceptions of the PBL environment at the same Middle-Eastern institution I had investigated in my FOP. New understandings from this module revolved largely around the theories, perspectives and epistemological understandings necessary before one can embark on an appropriate piece of research. I managed to gain new insights particularly around the ethical, cultural and political considerations surrounding ethnographic research of this type. I also learnt about the various methods of data collection and research design that allowed me to appropriately select the correct tools for the final module which I now explain. MOE II, involved carrying out a pilot study that would actually test the effectiveness of the research tools that I had earlier proposed in MOE I. The idea was to see if my research tools appropriately gauge students' perceptions of the PBL environment and therefore answer my research questions. There was much scope for new insights and new understandings from this module. I learnt that the actual intricacies and design of the research tools can impact severely on the quality of the data which in turn impact on the extent to which my

results can inform my research questions. The process requires hard work, patience and commitment as it is a cycle of continuous improvement or 'fine tuning' until the research tools are robust enough to allow myself to collect data that can appropriately answer my research questions. I also gained insights into applying simple coding techniques in results analysis and about the more advanced software such as NVivo and SPSS that are available when analysing the results of a larger scale study in the future such as my IFS. Through regular consultations with my module tutors and main supervisor, I am thankful and grateful to have been able to make steady progress in my work as my research developed.

My IFS involved researching the teachers' perceptions of the PBL environment at the tertiary level in the context of the same HE institution I had been investigating thus far. I was therefore thinking deeper not only about how and what my students were learning on my economics course, but also about disparities in the minds of teachers' between their own personal perceptions of PBL and their actual actions in the classroom. I synthesised a term called 'pseudoception' to explain this disparity I had observed in the minds and actions of the small sample of teachers when I analysed my semi-structured group interviews. My idea of 'pseudoception' was based on Giddens' (1976) work in the area of 'double hermeneutics' and helped me to better understand the way in which teachers at the tertiary institution in the Middle-East were delivering their PBL lessons how it may possibly be improved. I had the pleasure and honour of presenting my IFS paper and sharing my ideas with delegates at the Joint 7th Biannual SELF and ERAS Conference in Singapore.

Now, I move on to the discussion around my thesis, the point of my EdD where I feel that I have matured most as an academic and educational researcher. My chosen area, topic and research questions for my thesis have proved to be most satisfying from both a personal and professional point of view. As I explain next, the opportunity to complete my EdD at UCL Institute of Education carries almost a 'circle of life' significance for me.

I began my undergraduate Economics course at UCL in the late 1990's. I strived for a better understanding of the world around me and was aided by the gifted academics and professors at the UCL Economics department such as Professors' Carlin,

Preston, Brewer, Smith, Machin and Rau. However much I enjoyed my student experience both personally and academically, I felt that it was possible to change and develop some of the aspects of the economics course to make it more absorbing, relevant, enjoyable and rewarding for undergraduate students like me at the time. My career was to develop as a classroom practitioner when I began a PGCE course in Secondary education in the area of Business and Economics Education under the passionate and gifted Dr Brant. I realised that I was in good company and my experience at the IoE allowed me to start an international teaching career which began in London, took me Osaka, then to Dubai, Bahrain and Singapore.

I began as a school teacher, moved to being head of department and then gained valuable experience in tertiary education through these teaching assignments. Economics remained as my focus and I chanced upon the CORE project in the January 2014 copy of the Economist magazine. I was delighted and excited to see Professor Wendy Carlin speaking in an article about reconceptualising the economics curriculum at the undergraduate level, with the aim of piloting this reconceptualised curriculum with Year 1 students at UCL in the academic year 2014-15. Through a continuous process of 'back and forth' discussions with my supervisor, Dr Brant, we eventually settled upon and agreed on my topic, title and research questions. I began writing up the research proposal for my thesis in early 2014. Dr Brant then introduced me to the works of Roy Bhaskar. I looked closer at readings around 'critical realism' and 'retroduction'. It was these philosophies that resonated with me and later went to serve as the foundation of my conceptual framework. My ideas and understanding were to further develop with Dr Brant's guidance and advice as I read more about economics, curriculum innovation and pedagogy. By Summer 2014, I was delighted to have the opportunity to interview Dr Brant and Professor Carlin for inclusion and analysis in my thesis. Not only did this interview occur at UCL shortly before the IOE-UCL merger was announced in Autumn 2014, but it represented the full circle of my main influencers as an economics student and economics teacher in my role as an educational researcher in the area of economics. This meeting provided me with the impetus to carry out interviews with economics professors at a Singapore-based American University. Further data collection was to follow by way of email surveys with UK based economics professors. My interview data was transcribed, coded, analysed

and written up as a narrative, triangulated with curriculum artefacts to aid my discussions and allow recommendations to be made pertaining to improving the teaching of economics at the undergraduate level. I strive to improve the teaching of economics for future graduates of the discipline at my current HE institution in Singapore in my role as an educator in economics.

Conclusion

I am pleased with my overall learning experiences during the entirety of the EdD (International) programme. I feel that my research competencies have improved such that I can enhance the professional work that I do in my current role as an economics lecturer. In all honesty, my experience as an EdD student has been deeply satisfying as it felt as if I had come home. 'Home' in the sense that it was in London, at UCL where I read BSc. Economics under Professor Wendy Carlin and at the Institute of Education where I successfully completed my PGCE in Business and Economics Education under Dr Jacek Brant. The Institute of Education provided the launch pad in my teaching career that has swept me away on a journey from London to Osaka, Dubai, Bahrain and Singapore. This journey is one that has allowed me to return home to London at the rebranded UCL Institute of Education as a doctoral student. To quote the American poet, Ralph Waldo Emerson (1803-1882), "Life is a journey, not a destination". My learning journey is indeed one which is constantly meandering and ever-evolving.

(2164 Words)

"It may be necessary for morality to correct bad science,

but it corrects it in the name of a higher norm, true freedom.

And that is guided by the highest norm of all – fundamental truth".

Roy Bhaskar (1944 – 2014)

Founder of Critical Realism and UCL IOE World Scholar

Chapter 1

1. Introduction

1.1 Background

The economic events of the late 2000s have called into question existing ideas about the relationship between the public sector and the private sector and the management of the economy. The collapse of the American sub-prime real estate bubble in 2007 provided the catalyst for a chain of events such as the failure of Lehman Brothers Holding Inc., a systemically significant financial institution, in 2008. This triggered panic in international financial markets, the effects of which created a crisis of global proportions. The exogenous shock of financial collapse and crisis in Europe from 2008 onwards has been widely documented in the mainstream media. Media focus has been on mainly the social, political and economic impact it has had firstly on the USA, where the financial crisis originated, on to other countries that were subsequently affected to varying degrees such as Greece, Italy and Portugal.

1.2 Rationale

My thesis explores an undergraduate Economics Curriculum through an investigation of lecturers in the UK and Singapore. My premise is a belief that young adults have a right to receive an excellent economics education at university so that they can better understand the world around them to make informed choices as participative individuals contributing to society. At the secondary school level, economics education has faced a sustained period of decline over the last two decades. For instance, between 1992 and 2000, the number of students taking economics at A-level in England fell by over 50% (Bachan, 2004). The General Certificate of Education Advanced Level (commonly referred to as an A-level) is the main qualification taken by eighteen year-olds at the end of their school education in England, Wales and Northern Ireland. Several researchers (Ashworth & Evans, 2000; Bachan, 2004; Bachan & Barrow, 2006) have examined the reasons why economics has become less popular as an A-level subject and they have come with similar conclusions. Reasons cited for the decline in

the number of students taking A-level economics include students' perception of the subject's difficulty, the abstract and mathematical nature of the subject, students' estimation of their future examination performance, and the lack of past study of economics because too few schools offer economics at GCSE level.

However the main reason for the decline in economics may be explained by the increased number of students enrolled in business studies courses at A-level. Between 1992 and 2000, at a time when economics students fell by over 50%, business studies has enjoyed an 80% increase in students from 1992 to 2000, according to Bachan (2004). Furthermore, schools also offered other subjects which may, like business studies, be deemed as alternatives to economics such as Business Information Systems (BIS) and Information & Communication Technology (ICT). Hurd et al. (1998) assert that economics is inherently difficult and overly conceptual, thus leading to a substitution effect towards related subjects such as business studies. To borrow words from a typical A Level economics textbook, this 'substitution effect' away from economics has also been associated with a dearth in 'complementary goods' for economics such as teacher preparation and innovative economics texts for an economics student at school. Moreover, as reported by authors (see for instance, Pisanie, 1997 and Yamaoka et al, 2010), the decline in the number of students enrolling into economics courses was not only limited to England but rather one which was a global phenomenon. Looking at the number of students enrolled in single economics undergraduate degree programmes in UK universities had remained rather steady from 2000 to 2007 with acceptances at 5221 students in 2000 to 5314 students in 2007 according to data collected by UCAS and reported by the Economics Network (2011). However, this number increased from 6875 enrolments in 2008 to 7104 in 2010.

The 2008 global financial crisis and the crisis in the Euro-zone have contributed to a resurgence of economics as a discipline at both secondary school and university level. As reported by Brant (forthcoming) using data from the JCQ website, in England, 26,612 students sat the A-level examination in June 2014 (compared to 17,762 ten years before) and 43,812 sat the advanced subsidiary (AS) level compared to 21,076 in 2004, it is evident that the number of economics students is approaching its peak of twenty years ago and that their exists further potential for growth in the number of A level students in the UK. However, as suggested by Brant:

> "…it is not good enough to rely on financial crises to achieve good student numbers, rather the fundamental reasons for the subject's decline in the 1990s and 2000s should be addressed and the mistakes of the past should not be repeated." (Forthcoming, p. 2)

Economics as it is taught in schools and universities worldwide, is limited in its ability as to explain the causes and effects of the crisis and also in providing answers. Economics should not be seen as a subject that can be passively learnt as a set of factual material as a subject that is devoid of values. Indeed if economics as a discipline is to prosper in the long run, it must be achieved by challenging static and over-simplified concepts and critiquing unrealistic economic models. In this manner, teachers can create a dynamic learning environment where students' understanding can be deepened.

In my thesis, I argue that the ontological and epistemological basis of neo-classical economics is flawed and requires questioning and possibly a new conceptual framework to be at its centre. In their paper, Brant and Panjwani (2015) critique the orthodoxy that neo-classical economics is the 'only' economics in English secondary schools and present alternative conceptualisations which they argue are better fit for purpose. Robins (1935) defined economics as a science that studies human behaviour as a relationship between ends and scarce means which have alternative uses. This definition, or variations of it, has become a standard starting point for learning economics at school throughout the world (Brant, 2011). Brant and Panjwani (2015) assert that there exists a claim of science and scientific method right from the outset on both the definition and methodology of secondary school economics given that most standard economics text books distinguish positive (notably scientific and value-free) from normative economics (which deals with value judgments). Such scientific claim and method may lend itself to didactic teaching and passive learning in the classroom, which is often unfulfilling and unrewarding for both students and teachers of economics. My thesis argues that students and teachers deserve more from the subject they have chosen to study and teach, respectively.

1.3 Personal context

As both a former undergraduate and postgraduate student of economics in the UK and now as an economics lecturer, the motivation for my thesis is to improve the teaching of undergraduate level economics. My premise throughout this thesis is a belief that undergraduates have a right to receive an excellent economics education in their economics courses so that they can better understand the world around them and therefore make informed choices as individuals that participate and contribute to society. I have witnessed a trend in which economics, as it is currently presented in textbooks and taught in the classroom, has increasingly less relation with human behaviour (Brant forthcoming). Plato (cited in Jowett, 1941) argues that educational inquiry usually incorporates some philosophical understanding of the nature of 'the good society' and of the cultural, political and economic roles that individuals must be educated to perform if such a society is to be created and sustained to ultimately flourish into the future. Indeed, many of the early economists including Adam Smith were moral philosophers.

A worldwide movement towards a new undergraduate economics curriculum has begun and is gaining steady momentum (Carlin, 2013) the time appears right to investigate the need for change, the way such change may be implemented and its possible impacts on students, teachers and ultimately on learning. I believe that instead of simply learning subject matter, theories and concepts in an abstract and isolated way, undergraduate economics students' should be exposed to competing paradigms and schools of thought in order to engage in meaningful debates and therefore draw meaningful conclusions.

Economics began as a subject involving moral and philosophical discussion and I feel it is important for the evolution of economics that lecturers, such as myself, make the important connection of economics with other social sciences such as politics and history explicitly in the classroom through curriculum reform in favour of greater pluralism in economics. The potential rewards of a pluralist approach include greater motivation, engagement and understanding among students who may feel that they have a greater grasp of economics as a subject. The very nature of teaching a pluralist course offers greater scope for lecturers to design and implement collaborative and

interactive lessons and allow for greater use of learning tools that may widen the use of technology. Therefore, aspects such as further intellectual challenge, job satisfaction and career development may also be seen as benefits to the lecturer of adopting a pluralist approach. Being a former undergraduate economics student at UCL, the way economics is taught and learnt by undergraduate students carries both a personal and professional significance. I can vividly recollect being taught aspects of a mainstream economics course with an emphasis on empirical methods, Keynesian and Monetarism. Teaching occurred mainly through didactic methods whether in lectures or smaller classrooms where there were limited opportunities for interaction and collaborative learning in the form of group work and debates to take place. It is important to make explicit that the prevailing mainstream economics curriculum may be the preferred economics curriculum for some students. Indeed, Simon Wren-Lewis of Oxford University supports greater pluralism in economics but emphasises that an unrestricted pursuit of pluralism may be "fundamentally misguided":

> "I think it is true that economics as a discipline has tried too hard to emphasise that it is an objective, politically neutral discipline, thereby underplaying value judgements when it makes them. Worse still, sometimes heavily value laden ideas like the importance of Pareto optimality are portrayed as being value neutral, which is clearly nonsense. […] Yet the idea that it should be possible to build a science of human behaviour which is independent of ideology or politics is a noble ideal, and one which has been partly achieved. We may need (and are getting) more political economy, in the sense of recognising that economics works alongside and interacts with social and political forces, but I do not think we need more partisan economics." (Wren-Lewis, 2014.)

Economics as a 'science of human behaviour' (Robins, 1935), has indeed advanced in the last 20 years, particularly at undergraduate level (for instance, see Coyle 2007) through ways including greater data-centricity, advances in econometric techniques (which has made increasing use of ICT, such as Stata) and methodologies (such as field experiments and trials), interdisciplinary work with psychology in particular and by increasing the importance of economic history and urban economics. This progress is

'mainstream' and should be credited as such. Furthermore, students "should be agitating to be taught more about it" (Coyle, 2014, pg. 1). A pluralist approach in economics may be sought as the answer to the issues faced by mainstream economics but the impact of greater pluralism in economics must be appropriately measured in future studies and not overplayed or generalised in its applicability and preference across all undergraduate economics students.

1.4 Critiques of mainstream economics

Mainstream economics, often referred to as 'orthodox' or 'neo-classical' economics, according to Samuelson and Nordhaus (2001) can be identified from other variants of economics or heterodox economics by its distinct assumptions, methods and topics. According to Robbins (1935, p. 16), neo-classical economics is

> "…the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses."

This definition, or at least variations of this definition by Robbins, has become a standard starting point for learning economics at school throughout the world (Brant, 2011). Neo-classical economics therefore involves the study of choice, as affected by incentives and resources in order to allocate scarce resources in such a way that best solves the basic economic problem. The implication being that, in the absence of scarcity and alternative uses of available resources, the economic problem ceases to exist. Contrastingly, other areas of the literature support the view that neo-classical economics, in its current form, is individualistic and lacks a social context due to its focus on individuals as 'rational' consumers and producers who act with the aim to 'maximise' individual benefits or 'utility'. This focus on self-maximisation emphasises selfish behaviour and self-interest in producing optimal outcomes for an individual. While individual self-interest and greed benefits the individual at the expense of others at the level of the individual, self-interest and greed at a collective level can lead to inequalities and cause harm to entire organisations, markets, industries and economies. Economics as taught to undergraduates reflects this 'orthodoxy' and school economics offers a simplified version of university economics (Brant, 2011).

Contrastingly, heterodox economics consists of separate and distinct schools of economic thought such as Austrian and Marxian which are contrasting and go above and beyond the neo-classical premise of mainstream economics (Lawson, 2005) and therefore has a wider scope than neo-classical economics. Details of the various heterodox schools of economics are outlined in the following section and Appendix 1 provides a summary diagram (Patton, 2000) to depict the various schools of heterodox economics.

1.5 The different schools of economics: A historical perspective

Economics was famously labelled 'the dismal science' by Thomas Carlyle in the mid 1800's in reaction to reading Malthus (1798) 'An Essay on the Principle of Population'. Malthus had controversially, and rather pessimistically, predicted that population increases geometrically over time whereas food production increases arithmetically over time, hence leading to the view that there exists a population 'limit' that the earth can sustain.

> "It was with Malthus and Ricardo that Economics became the dismal science" (Galbraith, 1977, p. 35)

Economics has a vibrant history of debates and divisions within the subject, and various schools of economics have arisen as a testament to the differing opinions and views to explain real world phenomenon. The various schools of economics are founded upon different premises and assumptions which results in economists disagreeing until they can agree on the fundamental premises upon which they build their theories (Patton, 2000).

In what follows, I attempt to provide a brief overview of some of the major schools of economics starting with classical economics. Classical economics is generally recognised by economic historians to have begun with the 1776 publication, 'An Inquiry into the Nature and Causes of the Wealth of Nations' by the Scottish moral philosopher Adam Smith. He began to deduce many principles of cause and effect relationships in a market economy. Additionally, he founded a tradition known now as the classical school of economics, which lasted nearly a century. Economists, such as James Mill, David Ricardo, and John Stuart Mill, subsequently developed the classical economics tradition

in the backdrop of capitalism and ideas such as self-interest leading to 'the invisible hand' in allocating scarce resources efficiently (Patton, 2000). For Adam Smith and most classical economists, the political economy, as economics was previously called, was a subdivision of moral philosophy. Their economic science was built on a moral base and as a result, classical economics was not a subject that was seen to be in a 'vacuum' and especially not one that was separated from a moral standpoint.

Furthermore, neo-classical economists in the late 1800's such as Carl Menger (of Vienna), William Jevons (of Cambridge) and Leon Walras (of Lausanne) argued that subjectivities such as preferences and values placed on a good or services by individuals helped to determine the market prices of goods and services in the long-run (Patton, 2000). However, humanist and empiricist schools of economics also began to gain prominence in the late 1800's. Aligning with the physical sciences such as chemistry and physics, economics "progressed" from a science of wealth and welfare based on a moral framework to a value-free science of 'cause and effect' and 'prediction'. This culminated in the twentieth century as the humanistic science of economising at the individual or firm level or microeconomics and the science of managing the economy at a national level or macroeconomics (Patton, 2000). Humanist and empiricist ideas may have filtered in to the thinking of modern day neo-classical economists such as monetarists, led by Milton Friedman, who stress that a controlled management of the money supply can be used to manipulate macroeconomic objectives such as low inflation and economic growth. Friedman (1953) purports that, similar to physical sciences such as physics and chemistry, economics is a pure and objective science and that may be studied without reference to ethics or value judgements. Blaug (1992) agrees that science is about observing the world to collect data from which universal laws and theories can be made with which to explain observed phenomena and moreover, make predictions and forecasts about the future state of the world. Freidman (1953) and Blaug (1992) place an emphasis on sciences as having value in 'explanatory' and 'predictor' capabilities and that economics should follow suit as they argue that economics should be a positive subject and it should be objective in its methodology.

The supply-side school of economics, which gained prominence in the 1970's, is largely in favour of restoring incentives to work through tax cuts to stimulate spending, saving and investment (Chang, 2014). Keynesian economics, named after the founder

John Maynard Keynes, had its origins in the Great Depression of the 1930's. Keynes argued that capitalism was inherently unstable, contrary to neo-classical thought. Keynesian theory provided 'tools', for instance the US Government, to manage the economy to attain the goals of full employment, growth, and price level stability (Chang, 2014).

Another distinct school of economic thought was the Austrian school. The Austrian school was founded by the neo-classical economist Carl Menger and prominently developed by Ludwig von Mises (1881-1973) and is based on a body of deduced principles ala Adam Smith, which are believed to be universal laws of human behaviour that are true and absolute irrespective of time or place (Patton, 2000). According to the Austrian school, economics as a science is neutral with regard to human values, but it provides policy-makers with vital information to form valuations and to act successfully (ibid). In his criticism of mainstream economics, Piketty (2014) asserts that an over-reliance on simple mathematic models and unrepresentative agents in economics may have led academics to neglect important issues such as the distribution of wealth. Taking a 'data-centric' approach, Piketty uses a variety of data and presents it as a starting point with which to open up a discussion about economic concerns such as widening inequalities and poverty. This stance is supported in an open letter to the Guardian by Stockhammer et al. (2013) asserting that mainstream economics regards "microfoundations" based on self-interest "as more important than empirical plausibility" and therefore must re-engage with core historical concerns such as growth, underemployment, financial instability and the distribution of income and wealth. Moreover, they argue (ibid) for a need to move towards pluralism, similar to other social science subjects, where students have exposure to "competing paradigms" as opposed to a closed "dogmatic commitment".

This recommendation towards pluralism, as provided by lecturers, seems to be supported by students of the subject. The International Student Initiative For Pluralism in Economics (2014) (ISIPE) incorporates 42 associations of economics students across 19 countries who argue in an open letter that pluralism, particularly in terms of theoretical, methodological and interdisciplinary aspects is essential for a 'healthy and democratic' public debate and one which ultimately brings economics back to the 'service of society'. Perhaps most importantly for the evolution of economics as a

subject, the authors (ibid) add the caveat that a 'critical mass' comprising of both economics and non-economics students' must be established before a change to the economics curriculum can be successfully made and implemented. A pluralist and therefore more holistic economics curriculum may be one that includes neo-classical and static models alongside some of the more dynamic models offered under a heterodox economics curriculum.

1.6 A call for change

Even prior to the financial crisis there have been sporadic and distant calls for a reconceptualised Economics curriculum. Curriculum innovation is a practice to change practices (Fullan and Stiegelbauer, 1991, p. 9). In June 2000, a group of students in France campaigned for an end to what they described, in problematic terms, as the 'autism' of economics as an academic discipline (Rankin, 2003). This transition gained increasing momentum in the wake of the financial crisis and led to the formation of a global movement in favour of a new economics curriculum supported by a network of students and academics or 'rethinkers' to form the Institute of New Economic Thinking (INET) in 2012. Similarly, the World Economics Association (WEA) has also launched its Young Economists Network (YEN, 2012). However, a new approach to the teaching of economics is offered by CORE (Curriculum Open-access Resources in Economics). The CORE project is funded by the Institute for New Economic Thinking (INET) to propose a new approach to the teaching of economics at the undergraduate level. As stated in the CORE Press release (Carlin, 2013, p. 1)

> "…the pressure for change from students, faculty, business and policy makers, along with new developments in economics, makes this an auspicious time to seek improvements in what economics students learn, and how they learn it."

This idea of 'perfect timing' to enact a change to the economics curriculum is supported by Mittelstadt et al (2013, p. 11) who describe this as an "ideal teaching moment" with Lofstrom & van den Berg (2013, p. 53) using the phrase a "golden opportunity".

1.7 The CORE project

In the wake of the financial crisis, authors have been advocating changes to the Economics curriculum. The mainstream economics course content was regarded as being too narrow, focusing too heavily on mathematics and outdated models and ignoring modern human concerns (ISIPE, 2014). Some recommended changes to mainstream economics courses involved changes to the chronological order in which topics are taught. For instance, Konczal (Washington Post, 2013) suggests topics such as unemployment, the role of institutions and externalities should be introduced to students before static models such as perfect competition to benefit student learning and better engage students from the beginning. The introduction of applied topics before models aligns with Brant's (forthcoming) 'back to front' approach. Furthermore, others suggest a change in the way economic concepts are being explained to students in the classroom. For example, Seabright (Project-Syndicate, 2013) demonstrates that complex concepts in microeconomics can be explained using basic concepts and tools in a manner which is more 'step by step' and incorporates Information and Communications Technology (ICT), for instance in showing how a demand curve is constructed. ISIPE (2014) argue for the widening of the curriculum to include current 'multi-dimensional' challenges such as financial stability, food security and climate change to be more reflective of current concerns and therefore more relevant to individual students' future needs and previous experiences.

The CORE project (2013) attempts to address the critiques of mainstream economics directly by changing the design, content and delivery of the economics curriculum for undergraduates under the guiding principle of applicability of concepts and models to the understanding of important problems. A pilot of a new first-year undergraduate 'The economy' course is being taught internationally in participating universities, which include renown institutions such as Kings College London, University of Chile and Sciences Po (France), during the 2014-15 academic year. The CORE project consists of a steering team consisting of four economics professors and 25 economists from around the world working with writers, experts on innovations in teaching and a team of designers and computer programmers producing open access online resources, including e-book course material with interactive content including diagrams, data and videos. The CORE curriculum begins with presenting the economy as a dynamic system

and focuses on the capitalist economy in improving material standards of living, its potential for producing catastrophic climate change and the unequal distribution of rewards across and within countries. However, CORE project leader, Wendy Carlin cites challenges such as the simplifications of the standard syllabus, the emphasis on sets of standards problems for students to solve, the division into microeconomics and macroeconomics, and the decision to omit topics like the financial system to make economics easier to understand for new students. By focusing on relevant, current issues in economics through greater application of theory and reference to historical ideas in economics the CORE project aims to bring economic understanding back to the fore (Carlin, 2013).

Reflecting back briefly on my experience as an undergraduate Economics student at UCL in the late 1990s, I realised that a change was needed to the curriculum and to the way students learn economics in the classroom. I felt economics had the potential to be even more enjoyable, interesting and rewarding for students. Now as an economics lecturer, I am excited and fascinated to realise that curriculum reform in undergraduate economics is taking place in the form of the CORE project which is being piloted on undergraduate Year 1 economics students at UCL since September 2014. Through investigating the CORE project, I aim to further my own understanding of a specific curriculum reform in economics and its potential adoption by a Singapore-based American university in order to improve teaching of economics at the undergraduate level. An investigation of the CORE project carries personal significance and is thus the foundation of my thesis. It was through much deliberation, discussion and continuous editing that I had formulated my research questions.

1.8 Research questions

Given my research context, and in view of my research aims, my thesis seeks to answer the following research questions:

1) What is the impact of the CORE project on the teaching of undergraduate level economics in the UK and Singapore?

Sub questions:

1.1) What are the key goals and features of the CORE project and how does this contrast with a Singapore-based American undergraduate economics curriculum?

1.2) What, if any, are the possible implications of the CORE project on teaching of undergraduate level economics at a Singapore-based American university?

Chapter 2

2.0 Conceptual framework

2.1. Andragogy

My thesis investigates the teaching of adults on undergraduate economics courses and therefore specifically draws on andragogy as opposed to pedagogy. The term 'andragogy' was originally used by German educator Alexander Kapp in 1833 (Davenport, 1993) who used it to describe elements of Plato's education theory and contrasted 'andragogy' (andr– meaning 'man') with 'pedagogy' (paid- meaning 'child' and agogos meaning 'leading'). Andragogy developed into a theory of adult education in 1921 by Eugen Rosenstock-Huessy in a report which argued that adult education required 'special' teachers, methods and philosophy (Nottingham Andragogy Group, 1983, pg. 4).

Andragogy was popularised in USA by American educator Malcolm Knowles in the 1970s, after he was in introduced to the term by Dusan Savicevic in 1967 (Davenport, 1993). For Knowles, andragogy is premised on four crucial assumptions (which later became five) of the characteristics of adult learners that are unique and distinct from the assumptions of child learners (Knowles, 1984). I now describe the five assumptions of adult learning as described by Knowles (1984, pg.12). Firstly, Self-concept: As a person matures, he or she moves from being a dependent human being towards one that is self-directed. Secondly, Experience: As a person matures he or she accumulates an increasing depth of experience that becomes increasingly important for learning. Thirdly, Readiness to learn: As a person matures his or her readiness to learn becomes oriented increasingly to the developmental tasks of his or her social roles. Fourthly, Orientation to learning: As a person matures his or her orientation toward learning shifts from one of subject-centeredness to one of problem-centredness. Lastly, Motivation to learn: As a person matures, the motivation to learn becomes more internal than external. Critiques of Knowles' assumptions of adult learners' have centred on its oversimplifications (See Hanson, 1996), lack of scientific reasoning (See Jarvis, 1987) and some even question whether there is a basis for andragogy in the first place (See Kidd,

1978). Knowles (1989) concludes that andragogy is a "model of assumptions about learning or a conceptual framework that serves as a basis for an emergent theory."

Current understandings of the term ‘andragogy’ exist in two domains. One domain, in the tradition of Dusan Savicevic, situates andragogy as a discipline, the subject of which is the study of education and learning of adults in all its forms of expression’ (Savicevic, 1999, p. 97) Therefore andragogy can be viewed as the science of understanding (theory) and supporting (practice) lifelong and life-wide education of adults. The other domain for understanding andragogy, in the tradition of Malcolm Knowles, situates andragogy as a specific theoretical and practical approach, based on a humanistic conception of self-directed and autonomous learners and teachers as facilitators of learning.

2.2 Critical realism

Throughout my thesis, I draw on critical realism as my underpinning philosophical perspective and conceptual framework. In particular, I draw from ideas in Brant and Panjwani (2015) throughout this section as they provide an interesting and succinct description of the historical thought behind the evolution of critical realism. Rooted in the associated ideas of transcendental realism and critical naturalism, critical realism is a philosophy created by Roy Bhaskar in the 1970s and has since developed and evolved over time. Transcendental realism is a philosophy of science and argues that the world is real. However, the ‘real’ world is not directly accessible and therefore needs to be understood through the structures and mechanisms producing the observed phenomena (Bhaskar, 1978). Critical naturalism is a social science theory which Bhaskar (1979) uses to question the extent to which society can be studied in the same way as nature. The naturalistic tradition, based on the humean notion of law, is based on a belief that there is an essential unity of method between natural and social sciences. In contrast, hermeneutics offers a radical distinction in method between the natural and social sciences in which reality is socially constructed. Bhaskar’s argument is that the error that unites these opposing traditions is the acceptance of an essentially positivist account of natural science; he argues for a qualified anti-positivistic naturalism (ibid).

Positivism arose out of the Enlightenment where science was seen to have the answers to the problems of the universe and it was believed that truth could be discovered through observation and experimentation (Scott and Usher, 1996). The positivist tradition therefore looks to firstly uncover data and then uses this data to provide evidence to prove or disprove a hypothesis in order to seek truth, meaning and validity. For a positivist economist such as Milton Friedman, the world is objective in the sense that it is independent of its knowers and thus by using scientific method it is possible to discover universal laws. Positivists believe that given the same set of data, different observers are able to draw the same conclusions in order to make meaning from that data.

To the contrary, Bhaskar (2008) argues that this may be possible in a 'hard' science, such as physics, but it is not possible for social sciences, such as economics, which operates in open systems with many variables that are subject to change. Bhaskar (2011) notes that humean theory, which forms the basis of positivism, is premised on an ontology of closed systems and disparate events and it presumes a conception of people as passive receivers of given facts. In contrast, critical realism offers an understanding of the world that is real but which may be experienced and interpreted differently by different observers. Critical realism accepts a positivist ontology which is a view that the world is real and testable through experience so social sciences such as economics and 'hard' sciences such as physics can therefore share the same methodology for the purposes of data collection, such as questionnaires and interviews for instance. However, where critical realism is unique is in its epistemology, in that the interpretation of the world is relative and subjective and may therefore differ among different observers who draw different conclusions from the same set of data.

2.3 The real, actual and empirical domains

Bhaskar (2008a) explained that there are three ontological levels, or 'domains': The real, the actual, and the empirical. The 'real' refers to objects, their structures or natures and their causal powers and liabilities. The 'actual' refers to what happens when these powers and liabilities are activated and produce change. The 'empirical' is the subset of the real and the actual that is experienced by actors. The 'real' is here referred to as all

things which have the ability to have causal powers and are prior to, and separate from, our knowledge of them, such as human individuals with their power of agency. The 'actual' are all events (and non-events) that take place when mechanisms in the real domain work to create events. Even though a man may have the capacity to work, if he is not granted the opportunity to do so, he will not work and it will not be an event.

> "…the actual refers to what happens if and when those powers are activated, to what they do and what eventuates when they do, such as when the bureaucracy's powers are activated and it engages in activities such as classifying and invoicing, or the previously idle person does some work." (Sayer, 2000a, pp 12)

The 'actual' domain, in the same way as the 'real', is existent whether we know of the events or not. The domain of the 'empirical' is where there is human knowledge of the event. Critical realists stress the fact that just because events happen does not mean that researchers observe all events (Bhaskar, 2008), or even acknowledge them when they are observed (Sayer, 2000a). Therefore, there can be several mechanisms, or powers, which combine to create emergent events or non-events, which scientists may then observe.

2.4 Retroduction

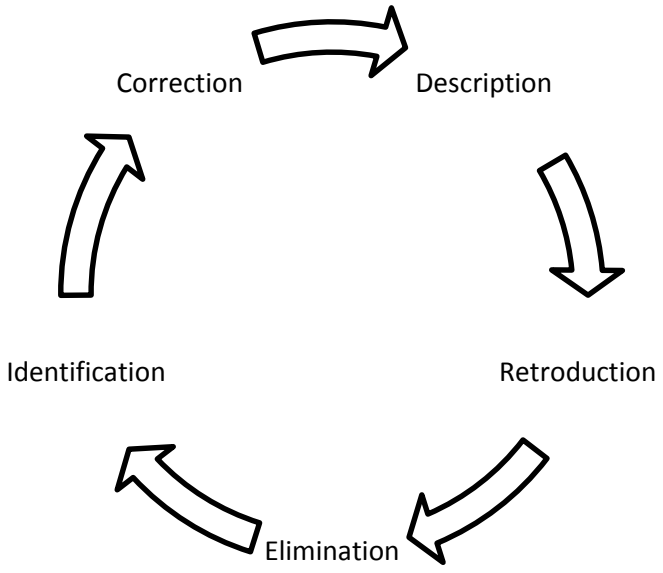
The knowledge of the causal powers of structures is gained through a mode of reasoning called retroduction of events. Retroduction is not to deduce or to induce, but to look at the empirical experience, and then ask the 'why' question. Critical realist ontology and epistemology was founded on transcendental arguments, and Bhaskar has said that retroduction is a form of transcendental question (Danermark et al., 2002). Therefore the same question which Bhaskar asked about what needs to exist in order for science to function can be used in other cases to find possible underlying mechanisms. The main purpose of using retroduction is in fact to imagine deep causal mechanisms, and then test the presumed mechanism. Thus, retroduction overcomes the deficiencies of the logics of induction and deduction to offer causal explanations by going back from, below, or behind observed patterns or regularities to discover what produces them (Bhaskar, 1979).

By connecting with a need for a humanist empathy and an understanding of social constructions, competing factors and subjectivity in the decision making of individuals, critical realism offers an alternative methodology to positivism which may be of particular value to the study of economics (Brant forthcoming). Indeed, a growing number of economists (Lawson, 1997; Collier, 1990 and Hodgson, 1999) are supporting the incorporation of critical realism into economics. These economists purport that mainstream economists study the empirical world, a world which is inconsistent with the underlying ontology of economic regularities and is thus a limited reality because empirical realists presume that the objects of inquiry are solely at the level of the experienced. According to critical realist economists (Lawson, 1997 and Hodgson, 1999) the central aim of economic theory is to provide explanations in terms of hidden generative structures. This position combines transcendental realism with a critique of mainstream economics.

2.5 The DREIC model of enquiry

Bhaskar (1979) argues for what he terms, a 'DREIC' (Description, Retroduction, Elimination, Identification and Correction) model of enquiry.

Fig. 1: The DREIC model of enquiry (Bhaskar, 1979)



The first stage in understanding a phenomenon is a Description of the observed phenomenon, followed by Retroduction, the process of generating a set of plausible explanatory hypotheses. Next is the Elimination of unlikely hypotheses in order to allow an Identification of the hypothesis or hypotheses that seem to best explain the phenomenon. The final process is an iterative one where corrections are made and the phenomenon is examined again to see if the explanatory mechanism has been identified. The critical realist DREIC approach applied to economics offers the subject an alternative and powerful explanatory function in contrast to the existing imperfect and positivist models of prediction. Indeed, Lawson (1997) argues for need for a social ontology in economics that places emphasis and equal weighting on social structure and human agency. Both social structure and human agency are each a condition and consequence of the other. This interaction, as argued by Lawson (1997), implies that humans draw on or are governed by social actions and it is only through humans that social actions are produced, reproduced and transformed over time. This argument informs the notion that economics ought to embrace a "social ontology" to include the underlying causes of economic phenomena.

2.6 Agency and social structures

Critical realism argues that humans, as opposed to other natural organisms, have an innate capacity to have intentions, and that this intentionality is related to agency or the physical act of doing something (Bhaskar, 1998). The International Association of Critical Realism (2015) concurs that human agency is seen as a

> "causally and taxonomically irreducible mode of matter [which] is not to posit a distinct substance 'mind' endowed with reasons for acting apart from the causal network, but to credit intentional embodied agency with distinct (emergent) causal powers from the biological matter out of which agents were formed, on which they are capable of reacting back" (IACR Social Ontology)

Agential causal powers come not from some independent mind as asserted by Descartes, but instead from the emergent properties of biological matter. It is also argued that agents can affect physical matter through both their embodied selves and their physical surroundings. According to critical realism, it is possible to move from

human agency to social structures and vice versa because of the relations of several agents as causal mechanisms. Critical realists (Archer, 2003 and Elder-Vass, 2010) point out that there is not just one overarching social structure, but instead several social structures working at different spatial and temporal levels. Since both physical and social realities are based on the same underlying principles of stratification and emergence and both seek to find underlying mechanisms with some form of causal power, critical realists argue that social science can be akin to natural science in being a science (Bhaskar, 1998).

However, there are some differences between social structures compared to natural structures, which has important implications. For instance, social structures do not exist independently of agents who can reflect on their own choices, and therefore these structures, along with their powers and liabilities, can change in time and space (ibid). These social structures may therefore be difficult to study and categorise (Sayer, 2000a). Social structures, are not visible as such and therefore the most effective way to study them is to observe the actions of people or social phenomena and to 'retroduce' what sorts of social structures must be in place for such events to be manifested (ibid). Bhaskar (1998) also made it apparent that social structures can only have an indirect causal effect on the material world through conditioning the actions of agents. Another development to agency and social structures is the Transformational Model of Social Activity (TMSA). Bhaskar argues that social life precedes agency as well as enables and constrains agency:

> "…people do not create society. For it always pre-exists them and is a necessary condition for their activity. Rather, society must be regarded as an ensemble of structures, practices and conventions which individuals reproduce or transform, but which would not exist unless they did so." (1998, p. 38)

The TMSA shows how society has an effect on how agents think and act, and that agents, through time, may in turn reproduce or transform society. The fact that people reproduce social structures is often involuntary, as Bhaskar (1998, p. 39) asserts;

> "Thus people do not marry to reproduce the nuclear family or work to sustain the capitalist economy. Yet it is nevertheless the unintended consequence (and inexorable result) of, as it is also a necessary condition for their activity."

Chapter 3

3.0 Literature review

In this section, I provide an overview of the literature around economics as a subject and related aspects of teaching and learning. I start by broadly outlining the philosophical perspectives around the purpose of education, and then move towards documenting literature around the purpose of economics education. I then move my focus on the history of capitalism, reaction to the financial crisis, the meanings of mainstream economics and heterodox economics and critiques of mainstream economics. I follow this section by providing an overview of students' and lecturers' views towards mainstream economics and a brief look at the importance of transferable skills. I continue my literature review by looking closer at curriculum, in particular, matters surrounding the role of reflective practice in instigating curriculum change, before looking at aspects of curriculum reform, design and development. I then move towards looking at literature around teaching and learning, focusing on experiential learning, constructivism, PBL, case studies and student engagement. I culminate my review of the literature by looking at specific matters of curriculum surrounding the CORE project.

It is important to emphasise that my thesis is an investigation of the teaching of adults on undergraduate economics courses and as Knowles (1980) asserted, andragogy should be distinguished from the more commonly used pedagogy and I provided an explanation of andragogy in Section 2.1. Despite my thesis being a study situated in andragogy and not in pedagogy, my literature review makes frequent references to pedagogy due to gaps in the literature particularly around matters of curriculum, teaching and learning theories in relation to the adult learner. It is necessary that I draw on literature around pedagogy to provide me with a better understanding of andragogy. Therefore, prior to my literature review it is important to make explicit that by using theories, concepts and ideas rooted in pedagogy, I am aiming to gain a better understanding of andragogy in relation to the teaching of adults in undergraduate economics courses.

3.1 What is the purpose of education?

It is widely documented in the literature that Philosophers across a diverse a spectrum as Aristotle, Plato, Locke, Rousseau, Tzu, and Confucius provided much of the modern day insight on the purpose and role of education and schooling (Noddings, 1995; Reed and Johnson, 1996). Although these early thinkers shared many common ideas about the purpose of schools, each of them also had their own unique perspectives on the role of schooling within a given cultural and societal context. In more modern times, educational philosophers such as John Dewey, George Counts, and Mortimer Adler have each proposed systematic arguments regarding the purpose of schooling in the context of American society.

Dewey (1938) argued that the primary purpose of education and schooling, besides preparing students to live a useful life, is to teach students how to live 'pragmatically' and 'immediately' in their current environment. Counts critiqued Dewey's philosophy stating that "progressive education has elaborated no theory of social welfare, unless it be that of anarchy or extreme individualism" (Counts, 1978, p. 5). Counts believed that the purpose of school was less about promoting individualism but rather to prepare individuals to live as members of a society with a sense of citizenry and community. Adler (1982) integrated the ideas of Dewey and Counts and suggested that education should aim to develop in students, the notion of citizenship, personal growth or self-improvement, and occupational preparation. David Tyack (1988) argues that the purpose of schooling has historically been tied to social and economic needs.

More recently, some sociologists have argued that schools exist primarily to serve a practical 'credentialing' function in society (Labaree, 1997). Credentialism was defined by Dore (1976) in his work 'The Diploma Disease' as existing in the education system where students may be learning simply to pass exams or to reach a certain benchmark in order to fulfil a given set of often externally predetermined aims or requirements. In my IFS (Patel, 2014) I wrote about the effect credentialism may have on propagating 'surface learning' in the context of higher education in the Middle East. I argued that even though surface learning seemingly satisfies certain requirements but may not necessarily result in students becoming more productive in their future roles as employees, employers and business leaders. Expanding on the pragmatic purpose of

school, De Marrais and Le Compte (1995) outlined four major purposes of schooling that include firstly, intellectual purposes such as the development of mathematical and reading skills. Secondly, political purposes such as the assimilation and integration of immigrants into society. Thirdly, economic purposes such as job preparation; and lastly, social purposes such as the nurturing in the individual, a sense of social and moral responsibility.

Broadly speaking, it has been accepted that the current UK education system, is driven by a liberal philosophy of education (Reiss and White, 2013). It must be pointed out that 'liberalism' as a philosophy has many forms, with different understandings of the meaning of the term 'liberty', the size and the role of the state and the nature or function of market (Fawcett, 2014). Gaus argues that the "Fundamental Liberal Principle" (1996, p162) governs a premise in favour of liberty which underpins all of these different forms and in such allows liberalism to drive the motivations of humans and therefore underpin the workings of the state including politics and compulsory education, particularly in democratic nations such as the UK. Brant and Panjwani (2015) argue that a key feature of liberal education is the goal to help make students become independent as life-long learners; in other words, autonomous.

3.2 Why study economics?

Nurturing the values of autonomy and independence were described in the previous section as being key objectives of liberal education. The moral philosopher Adam Smith (1776) extolled the virtues of having a situation where self-interested human-beings are act in a way to maximise the outcomes of their own situations by exchanging money earned by others for their talent in the production of a marketable good or service, which in turn allows society to become more productive and therefore better off with regards to economic growth and standards of living. In his very first line of 'The Theory of Moral Sentiments', Adam Smith famously wrote

> "How selfish soever man may be supposed, there are evidently some principles in his nature, which interest him in the fortune of others, and render their happiness necessary to him, though he derives nothing from it, except the pleasure of seeing it." (Smith, 1759, p. 1)

The term ‘self-interest’ is usually used synonymously with ‘greed’ or being “selfish”. The Collins Online Dictionary (2015) defines the term ‘self-interest’ as “1. One’s personal interest or advantage” and “2. The act or an instance of pursuing one’s own interest.” Furthermore, in the list of synonyms are “selfishness”, “egotism”, “self-centredness”, “greed” and “looking out for number one.” As Wang et al (2011) explain that the language of economics makes it especially difficult to differentiate between self-interest and greed. University economics retains this affliction with self-interest and school economics offers a simpler version of university economics (Brant, 2011), where self-interest is used synonymously with greed as in the Collins Dictionary. Although completely unintentional, an increased exposure to economic theory may give students convenient frameworks to normalise and possibly justify greed in terms of their own actions and behaviour. Wang et al. (2011) research of Australian graduates found that studying economics leads to more self-interested and potentially greedy action (compared to students in an education class).

Brant and Panjwani (2015) explain this phenomenon as follows: Firstly, ‘self-interest’ as an assumption in classical economics having withstood the ‘test of time’, may therefore be viewed by current or new economics students at schools and universities as a ‘natural’ human instinct. Secondly, other economic theories such as game theory also compound this through its emphasis on ‘tit-for-tat’ or ‘reneging’ strategies that may optimise the outcomes of a rational individual decision maker. Thirdly, the relationship between economics education and the belief that others also pursue self-interest creates a false consensus. However, self-interest being synonymous with greed conflicts with basic moral values and is in tension with the aims of a liberal education. Brant and Panjwani (2015) question whether economics should even be on the school curriculum if studying economics at school makes young people more selfish and greedy but they argue that economics should continue to be taught in schools but not as it presently is.

In *Theory of Moral Sentiments* (Smith, 1759), Smith attempts to develop moral theory out of ordinary moral judgements, rather than starting from a philosophical vantage point above those judgements. Indeed, in an article that discusses whether economics as a *subject* has become disengaged with the notion of *economy*, Coase (2012, p. 1) asserts that the

> "…separation of economics from the working economy has severely damaged both the business community and the academic discipline."

3.3 A brief history of capitalism

Chang (2014) asserts that capitalism started in Western Europe around the sixteenth and seventeenth century, particularly in Britain and the Low Countries (that is, the topographically low lying nations of The Netherlands and Belgium). Up to that point society was mostly organised through farming and agriculture with a limited degree of commerce and handicraft industries. Growth began to accelerate in this part of the world as compared to China and the India, helped on by colonialism, in a movement described somewhat vividly by Chang (2014) as 'Tortoises vs. Snails'. During the eighteenth and nineteenth centuries, particularly, the advent of the Industrial Revolution, there was a gradual movement in Europe and in the USA from primary to secondary production, the reduction of trade barriers, in particular restrictions on production, labour, formation of new businesses, and a drive towards deregulation. Central to describing and justifying this process was firstly the extension and clear definition of property rights that allowed landowners to make the best economic use of their land and secondly the political doctrine of laissez-faire economics and liberalism in the broader sense, and allowed the 'invisible hand' ala Adam Smith to smooth the operation of free markets in allocating scarce goods and services (ibid).

The next major step in the evolution of capitalism began in the late nineteenth century with the expansion of corporations, finance and globalisation. However, this progress to the world economy over time did not come without negative repercussions. For instance, Piketty (2014) studied the data of twenty countries, examining trends of wealth and income over time. He observes an 'unnatural' distribution of wealth and income and highlights an inherent weakness of orthodox economics because of its separation from the social and political context in which economic issues such as income inequality and poverty should be viewed. Piketty's main finding is that in an economy where the rate of return on capital (r) outstrips the rate of growth (g) we encounter a situation where r>g, thus inherited wealth (including the case of dynasties, wealthy families or corporations) will always grow faster than earned wealth or income. Accumulated wealth will therefore eventually reach levels that are incompatible with

democracy, fairness and equality. In other words, capitalism creates levels of income inequality and unfairness that is economically and politically unsustainable and moreover, socially unacceptable. Piketty viewed the 2008 financial crisis as simply the system working normally and further that a redistribution of capital may actually be required for capitalism to survive in its current form. Governments and international institutions seem to be recognising that the benefits and losses that capitalism can bring to society must be more inclusive of all participating members of society. Lagarde (2014) as current Managing Director at the International Monetary Fund has been documented in the media in agreeing that inequality may be a barrier to growth which could undermine democracy and furthermore, human rights and argues that capitalism can and must be more 'inclusive' of as many individuals in society as possible by addressing this extreme income inequality.

3.4 Government reaction to the financial crisis

Governments from countries such as Germany and the UK have responded to the challenges posed by the unanticipated shock of the 2008 financial crisis by implementing policies, which in accordance with neo-liberals but in opposition to the Keynesian view, allow for a sustained economic recovery. Austerity measures are defined by Financial Times Lexicon (2015) as

> "…official actions taken by the government, during a period of adverse economic conditions, to reduce its budget deficit using a combination of spending cuts or tax rises."

These 'austerity' policy responses have centred on financial bailouts and the tightening of banking rules and regulations mainly in the form of restrictions on lending and compensation, remuneration and bonuses. When further filtering the range of austerity policy responses adopted by affected Governments, two main strands emerge. The first strand concerns the adoption of policies by governments which have the aim of reducing state deficits through reductions in Government spending. I now provide two examples of austerity measures that centre on state deficit reduction in the UK and France. As reported in The Guardian, the UK Government froze child benefit payments in 2011 as a means of reducing Government sending (Bachelor and Collison, 2010). In France, the

2013 budget focused on bringing about a 30 Billion Euro saving in Government spending through increased taxation of mainly the wealthiest individuals and businesses in society which was in contrast to the imposition of spending cuts on the broader population as seen in Spain, Portugal and Greece (Carnegy, Spiegel and Johnson, 2012). However, protests and marches have been held in France in reaction to these measures by those members of society that feel that they have been targeted somewhat unfairly (ibid). The second strand of austerity measures concerns the provision of conditional financial support through international organisations such as the European Central Bank (ECB) and the World Bank. Greece has been a notable receiver of such 'conditional bailouts' from international organisations as is widely reported on the media. Traynor (2015) writing in The Guardian, reports that Greece had been granted a four month extension for its 240 Billion Euro from the Eurozone under conditions that were similar to that set originally by EU Leaders after much negotiation by new Greek Prime Minister and leader of the anti-austerity Syriza Movement, Alexis Tsipras in February 2015. Although there is a general agreement that reducing public debt has long-term benefits with regards to long term economic growth there is disagreement about the short-term effects of fiscal austerity, particularly in the context of economic recession as policy-makers recognise that austerity may impede growth and recovery in the short run.

The much simplified but useful 'circular flow of income' terminology based on the ideas of the 18th century economist, Richard Cantillon (in Murphy, 1993) is useful in illustrating this idea. If austerity measures act to remove funds from the economy in the short run through 'leakages', by way of taxation for example, at a greater rate than that which is 'injected', through encouraging investment for example, the amount of funds flowing around the economy through businesses and households will eventually deplete if all other factors are held constant (ceteris paribus). However, policy-makers also recognise that the global financial markets are demanding austerity – not because of its economic effects, but as an objective in itself, to provide 'credible' evidence that governments can properly manage their budgets to prevent a default (Konzelmann, 2012). This idea of using austerity measures as a tool for Government credibility may draw support from the misguided faith placed by neo-classical policy makers in the explanatory and predictive capabilities of economics in providing answers to address or solve economic problems. Arguing for austerity policies, Fama (2009) asserts that

government deficits 'crowd out' private investment as bailouts and stimulus plans may in effect, absorb savings that would have otherwise gone towards private investment. However it is important to note that this argument does not accord with the Keynesian position that there is no crowd-out effect during recessions. Fama argues that because stimulus spending must be financed by the state, it displaces alternative uses of the same funds. He concludes that austerity is therefore required to assure that more efficient private sector spending is able to drive economic recovery. The private sector must also bear the responsibility to bring about economic recovery as opposed to relying mainly on the public sector. Cochrane (2010) also supports the view that fiscal austerity is necessary to counter economic recession. As a neo-classical economic policy response, Cochrane explains that austerity is required to reduce public deficits through greater debt repayment, calm the financial markets by easing inflationary pressures and prevent a worsening crisis.

Chang (2014) provides examples of different neo-classical policy responses by separate EU member states facing unique and distinct macroeconomic conditions and agrees that many of these responses have been slow in coming but are much welcome nonetheless. For example, UK policy-makers instituted private sector expansion in a pursuit of market liberalisation, whereas Germany has historically aimed to keep their currency stable in the pursuit of macroeconomic stability and low inflation. Indeed, The Netherlands, France, Greece and Italy voted out pro-austerity parties in 2012 and 2013. Conversely, Chang (2014) citing the aftermath of the Great Depression, Latin America in the 1980s and Japan in the 1990s as examples, argues that

> "…a radical cut in a stagnating (or even shrinking) economy holds back recovery" (p. 105).

Konzelmann (2012) points out that during the period of Neo-liberalism, fiscal policy was largely driven by narrow private sector interests of the wealthy and financial elites. In the aftermath of the 2008 financial crisis, fiscal policy has been dictated by unpredictable financial market traders acting in self-interest without due attention to the national, social or political economy, which is in contrast to the moral philosophical values underpinning classical economics. As a result, demanding austerity as evidence that national governments are capable of managing their deficits and repaying their debts, austerity has become the objective of policy, rather than a policy whose objective

is macro-economic stabilisation (ibid). Reviewing the historical record on how the world economy has attempted to deal with macroeconomic imbalances like those it confronts at present, Frieden warns that

> "It is not the purely economic features of rebalancing that will be difficult: markets will clear, one way or another. It is, instead, the political implications of the coming adjustments that will test the capacity of national governments, and of international institutions. If national leaders grasp the political stakes, they may manage the unwinding of imbalances in a way that reinforces an open international economic order. If they fail to grasp those stakes, the recent financial crisis may be a harbinger of even greater dangers to come." (2009, p. 7).

To discuss these austerity policies and causes of the financial crisis in more detail is beyond the scope of my thesis, but it is important to stress that these policies have been devised and implemented with the aim of influencing the behaviour of economic agents such as consumers, producers and governments and instilling a sense of fairness, prudence and responsibility into economic decision making in response to an unprecedented external financial shock.

3.5 Overview of students' and lecturers' surveys

In order to better understand the current challenges around teaching in the context of the mainstream economics curriculum, I now turn my focus on to looking at the findings of student and lecturer surveys. In a survey of 145 economics lecturers from 57 UK universities (Economics Network, 2012) among the most important issues mentioned by lecturers was a questioning of students' motivation, the tendency to plagiarise and a lack of mathematical skills in particular. Moreover, constraints regarding resources such as time and physical space, exemplified by the sheer number of students, particularly from overseas who required additional language support, were cited by lecturers as having an undermining effect on their teaching effectiveness. In a student survey conducted by the Economics Network (2012) comprising 1440 respondents from undergraduate and postgraduate economics students across 56 UK universities, a greater need for real-world relevance in economics courses was evident. Most students agreed that learning in smaller groups through more seminars and tutorials should encourage more student-teacher interaction and student-student interaction. Some

suggested more imaginative and innovative teaching techniques with the use of role-plays and games specifically cited as improvements. Regarding assessment, many students felt that they would benefit from more frequent tests and practice exams and essays with regular feedback as opposed to 'high-stakes' end of year exams.

The ISIPE (2014) student manifesto calls for the hiring of lecturers with a 'broader outlook', the use of a wider range of texts and moreover an interdisciplinary approach that 'blends' economics with other fields through departmental collaboration within the social sciences. When I evaluate the overall view of students' suggestions for improvements to their economics courses; some recommendations such as smaller class sizes or more contact time, would require extra resources. However, in other cases, students' recommendations could be achieved through relatively small changes in classroom practice or teaching styles. In my IFS (Patel, 2014), I had researched Problem-Based Learning (PBL) in the context of higher education in the Middle East and it may be of use in this current context in order to address some of recommendations put forward by students in the Economics Network survey. PBL may be viewed as an alternative to the traditional, more didactic pedagogic approaches that students' often criticise as it is a pedagogic approach that uses problem scenarios as contexts for students to learn problem solving skills and acquire knowledge (Albanese and Mitchell, 1993; Barrows and Kelson, 1995).

Moreover, teaching economists how to communicate their knowledge when they apply it to the world around them is an area which is increasingly important but often overlooked. Anand and Leape (2012) surveyed almost 500 members of the Government Economic Service and asked the question 'Are there any changes in your university economics training that would better prepare you as a professional economist?' The majority of participants responded with the need for a greater focus on practical application of the principles they learned with more examples from real life and more emphasis on real-world topics. PBL may represent one route into deeper learning and therefore a shift away from surface learning. 'Deep learning' is described by Marton and Saljo (1976) as the type of learning that encourages students to relate new ideas to previous knowledge and look for patterns and underlying principles in order to provide meaning. I now draw on the critical realist idea of retroduction (Bhaskar, 1979) referred to earlier. Deep learning may be implicit in a heterodox

economics curriculum where students are encouraged to look at the various economic schools for contrasting views and therefore stimulate debate in an attempt to understand the interaction of the various mechanisms and forces at work in explaining observed economic phenomena. Additionally, students are encouraged to take more responsibility and therefore ownership of their learning through deep learning where the teaching methods are somewhat more interactive.

3.6 Transferable skills

The study by Anand and Leape (2012) on the lack of practical or 'soft' skills of economics graduates motivated me to look at the implications of 'soft' skills or transferable skills more generally. The Report of the Dearing Committee of Inquiry into Higher Education (Dearing, 1997) outlined the extent of the skills gap in the UK. Undergraduates must acquire the key skills of communication, numeracy, information technology (IT) and independent learning whilst transferable 'professional' skills are also a key component at postgraduate level. Soft skills or transferable skills such as interpersonal, communication, presentation and team work also form the repertoire of a graduate entering the workforce. The importance of "soft skills" is also emphasised by Bereiter & Scardamalia (2006) such as self-directed learning and collaboration that are not measured on achievement tests but are important for being lifelong learners and citizens in a knowledge economy. The result may have wider implications for matters of economic and political importance such as immigration, amongst others, with employers opting to recruit migrant workers to fill a position that may have otherwise been fulfilled locally. Addressing this skills gap, potentially through curriculum innovation, is therefore vital for the UK to sustain its international competitiveness in what is becoming an increasingly globalised job market.

3.7 Economics education in Singapore

Economics education is available in local schools, each following their own syllabus under the guidance of the Ministry of Education of Singapore (Ministry of Education, 2015). Additionally, students may study towards the International GCSE Economics

(IGSCE), the AP (Advanced Program) the A-Level or International Baccalaureate (IB) which are all offered by the various international schools in Singapore.

Economics education in Singapore formally begins for students at Secondary level at 'O-Level' and is equivalent to the GSCE in England and Wales, which it closely follows through its content and expectations. In Singapore, economics at O-Level is studied for two years by students aged 14 years old and as in schools in England and Wales, economics remains an optional subject in Singapore. Extracts of the relevant sections under discussion from the economics O-Level syllabus as provided by Singapore Examinations and Assessment Board appear in Figure 2 and 3 (see SEAB, 2015). Figure 2 shows that the aims of this course, along with the development of general literacy and numeracy skills, are to develop sound knowledge of economic theory, terminology, principles, which is followed by a practical application of this theory to individuals, firms, national and international organisations. Heartening are the references in the syllabus pertaining to students distinguishing 'between facts and value judgements in economics' and to 'better understand the world in which they live in'. Also, another feature of the O-Level course is to explore the relationships within and between developed and developing nations.

Fig. 2: An extract from the 2015 Economics O-Level syllabus showing Course Aims

Source: SEAB [Online], 23/1/15

AIMS

The purpose of the syllabus is to encourage Centres to devise courses that will enable candidates to:

1. develop a sound knowledge and understanding of economic terminology and principles and elementary economic theory
2. develop basic economic numeracy and literacy and the ability to handle simple data including graphs and diagrams
3. use the tools of economic analysis in particular situations
4. identify and discriminate between differing sources of information and to distinguish between facts and value judgements in economic issues
5. employ economic skills, with reference to individuals, groups and organisations in order to understand better the world in which they live
6. develop an understanding of the economies of developed and developing nations and of the relationships between them; and to appreciate these relationships from the perspective of both developed and developing nations.

The assessment objectives of the O-Level economics syllabus are included in figure 3. The first two assessment objectives (AO1 and A02) largely follow the information in the course aims as described above. However, heartening is A03 and in particular the explicit reference and inclusion of sub-points 1, 2 and 3. Sub-point 1 pertains to students having the expectation to 'distinguish between evidence and opinion, make reasoned judgements and communicate them in an accurate and logical manner'. Sub-point 2 makes it explicit for students 'to know and understand the limitations and uncertainties of economic theory' and sub-point 3 requires an evaluation of 'social and environmental implications' of economic decisions.

Fig. 3: An extract from the 2015 Economics O-Level syllabus showing assessment objectives

Source: SEAB [Online], 23/1/15

ASSESSMENT OBJECTIVES

AO1 ***Knowledge with understanding***

Students should be able to demonstrate their knowledge and understanding in relation to:

- economic facts, definitions, concepts, principles and theories
- economic vocabulary and terminology.

AO2 ***Analysis***

Students should be able to:

- select, organise and interpret data
- apply economic knowledge and understanding in written, numerical, diagrammatic and graphical form
- use economic data, recognise patterns in such data, and deduce relationships.

AO3 ***Critical evaluation and decision making***

Students should be able to:

- distinguish between evidence and opinion, make reasoned judgements and communicate them in an accurate and logical manner
- recognise that economic theory is subject to various limitations and uncertainties
- evaluate the social and environmental implications of particular courses of economic action
- draw conclusions from economic information and critically evaluate economic data
- communicate conclusions in a logical and clear manner.

Regarding the course content, the material largely follows the GCSE specification of England and Wales as detailed for instance in the latest GCSE economics specifications released by AQA (2015) and OCR (2015) examination boards. The O-level economics course in Singapore incorporates eight main units of study beginning with the basic economic problem, the role of the market and market failure, individual decision making, theory of the firm, Government, economic indicators, developed and developing countries and international aspects such as international trade. The economics O-Level is assessed by means of two exam papers: the first is a multiple choice paper lasting 45 minutes and the second paper involves students answering a data-response question and three essay questions in 2 hours and 15 minutes.

Economics education in Singapore continues at pre-university level (or sixth form level) in the form of 'Highers' (H1, H2 and H3) which is equivalent to the traditional A-Level, and provides students with a greater theoretical grounding of microeconomic and macroeconomic theory and further opportunities to apply their knowledge in practice in preparation for entry into university. H1 is comparable to A1 in England and Wales with a greater focus on microeconomics. H2 builds on the H1 subject and is comparable to A2 in England and Wales with a greater focus on macroeconomics. H3 is an optional extension to H1 and H2 for more able or economics inclined students who wish to challenge themselves further in the subject through greater application through 'advanced' topics such as game theory and also through more mathematical means such as calculus. The 'Highers' are assessed through examinations at the end of each H1, H2 and H3 course. All of these higher exams are composed of a stimulus case study question and essay questions. The exams last for approximately 3 hours at H1 and H3 level, but an intensive exam lasting 4 hours and 30 minutes is sat by students at the H2 level.

At university, economics can be studied by students at undergraduate, masters and doctoral levels. Economics is offered by the publicly funded universities: National University of Singapore, Nanyang Technical University and Singapore Management University. Additionally, there are also a host of privately run universities such as SIM University and Singapore Institute of Technology that also offer economics (Ministry of Education, 2015a). Well-known foreign universities such as Yale, Chicago and INSEAD have also set up campuses in Singapore since the late 1990s to offer local students the opportunity to study towards internationally accredited degrees. In addition, the

'Committee on University Education Pathways' was set up under the Minister for Education, Heng Swee Keat on 16 August 2011 (Ministry of Education, 2015b). The committee is responsible for developing a plan for the expansion and modernisation of universities in Singapore until 2015 with the goal of providing students with additional opportunities within higher education (ibid).

3.8 Reflective practice

Stenhouse (1975) identified a curriculum as being a 'starting point' from which teachers can reflect and develop. Innovation in curriculum may therefore stem from a reflection on the current curriculum as an impetus towards an improved curriculum. An early attempt to capture reflection was provided by Dewey (1910: p.57) who describes reflection as

> "…turning a topic over in various aspects and in various lights so that nothing significant about it shall be overlooked – almost as one might turn a stone over to see what its hidden side is like or what is covered by it."

Developing this idea further was the notion that professions, such as teaching, involve a continuous reflection which is built into the action process itself to give 'reflection in action' (Schon, 1996). However, reflection is very rarely a process conducted in isolation. Indeed, Dewey (1910) emphasised the value of the professional community in reflection: if we are to reflect on our own practice, we should do so within our professional communities and in dialogue with fellow colleagues.

Wenger et al. (2002) go further to state that groups of people who share concerns, problems, or passions about a topic may deepen their knowledge and expertise through constant interaction. Goodyear and Ellis (2007) emphasise the implicit and explicit importance of social context on learning and academic performance. Lave and Wenger (1991) move the discussion forward by examining the importance of the kinds of social engagements give rise to the cognitive processes and conceptual structures for learning to take place. Learning, they believe, involves participation in a community of practice where they construct their own knowledge through the perspectives of others (Johnson and Johnson, 1994). Similarly, Pallof and Pratt (2003)

advocated a learner centred approach which valued 'community building' and where there was an interactive role between the tutor and the student in the construction of knowledge. Schon (1995) is interested in tacit and explicit knowledge that he argues is as important as objectively scientific based knowledge. Schon's approach is unique in that it enables the practitioner to generate knowledge by reflecting on their experience. Schon (1995) defines what methods a professional must take to reach a level where reflective practice skill becomes a habit from which artistry results. Schon's 'Systemic Reflective Space' (SRS) focuses on developing professional practice that requires practitioners to use their skills, competence and abilities in a collective way, thus inviting collaborative reflective practice. Reflective practice space focuses on strength and diversity of repertoires. Eraut (1994, 1996) explores the construction of knowledge in action across a wide range of professions, including accountants, midwives and engineers and in particular, highlights the difficulties of accessing the tacit nature of what is known and how professional knowledge is shown. Eraut (1994) acknowledges the difficulties faced by researchers when accessing tacit knowledge and non-formal learning. As Eraut explains,

> "People do not know what they know, and it can be very difficult to elicit it from them. People are not fully aware of ...the constructs through which they construe the world" (1996, p. 10)

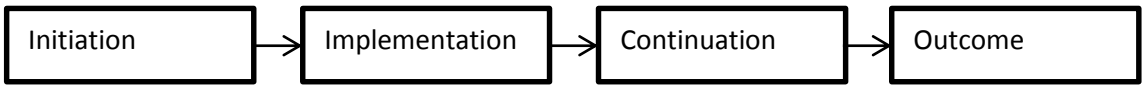
Using an iceberg metaphor, Eraut (1994) illustrates this above idea vividly. The tip of the iceberg exposed above the water-level may represent the area that is "publicly" known, such as propositional knowledge and theories of learning. However, the mass of ice below the water-level which is not visible from above the surface represents how this 'public' knowledge might be used and interpreted to impact on practice. During what he terms as 'hot action' or the daily, pressurised classroom environment, Eraut asserts that most of what is said and done by the teacher develops out of personalised routines which require little thought to enact. Research appears to show that effective practice is related to inquiry, reflection, and continuous professional development (Harris, 1998). However, Davis (2006) states that productive reflection will not be achieved solely through the provision of the opportunity for reflection; reflection should be stimulated if it is expected to be productive. Chirema (2007) describes reflection as a way of turning experience *into* learning. The reflection in this case is characterised as when an

individual returns to, recalls or replays events and may result in new or changed behaviours. Vygotsky (1997) had earlier underlined the importance of social interaction and in particular, meaning making, in the development of cognitive ability.

3.9 Curriculum and curriculum reform

Early definitions of curriculum typically frame the term 'curriculum' with regards to time and units of study. Bernstein (1971, p.48) defines curriculum as "the principle by which units of time and their contents are brought into special relationship with each other". Further, Stenhouse (1975) identifies a curriculum as being a 'starting point' from which teachers can reflect and develop. Furthermore, a curriculum is "an attempt to communicate the essential principles and features of an educational proposal in such a form that it is open to critical scrutiny and capable of effective translation into practice." (Stenhouse 1975, p.4). Barnes (1976, p. 14) builds on the notions of communication and critical scrutiny by adding that a 'meaningful' curriculum is one that must be 'enacted' by pupils and teachers coming together in a meaningful communication. A move towards a reconceptualised curriculum may therefore be described as an attempt to change teaching and learning practices by firstly reflecting and then transforming and effectively communicating a set of beliefs and understandings to lead to a desired set of outcomes to the teaching and learning process. Figure 4 simplifies and illustrates this process of change.

Fig. 4: A simplified overview of the change process (Fullan and Stiegelbauer, 1991)



A significant phase in the evolution of a curriculum is provided by Hirsch's (1987) notion of 'body of knowledge' and 'cultural literacy'. In a study of primary school learners in a reading comprehension setting, Hirsch (1987) underlined the importance of a having a curriculum that teaches a 'core' body of background knowledge such as geographic and historical facts of national significance to facilitate learners in becoming knowledgeable

and rounded citizens. Moore (2006) also agrees that curriculum selections are culturally, historically and socially produced.

However, Furedi (2007) contradicts the notion that studying a body of knowledge is perceived as a 'good thing' by arguing that contemporary pedagogy places less importance of knowledge and therefore has implications on how knowledge is perceived. Furedi (2007, p.7) purports that if "the status of knowledge is negotiable, then so is the curriculum". Indeed, Moore (2006) remarks on the influence of politicians in determining the actual knowledge taught within a curriculum. Moore (2006, p.97) asserts that politicians, instead of debating key issues in education and curriculum, may instead actually be "cramming the curriculum with knowledge content and then focusing debate on how best to 'deliver' that content".

3.10 Curriculum design and development

Tyler (1949) proposed a more aligned approach to curriculum design. In such a system, teaching and learning takes place in a whole system, embracing classroom, department and institutional levels. In a contrasting system, the components (curriculum, teaching and assessment tasks) are not necessarily integrated and do not necessarily support learning. However, in an integrated system, all aspects of teaching and assessment are tuned to support high level learning.

Biggs (2002) proposes the use of 'Constructive Alignment' (CA) to inform curriculum development. CA aspect refers to what the learner does, which is to construct meaning through relevant learning activities. The key is that the components in the teaching system, especially the teaching methods used and the assessment tasks, are aligned to the learning activities assumed in the intended outcomes. Teachers are a constant factor in the education system and thus have a key role for classroom innovation (Havelock, 1970). The degree of motivation with which teachers engage with an innovation is central to its successful implementation.

3.11 Examples of curriculum innovations in economics

When I refer to 'curriculum innovation' I am referring to the ways in which many factors may contribute to transformations in classroom activity. A notable example of

curriculum innovation in Business Studies and Economics at the secondary level is provided by the Nuffield Economics and Business Project (Wall, 2008). This project was set up in 1991 by Jenny Wales and Nancy Wall and funded by Nuffield. Wales and Wall were considering how best to nurture in students a much deeper understanding of economics at secondary school level, through a change in the pedagogic approach. The reconceptualised pedagogic approach aimed to encourage student engagement through deep learning strategies, such as case studies and the solving of real world problems with an emphasis on the use of ICT (ibid). The project developed through a three approaches: the offering of new courses, innovative resources, and teacher development sessions. The uptake of Nuffield Business and Economics courses was deemed as successful by Wall (2008). In 1994, the GCSE and A-level course attracted 4000 students at the outset, but "this figure never grew very much and in time, it began to diminish slightly" (2008, pg. 8). Wall asserts that the falling enrolments were due to greater 'risk aversion' in school leaders, especially in the backdrop of a greater emphasis on school league tables, who increasingly turned towards the offering of 'safer' or traditional subjects (ibid). Teachers' preferences, either for or against the Nuffield Project were not cited by Wall as providing a possible explanation for this enrolment trend but it is worth highlighting as a plausible contributing factor. Since 2008, the Nuffield Business and Economics course has been adopted by Edexcel, who took over the writing and planning of the new A-level Economics & Business Studies. Similarly, the GCSE course was superseded by the Edexcel GCSE in Business which has a Year 11 option entitled 'Introduction to economic understanding'. These courses incorporated the Nuffield course content and retained the ethos of the original 1994 project. Since 2009, the resources developed in the Nuffield Project have been made available on the EBEA website (EBEA, 2015).

Taking the UK political context into account, the Labour Party came to power in 1997, resounding with Prime Minister Tony Blair's mantra of "education, education, education". This mantra led to a set of documents and education policies with which to place education at the forefront of the government policy. For example, the 'Innovation Nation' report (Department of Innovation, Universities and Skills, 2008) argued that the UK needs to become more innovative in order to prosper and be internationally competitive: "…education is key to this transformation; indeed, it claims children need

to develop a more enterprising and innovative mindset" (2008, pg. 6). As such, the notion of 'innovation' has become increasingly important to educational policy. 'Innovation' in relation to curriculum is used in three interrelated ways: innovation as a curriculum design process by education leaders, innovation as professional classroom practice by teachers and innovation as a mindset and skill to be adopted by students. Additionally, The Gilbert Review (2006), set out a vision of teaching and learning in 2020 in the UK. It highlighted the importance of socially constructing knowledge, knowing how to evaluate information critically, being creative, inventive, enterprising and entrepreneurial.

Critical teaching (Shor, 1992) requires teachers to reduce the pace of the classroom and support children to take a more closer, detailed and analytical view of the problems, concerns and ideas that they encountered, in order to "extraordinarily re-experience the ordinary". One example of such applied approach in Economics informed real-life decision-making such as choosing a mortgage is 'Mathematics for Economics: enhancing Teaching and Learning' (METAL) developed by the Business School at Nottingham Trent University, in collaboration with University of Portsmouth and Brunel University (NTU, 2007). The METAL Project developed online resources for students and lecturers, including an online question bank, interactive video units, teaching and learning guides, and case studies. Furthermore, Lancaster University introduced a personal response system (PRS) to lectures on a Microeconomic Principles module (Elliot, 2002). The system was used during each lecture to pose a set of multiple-choice questions to students. The questions tested students' understanding of content, their recall of material covered previously and were also used to stimulate interest in other related economics topics. This system enabled students to shape the module design during its delivery (Elliot, 2002). Another example of a curriculum innovation to facilitate the understanding of economic concepts is provided by the Aberystwyth University (Economics Network, 2010). Important 'threshold concepts' were embedded into a first-year undergraduate Economics module by integrating online exercises into learning activities. The result was "a significant increase in the use and quality of applied economic analysis and a more consistent use of the economic toolset" by all students, particularly, non-specialists (ibid).

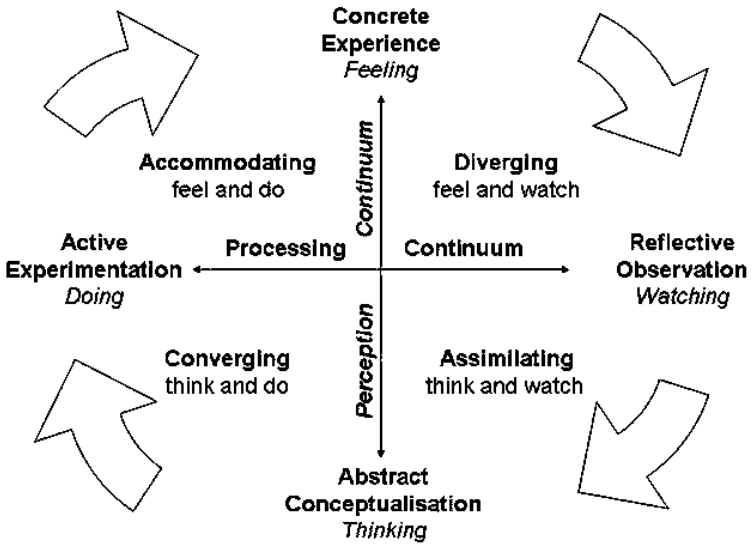
Furthermore, students were allowed to shape the curriculum content on their economics course through SMIRK (Simple Media-Integrating Resource Creator). SMIRK was introduced by the University of Hertfordshire to enable the creation of multimedia presentations to aid the teaching of undergraduate level Microeconomics in an Introduction to Microeconomics module with over 800 registered students (Kraithman and Bennett, 2005). SMIRK made online multimedia streaming presentations available each week with the capability of being saved remotely and replayed at the convenience of each student. Additionally, the pre-existing two-hour lecture slots were replaced by workshops and group tutorials.

Despite the innovative, interesting and intriguing nature of these examples of curriculum innovations in economics, they did not however provide the long-term paradigm shift that the economics discipline required, particularly from the vantage points of students, teachers and industry.

3.12 Experiential learning

Kirschner et al. (2006) find that the trend towards inquiry based instructional methodologies has resulted in a departure from teaching a discipline as a 'body of knowledge' towards learning a discipline through experiencing the processes of the discipline. Dewey (1910) first popularised the concept of 'Experiential Education' which focuses on problem solving and critical thinking rather than memorisation and rote learning. Kolb and Fry (1975) also noted that concrete learning experiences are critical to meaningful learning and that learning takes place as a result of being personally involved in this pedagogical approach. Kolb (1984) suggests that there are four stages in learning, which follow one another cyclically. Concrete Experience is followed by Reflection on that experience on a personal basis. This may then be followed by the derivation of general rules describing the experience, or the application of known theories to it (Abstract Conceptualisation), and hence to the construction of ways of modifying the next occurrence of the experience (Active Experimentation), leading in turn to the next Concrete Experience. The working of this learning cycle is highly fluid as the actual process varies depending on the given topic, individual, social conditions and environmental factors and is shown in figure 5.

Fig. 5: A simplified version of Kolb's Learning Cycle (Kolb, 1984)



Appendix 2 shows how each of the four stages of the Kolb learning cycle relates to different activities that may be used by teachers in the classroom.

3.13 Constructivism and PBL

Constructivism can be viewed as an educational philosophy that encourages individuals to make sense of the world around them by constructing knowledge representations of these learning experiences through integrated mental models (Jonassen et al., 2004). Such an approach empowers learning to be self-regulatory, authentic, intentional and contextual. Constructivism encourages learners to think in somewhat creative ways and apply a wider range of competencies. Constructivist approaches are socially co-constructed (for instance see Vygotsky, 1997) in contrast to traditional models of learning where learners are viewed as somewhat passive recipients of knowledge (for instance see Hirsch, 1987). In this altered educational conceptualisation, educators assume the mantle of being knowledge facilitators who have to go beyond the teaching of content to making learning more meaningful. One such pedagogical methodology, modelled on a constructivist philosophy in order to remain 'student-centred' is problem-based learning (PBL).

The first modern and institutionalised use of Problem Based Learning (PBL) as a teaching method was in 1958, in medical teaching at McMaster University, Canada. It has been widely implemented in medical and nursing education and is now gaining popularity in other contexts (Barrows and Kelson 1995; Barrows 2000; Torp and Sage 2002) and subjects (Hmelo et al. 1995; Hmelo-Silver 2002; Torp and Sage 2002). PBL research literature is still dominated by medical-based applications despite its application to a variety of disciplines. Authors (such as Barrows, 1986; Van den Bossche et al., 2000) agree that PBL may be characterised as follows. Firstly, the learning process is student centred: the students construct actively and cooperatively their knowledge base, on the basis of learning goals that they formulate themselves. Therefore, the learning in a PBL environment is defined as self-directed. Secondly, learning occurs in small groups: collaborative learning via shared information and knowledge is the main activity. Thirdly, the teacher or tutor facilitates the learning process: the tutor is not the 'fountain of knowledge' but stimulates group discussions and monitors the group processes through guidance. Lastly, the problem tasks are the starting point for learning: students address authentic problems that build upon prior knowledge alongside problem-solving skills to achieve a solution. It is important to make a distinction between problem-based learning and project based learning as they embody quite distinctive characteristics but are often and wrongly used interchangeably. Based on Savin-Baden (2003) these features can be summarised in figure 6.

Fig. 6: A simplified comparison of problem-based learning and project-based learning (based on Savin-Baden, 2003)

Project-based Learning	**Problem-Based Learning**
Predominantly task orientated with activity often set by tutor	Problem is usually provided by a tutor but what and how they learn defined by students
Tutor supervises	Tutor facilitates
Students are required to produce a solution or strategy to solve the problem	Solving the problem may be part of the process but the focus is on problem-management, not on a clear and bounded solution
May include supporting lectures which equip students to undertake activity, otherwise students expected to draw upon knowledge from previous lectures	Lectures not usually used on the basis that students are expected to define the required knowledge needed to solve the problem

As shown in the above table, project-based learning is based around a task which is usually set by a supervising tutor. This supervisory task is usually performed by the tutor in conjunction with lectures in order to allow students to learn the required material to complete the project. However, problem-based learning is distinct and separate to project-based learning in that the tutor sets a problem and it is up to the students to work in teams, prioritise what to learn and solve the given problem which may not be encompassed within a bounded solution. The tutor has a task of facilitating students by asking questions, eliciting reflections and providing feedback in order to hopefully guide students towards a possible solution, if any, to the set problem.

3.14 The use of case studies

Most educational research has shown case studies to be useful pedagogical tools, particularly if they are contextualised. Grant (1997) outlines the benefits of using case studies as an interactive learning strategy, shifting the emphasis from teacher-centred to more student-centred activities. Raju and Sanker (1999) demonstrate the importance

of using case studies in engineering education to expose students to real-world issues with which they may face in the work place. Case studies have also been linked with increased student motivation and overall interest in a subject (Mustoe and Croft, 1999).

Gibbons et al (1994) argue that knowledge is produced in two modes. 'Mode 1' or formal knowledge is a one step or traditional transfer of knowledge from theory to practice. 'Mode 2' or tacit knowledge can be described as a 'multi-step' transfer of ideas between pure and applied thinking. The development of formal knowledge relies more on traditional teaching methods such as lectures and problem sets, whereas tacit knowledge incorporates more applied activities such as case studies, field trips and work placements. Combining the use of mode 1 and mode 2 methods are important in providing an overall 'knowledge transfer' and therefore allows a more effective form of teaching and learning to take place.

3.15 Student engagement

The term 'student engagement' has developed over time through the efforts of several theorists and educational researchers. As such, student engagement does not have a clear and singular definition or an obvious beginning, but rather has slowly evolved. From studies of student involvement (Astin, 1968), quality of effort (Pace, 1984) and interaction and integration (Tinto, 1993), student engagement is now used to describe the effort, interest, and time that students invest in meaningful educational experiences. Kuh describes student engagement as

> "…the time and energy that students devote to educationally sound activities inside and outside of the classroom, and the policies and practices that institutions use to induce students to take part in these activities" (Kuh, 2003, p. 25)

Kuh goes further to assert that students that are actively engaged in educational activities, through continuous practice and feedback, are more likely to become adept at the given subject. Moreover, the very act of being engaged also adds to the foundation of skills and dispositions essential for life-long learning and personal development (Shulman, 2002). According to Kuh et al. (2005), student engagement has two key components that contribute to student success: the amount of time and effort

students put forth in studies, activities, and experiences that have success-based outcomes, and the ways in which institutions provide learning opportunities and services that encourage students to participate and benefit from their participation. In one recent study, using data from six South Dakota public colleges and universities, the National Center for Higher Education Management Systems (NCHEMS) found some positive links between student engagement and ACT CAAP scores, though statistically significant, the associations were quite modest (Ewell, 2002). One report describes student engagement as the student's relationship with the school community including the people, structures, curriculum, content, pedagogy, and opportunities (Yazzie-Mintz, 2007). Student engagement focuses on the interaction between students and their learning environment, where students are responsible for their own level of involvement, but the institution and staff are responsible for fostering an environment that stimulates and encourages student involvement (Chalmers, 2007).

Overall, a large and growing body of research concludes that student engagement is associated with learning, growth, personal development (Astin, 1991; Pace, 1984), and student persistence (Kuh, et al., 2005; Tinto, 1993) or more concisely: overall student success.

Chapter 4

4.0 Methodology

My thesis draws on philosophies and ideas in critical realism as my conceptual framework in order to better understand how the teaching of economics can be improved. I draw on critical realism as my underlying ontological and epistemological perspective and in particular, an understanding of the world that is real but which may be experienced and interpreted differently by different observers in order to make meaning. Critical realism accepts a positivist ontology which is a view that the world is real and testable through experience so social sciences such as economics and 'hard' sciences such as physics can therefore share the same methodology for the purposes of data collection, such as questionnaires and interviews for instance.

Critical realism is useful in providing greater understanding of, and in making sense of, the world when it comes to reasoning in educational research. Sayer (2000b) asserts that critical realism is also open to a wide assortment of research methods and that the methods actual methods adopted depend on the research questions and research area. According to Scott (2007) and Lund (2005), critical realism is open to both quantitative and qualitative methods and also, as asserted by Downward and Mearman (2007), mixed methods.

4.1 Research questions, methods and strategy

Research questions are what guides the research activities and Robson (2011) emphasises that the research questions constitute the most important element of any research design:

> "A mantra of this book, here restated once more, is that research questions can provide the key to planning and carrying out a successful research project. Coming up with a small set of questions (or perhaps just a single question) to which the project will seek answers is a challenging exercise. It forces you to think." (p. 58, 2011)

Robson argues that research questions are ultimately guided by the purpose of enquiry, which may be exploratory ("to find out what is happening, particularly in little-understood situations"), descriptive ("to portray an accurate profile of persons, events or situations") or explanatory ("seeks an explanation of a situation or problem") (2002, p. 59). Following the advice of Creswell (2007) my research questions went through a number of revisions during my research and writing process which involved discussions with my peers, supervisor and internal reader, before I ultimately settled on the following:

'What is the impact of the CORE project on the teaching of undergraduate level economics in the UK and Singapore?'

My thesis is a case study of the CORE project and aims to investigate the impact of the CORE project on teaching of undergraduate level economics in the UK and Singapore. In order to answer my research questions as fully and effectively as possible, I have constructed two sub-questions as follows:

1.1) What are the key goals and features of the CORE project and how does this contrast with a Singapore-based American undergraduate economics curriculum?

1.2) What, if any, are the possible implications of the CORE project on teaching of undergraduate level economics at a Singapore-based American university?

4.2 Case studies

Case studies involve an investigation which focus on a *case*, such as a person group, organisation or setting, taking its context into account (Robson, 2002). Central to the case study methodology are the boundaries or parameters that define the case (Hitchcock and Hughes, 1995; Miles and Huberman, 1994). However, there remains a debate as to whether a 'case study' is a de facto 'unit' of study (Stake, 1995; Merriam, 1988) or a 'methodology' (Yin, 2009). Creswell (2007) views the case study as one which takes a qualitative approach to explore a bounded system, the 'case', via in-depth data collection involving multiple sources of information over a period of time.

From my reading of the literature around case studies and the ideas in Enda Donlon's PhD thesis at the Institute of Education (Donlon, 2013) my decision to adopt a case study approach in my methodology to investigate the CORE project as a *case* is supported by the findings of authors such as Yin (2009) who proposes that case studies are particularly suited to answering 'how' and 'why' questions especially in situations that examine contemporary events where the relevant behaviours cannot be manipulated by the researcher. Additionally, Bell (2005) suggests that a case study allows the researcher to concentrate on a specific 'instance or situation' in order to attempt to identify the various interactive processes at work. Furthermore, Cohen et al. (2007) purport that case studies can establish cause and effect and have the advantage that they observe these effects in real contexts (2007).

Case studies give rise to multiple data collection methods, which may be used to collect quantitative or qualitative data, although the latter is more common. Case studies are therefore a versatile and valuable research tool. Case studies as a data collection method, can be classified in a variety of ways (as described in Yin, 2009; Merriam, 2009 and Robson, 2002). However, Stake (1995) describes the 'Intrinsic Case Study', which is a study undertaken in order to understand a particular case in depth when the case itself, in my case the CORE project, is of primary rather than secondary interest. However, as guided by my research questions, my case study approach also contains elements of evaluation, the use of which is strongly linked to case study (see for instance Merriam, 1988; Greene, 1998 and Robson, 2000). Furthermore, according to Valsiner (1986, p. 11), case studies are a 'major strategy in the advancement of human beings'. However, case studies have also been criticised as being a 'soft option' or limited in its value (Campbell and Stanley, 1963) and Bromley (1986) suggests that as a research strategy, case studies are susceptible to being carried out in an incompetent or biased manner. Robson (2002) asserts that criticisms such as these can be attributed to any research strategy but the key issue is whether it is possible to devise checks to demonstrate the trustworthiness of the findings of a case study. In my thesis I attempt to provide an investigation of a new undergraduate level economics curriculum and therefore my *case* is the CORE project.

4.3 Semi-structured interviews

In order to effectively investigate the impact of the CORE project on the teaching of undergraduate level economics, I employed the research tools of semi-structured interviews and email surveys combined with the collection of curriculum artefacts. Interviews are usually categorised in several different ways, but the classification of informal interviews, unstructured interviews, semi-structured interviews and structured interviews is widely accepted (Robson, 2002, pp. 89-90). According to Yin (2009), interviews are one of the most important sources of case study information. Interviews are particularly suited to my chosen constructivist framework. Stake takes the view that "qualitative interviewers take pride in discovering and portraying the multiple views of the case [and] the interview is the main road to multiple realities" (Stake, 1995, p. 64) while Cohen et al. (2007) propose that the use of the interviews in research represents a move towards regarding knowledge as generated between humans as opposed to being externally and separately generated. Interviews are particularly helpful in allowing the interviewer to understand the interviewees' viewpoint (Rubin and Rubin, 2005).

In order to elicit information on viewpoints, semi-structured interviews are suited to my purposes as they allow for a degree of flexibility. Flexibility is important in letting an interview flow more naturally and allows me to take advantage of any unforeseen but nonetheless worthwhile diversions from the main question. In my semi-structured interviews, I had a set of prepared questions to act as a guide and ensure that certain key questions are asked of every lecturer interviewed. An added advantage of the semi-structured format is that it allowed and encouraged me to interject with additional questions as appropriate. Importantly, semi-structured interviews allowed for the flow of the interviews to be primarily driven by the participants. Participants were asked to talk openly and freely about whatever they view as important and were thus encouraged to elaborate and even take the conversation in an unanticipated direction (Robson, 2002). According to Denscombe (2003, p167), they allow "the interviewee to develop ideas and speak more widely on the issues raised".

Due to my previous successes in using semi-structured interviews to develop illustrative case studies on student perceptions of a PBL environment at a HE institute in the Middle East for my MOE2 paper (Patel, 2013) the same approach was used to conduct my IFS investigation on teacher perceptions of the PBL environment in the same

context (Patel, 2014). The goal of these case studies was to provide insights into the academic experiences of these individuals by asking them to discuss their perceptions of the PBL environment in relation to their classroom experiences at the HE Institution. More specifically to this present study, my research sub-questions are research question 1.1: 'What are the key goals and features of the CORE project and how does this contrast with a Singapore-based American undergraduate economics curriculum?' and research question 1.2: 'What, if any, are the possible implications of the CORE project on the teaching of undergraduate level economics at a Singapore-based American university?'

In order to answer these research questions effectively, I sampled the views and opinions of lecturers in the UK and Singapore using a semi-structured group interview. Guiding me in these semi-structured interviews with lecturers, was a questioning of the ontology and epistemology of economic theories and concepts, the andragogy and rationale behind the CORE curriculum, the decision-making criteria used for matters such as curriculum structure, content, topic selection and rejection. Logistical matters such as the organisation, setup and delivery were also covered. I also asked questions that aimed to elicit and critically evaluate the extent to which the CORE curriculum may be implemented in the context of Singapore and any potential challenges that may be faced. During and immediately after the interview process was a sharing session of artefacts related to the CORE curriculum in order to allow for effective analysis. In order to make comparisons with the Singapore context and directly address research question 1.2: 'What, if any, are the possible implications of the CORE project on the teaching of undergraduate level economics at a Singapore-based American university?' I conducted semi-structured group interviews with Singapore based Economics lecturer and curriculum leader working with a non-CORE Economics curriculum to elicit responses and make comparisons to the CORE project in all of the above areas of questioning.

4.4 Targeted email surveys

Additionally and in order to gain further insights into the current state of undergraduate level economics in the UK and to elicit comments, ideas and suggestions regarding the current undergraduate economics curriculum as well as possible implications of the CORE project, I conducted targeted email surveys to a group of personally selected

academics involved in the teaching of current mainstream undergraduate economics courses in the UK. Selections were made based on my interactions with these lecturers who I knew were teaching undergraduate level economics during my own experiences as a post-graduate economics student at University of Bristol. I conducted email interviews, consisting of four rather simplistic questions, to help stimulate thoughts and encourage participants to respond with relative ease. Email interviews also offer the advantages of being low cost, require limited time commitment, involve no additional transcription as they are sent and received in type-face, and offer the respondent time for reflection and modification as opposed to a real-time face to face interviews. Additionally, email interviews may be regarded as more impersonal than face-to-face interviews and this allows for an overcoming of interviewer effects and perhaps a greater sense of openness in matters being divulged and discussed such as Robson (2002).

However, the drawbacks to email interviews must also be taken into account. Despite my strategy of limiting my number of questions to just four to increase participation rates and encourage responses, I encountered a rather low response rate, of around 50% when contacting possible respondents for their opinions via email. The lack of responses made it difficult to attain a representative sample of academics in economics that are currently involved in teaching undergraduate level economics, which happens to be quite a distinct group of individuals in the first place. Also, emails offer a typed response with no regard to non-verbal cues such as body-language and gestures in particular, which may be linked to a lack of rapport. Thus, emotions and non-verbal cues are not best captured by email and may result in email interviews lacking in information of this type which may have been of use to me as an interviewer, regarding cues for further lines of questioning, elaboration of points or general mood or flow of the interview. Therefore, there was a reduced sense of flexibility regarding the flow of the interview, especially when compared to the semi-structured face-to-face interviews I had conducted.

Overall, the advantages of using email interviews were over and above the disadvantages of not using them as a data collection tool and the results of my email interviews proved valuable in my overall analysis to help answer my research questions.

4.5 Curriculum artefacts

I made use of curriculum artefacts as a means of comparing a non-CORE Economics curriculum to the CORE project in order to evidence and analyse specific aspects of the curriculum and its relation to the teaching of undergraduate level economics. For instance, Professor Kelly George contributed curriculum documents pertaining to the undergraduate Economics course at the Singapore-based American university for inclusion in my thesis. Yin (2009) proposes that documentary information may come in a variety of forms including written reports of events, administrative documents, internal records and diaries and are likely to be relevant to every case study topic. Bell (2005) further categorises documentary information into primary (those which came into existence during the time period of the research) and secondary sources which are interpretations of the primary documents. Bell (2005) also distinguishes between deliberate sources and inadvertent sources for documents. Deliberate sources are documents produced specifically for the preservation of information for the attention of future researchers such as autobiographies, diaries or documents intended for future publication. Inadvertent sources are used by the researcher for another purpose for which they were originally intended and include personal files, curriculum documents, course materials and examination papers. Professor Kelly George had therefore kindly provided me with an inadvertent source of documents for analysis and inclusion in my thesis.

Yin (2009) underlines the importance for the researcher of not simply using documentary evidence as it is a seemingly an 'easy' or 'accessible' option but instead the researcher should "sort or triage the materials (documents or numeric data) by their apparent centrality to your inquiry" (2009, p. 105). In its most basic sense, content analysis is the application of quantitative measures to qualitative data, with the units of measurement taking such forms as the frequency and variety of messages, or the number of times a certain phrase or speech pattern is used (Merriam, 2009). Whilst remaining fully aware that content analysis can be used in a far more extensive manner within a study (Cohen et al., 2007), although at its "simplest level", as outlined by Anderson and Arsenault, content analysis involves "counting concepts, words or occurrences in documents and reporting them in tabular form" (1998, p. 102). As per Robson (2002, p. 352), a simplified content analysis was employed in my research as a

supplementary method for triangulation purposes and was used to corroborate and validate evidence that arose from my primary source of data, my semi-structured group interviews and email surveys.

I carried out qualitative analyses of curriculum artefacts related to the CORE and non-CORE curriculum, in order to draw conclusions to help me answer my research questions. The advantages of analysing curriculum artefacts is that they are not intrusive (Robson, 2002), as they can be analysed privately and in my own space and time, which is independent of the participant. Further, curriculum materials may be available online or in printed form, or both, making them readily accessible. For instance, the CORE curriculum is available online at no cost to the user. Curriculum artefacts usually undergo revisions and proof-readings in their development, and are often collaboratively produced, and requiring approvals from a higher authority such as an academic dean or an independent body. This level of rigour and accountability in the production of curriculum artefacts may lead to at least a reduction, if not the removal, of errors in content or language and therefore make it a user-friendly and accurate source for data analysis. Additionally, biases that may stem from data collection methods such as interviews such as verbal misrepresentation are largely absent, although the possibility of written bias remains.

4.6 Thick description

The literature around case studies underlines the value of description in case study research. Merriam (2009, p. 43) argues that the defining characteristics of qualitative case studies include that they further the reader's understanding of the phenomenon under study and are descriptive in their approach such that the 'end-product' of a case study is a rich or 'thick' description of the case being studied. Creswell and Miller (2000, pp. 128-129) allude that thick description creates for the readers "the feeling that they have experienced, or could experience, the events being described in a study" to establish validity and credibility for qualitative studies.

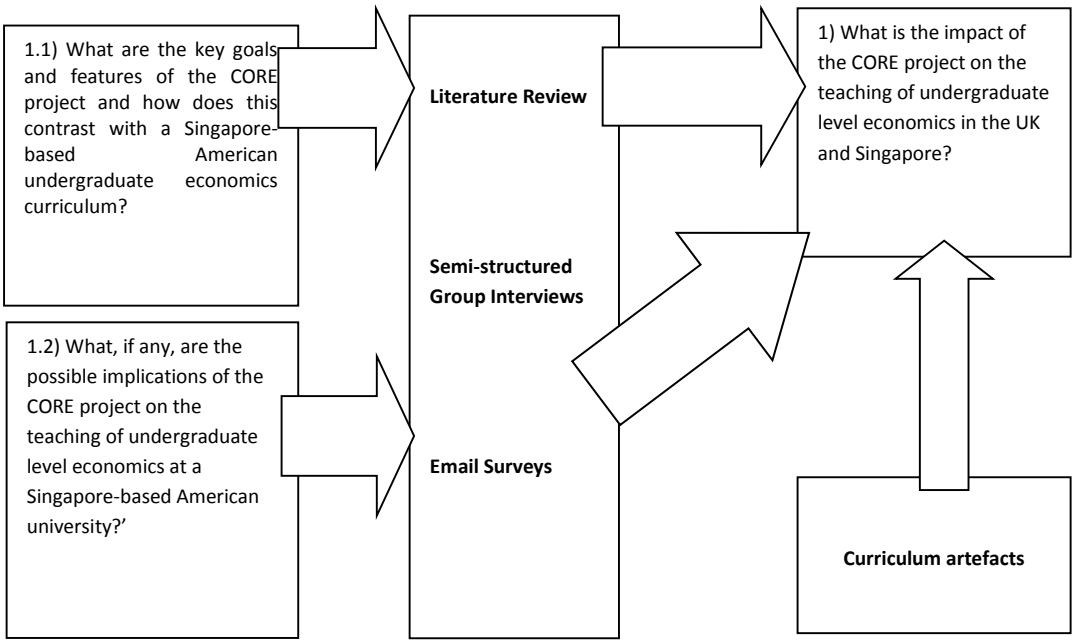
Furthermore, and particularly relevant to my thesis, is that thick description is not limited to words however and may make use of any form of data which leads to a

greater understanding of the context and participants of a study (Firestone, 1990). Therefore, I make use of images in the form of 'stills' or 'screenshots', which are essentially still images of a computer screen and is increasingly used in qualitative research, particularly in research with a technological focus (For instance, see Johri & Nair, 2011; Kim & Hannafin, 2009). I used full-colour screenshots to help provide the reader with a thick description of the CORE project by further illustrating the experiences and opinions of my interviewees and moreover, in an attempt to fully immerse the reader in my case study.

4.7 From research questions to research strategy

Overall, taking into account the above arguments, my use and analysis of CORE and non-CORE curriculum artefacts in combination with semi-structured interviews and email surveys with current economics lecturers allow me to answer my research questions much more effectively. Figure 7, diagrammatically outlines the link between my research questions and research strategy.

Fig. 7: The link between my research questions and research strategy



4.8 Data collection and sampling

My data collection period therefore spanned from June 2014 to December 2014. Once individuals' had consented to participate in my study, I arranged a meeting time and place to conduct the interviews. Locations were chosen to be convenient for the participant and thus took place in a private office or conference room at the participants' institution. The duration of these semi-structured group interviews were between 60 to 90 minutes each. I wrote limited and brief notes during each interview as I took audio recordings of the interviews, with the participants' prior permission, for subsequent transcription and analysis. Moreover, the nature of this study is exploratory. In this sense, some preliminary analysis was conducted after each interview in order to provide me with a greater feel for my collected data. The interview process was thus continually reflected on and therefore underwent continuous refinement. I also collected from lecturers', curriculum artefacts related to their course, for subsequent analysis and inclusion in my thesis, either on the day of the interview or after the interviews, depending on their availability.

In addition to my semi-structured group interviews with academics, I also conducted email surveys with lecturers in the UK to further my own understanding of curriculum change in economics and inform my thesis to gain alternative perspectives and views of other lecturers' of undergraduate economics. I questioned a sample of four economics lecturers on four areas; specifically; on matters surrounding the general state of undergraduate economics in the UK, their views on pluralism, their perspectives on the CORE project and also their ideas on improving the economics curriculum.

For the purposes of collecting the data to answer my research questions, I made use of purposive sampling. The use of purposive sampling in my thesis involved making a personal judgement as to which participants to include based on typicality or interest (Robson, 2002). Therefore, I built up a sample of participants that satisfied my specific needs in my thesis, specifically, in allowing me to collect views, opinions, ideas, suggestions regarding the CORE project, mainstream curriculum and then using this information to evaluate its impact on the teaching of undergraduate level economics. I gained written and verbal permission to include all of the UK based lecturers that are participating as named participants in my study, however the two Singapore based

lecturers wished to exercise their right to anonymity throughout my study which I fully respect.

In person, I interviewed a targeted sample of four lecturers, namely: Professor Wendy Carlin and Dr Jacek Brant (UK based) and Professor A and Professor B (Singapore based). Through targeted emails, I surveyed a sample of four UK based lecturers as follows: Professor Engelbert Stockhammer, Professor Jon Temple, Professor Edmund Cannon and Professor Ian Preston. This sample of UK based lecturers for inclusion in my thesis were personally chosen by myself, as they all had a personal connection with me. One personal connection I shared with lecturers that had once taught me as follows: undergraduate economics degree course (Professor Wendy Carlin and Professor Ian Preston), post graduate economics degree course (Professor Jon Temple and Professor Edmund Cannon), post graduate diploma in education and doctor in education (Dr Jacek Brant). Another personal connection I shared was with the two colleagues in Singapore, Professor A and Professor B, with whom I will teach undergraduate level economics as of July 2015. Professor Engelbert Stockhammer was the only member of my sample that I had not shared a personal connection with, but one I became aware of when reading his contributions on the CORE press release (Carlin, 2013).

For my semi-structured group interviews, I restricted the sample size to four lecturers as it meant that I could structure my group interviews into two groups of two lecturers. I believe that this sample size allowed for a satisfactory level of data to be collected, transcribed and analysed appropriately for a relatively small-scale study of this type, bearing in my mind the scope and magnitude of my thesis, whilst allowing the semi-structured group interviews to flow interactively in a framework that is logistically manageable regarding space and time constraints. However, my personal connections with each member of my purposive sample may be deemed both beneficial and potentially problematic. The benefits of knowing my the participants in my purposive sample include the benefits of an already established rapport such as a more natural interview exchange, a greater sense of openness and reduced chances of non-response. On the other hand, the amount of data that can collected may be restricted, unrepresentative or even biased to an extent. I address each of these potential sources of bias in the following section. It is important to note that because my thesis is an investigation into the impact of the CORE project on the teaching of undergraduate level

economics in the UK and Singapore, I decided against the inclusion of students in my sample. As a 'value-aware' researcher (Guba and Lincoln, 1994), I made the decision to gather data only from experts in the field of teaching economics in order to collect and ascertain thoughts, views, beliefs, values, opinions and recommendations to better inform and further my own understanding of how to improve the teaching of economics at the undergraduate level. As an 'agent of change' in the Foucauldian sense (Gordon, 1980), my investigation allowed me to better understand the current state of economics through the collection of the views and beliefs of specialist, expert and 'value-aware' (Guba and Lincoln, 1994) lecturers as opposed to undergraduate students, whose understanding of the 'status quo' (Gordon, 1980) may be limited due to their limited experience with economics or lack of past study of economics. Therefore, an investigation of the views, beliefs, values, opinions and considerations of undergraduate students may be of limited value in a study which aims to improve the teaching of undergraduate level economics through consultations with experienced specialists related to the teaching of undergraduate economics as opposed to learners of undergraduate level economics. My thesis is therefore a survey solely composed of a sample of economics lecturers as opposed to economics students.

4.9 Potential sources of bias and possible remedies

Throughout my thesis, I have maintained a careful and rigorous approach that should act to mitigate against potential bias. It must be made explicit that I have a vested interest in favour of curriculum innovation in Economics and the CORE project in particular as it may affect my professional connections and impacts on my personal involvement in the subject. There is an 'agency issue' inherent to my study. Due to having a dual role as an educator of undergraduate economics and a researcher in the improvement of economic education, inter-role conflicts should be made transparent and open as they cannot be excluded (Moore, 2007).

Through my study of the CORE Project, I am advocating an improvement to the teaching of economics both as a researcher and economics lecturer. This tension is typically seen in studies of race and gender, and assumes the *a priori* view that the

current state of the world is not perfect and that a change is needed in order to improve a given situation. In positivist studies the researcher is usually neutral, whereas in this study, I take the stance that a change to the way we teach and learn economics is much needed and am of the premise and belief that economics, as it is currently taught to undergraduate students is not perfect and therefore needs changing. Indeed, Foucault's views between power and knowledge are relevant to my argument. Foucault outlines a form of covert power that works through people rather than only on them. Foucault (in Gordon, 1980) argues that belief systems gain momentum, hence power, as more people come to accept the particular views associated with that belief system as common knowledge. Associated with such belief systems are figures of authority, such as surgeons in a hospital and lecturers at a University. Moral codes of what is right or wrong are subsequently formed within such a belief system and therefore certain views, thoughts, or actions become unthinkable. These ideas, being considered undeniable "truths", come to define a particular way of seeing the world, and the particular way of life associated with such "truths" becomes normalised. Even if such a system may be 'working well' as 'status quo', it may well be one that is operating with inefficiencies or inequalities. My belief is that the teaching of economics at undergraduate level is in need of change and that although the 'status quo' may be satisfactory, it is not sufficient.

Through my thesis, I aim to bring about an improvement to economics education in Singapore by seeking meaning through views, opinions and thoughts of a deliberately selected sample of economics lecturers, as opposed to a random sample, that may in turn help me to become a better economics lecturer but further, help better prepare my students for life after their undergraduate studies by hopefully allowing them to make better sense of the world that is around them. My view is that, by taking a critical realist approach in their studies of economics, undergraduate economics students may come to realise that the world is observable and that reality is layered and structured through mechanisms such as for instance, legal systems or taxation systems, but individual agency as described by Foucault means that individuals have the power to change and modify these structures. Thus, I am choosing non-neutral samples as my research participants to identify ways to improve the teaching of economics. The size and choice of participants in my sample is an example of positivist-interpretivist tension and it is this very tension which is resolved by taking a critical realist view. I am seeking

meaning to answer my research questions through semi-structured interviews with a select sample of Economics lecturers which is not of a large size. Bearing in mind the nature of this study in sampling the views of economics lecturers, the relatively small sample size does not render the data as being unrepresentative of the overall economics teaching faculty. My research is rigorous and aims to seek better understanding of the teaching of economics by unpicking issues through interviews with only those academics directly involved in the teaching of undergraduate economics. Agency, according to Bhaskar,

> "…may be defined in the simplest way as embodied intentional causality or process, which issues in a state of affairs that, unless it was overdetermined (as in a firing squad), would not have occurred otherwise…" (2010, p. 76)

By virtue of carrying out this research for the purpose of my thesis, I am therefore directly involved in bringing about an improvement to the pedagogy of undergraduate economics through being an 'embodiment' of a process to bring about a positive change to how the subject is taught and learnt. In qualitative research, the main concern is with understanding how the personal values of a researcher may influence the conduct and conclusions of the study (Maxwell, 2005). This opens up the possibility of interviewer and respondent bias in my data collection, which I now address in turn.

Firstly, an interviewer may inadvertently portray verbal and non-verbal actions and cues that dictate the direction of the conversation or maybe prompt a certain answer from the participants (Hall and Hall, 1988). Although this bias cannot be avoided per se but only minimised through neutral body language and closely adhering to the interview items (Mitchell and Jolley, 2007). This may highlight the advantage of using a semi-structured interview over an unstructured interview, where there may be more opportunities for the interviewer to deviate from the main theme in order to gain deeper insights whilst retaining overall control of the direction of the interview (Drever, (1995). Contrastingly, respondent bias may stem from participants having insufficient incentive or comfort to reveal their true preferences, however this effect is reduced in my email interviews, as I had earlier argued in my methodology. The concept of validity may be problematic because of the researcher's involvement with the subject of study. Furthermore, interviewees may feel more comfortable and talk openly if familiar with

the researcher (Tierney, 1994). Therefore in my thesis, the group interviews took place at the respected interviewee venue in order to minimise power interactions.

Further, regarding the actual data collected in my interviews, it is important to note that the process of coding is highly subjective in general. Sipe and Ghiso (2004, p482–483), note that "all coding is a judgment call" since we bring "our subjectivities, our personalities, our predispositions, [and] our quirks" to the process. Thus, the same interview transcript may be coded in distinct and different ways and is therefore somewhat unique to the researcher who is involved in the coding process. Therefore, my categorisation of interview data and formulation of preliminary codes and final codes were created subjectively and hinged on my own interpretation of the themes discussed in the interviews. As such, given that my results and findings are based on my own subjective process of coding, they must in turn be treated with a sense of caution. It is both in the interest of this study and the credibility of the results to minimise and mitigate where possible all of the above types of biases and also any other biases that inadvertently arose during the research process.

4.10 Ethical considerations

Soltis (1989) highlights the need for the educational researcher to uphold the concerns and rights of not only the participants included in the study but also for the society that they are collectively part of. Indeed, Mauthner et al. (2002) underline the importance of protecting the rights of participants included in a research project which involves placing their contribution in the public domain. This concern for the rights and dignity for participants on the part of the educational researcher, has led to codes and procedures and indeed legal requirements, such as data protection acts, to govern research as a whole, of which educational research is an example.

Cohen et al. (2007) document the role of Research and Ethics Committees to oversee, monitor and approve research in universities and other institutions meet the ethical codes of not only professional bodies and associations but also the personal ethics of individual researchers. As an educational researcher, I have been bestowed with a special moral duty to respect the privacy and dignity of the teachers I research

(Bassey, 1999) particularly regarding the collection, storage and use of personal data as well as the dissemination of the results. I have presented and will disseminate my data both appropriately and carefully as it is made available to the learning community to inform practice at my institution. I have confirmed the descriptions of participants' contributions and points of view prior to the publication of my thesis.

As my investigation developed, I ensured that it remained visible and open to suggestions from others. I personally stored all my collected data safely within a secret password protected computer to ensure that participants' views and opinions were closely guarded and secured. Furthermore, I made the option to 'opt out' explicit to all participants prior to data collection and especially when I verbally explained the data collection procedure to all participants. Moreover, participants were made aware of their right withdraw at any moment and for any or no reason (BERA, 2004, paragraph 13). I also ensured that anonymity of participants is respected. The right to anonymity granted to each participant was clearly detailed in the consent letter and was also reinforced verbally in person to each participant prior to data collection without the need for any further justification. Furthermore, I insisted on the completion of an informed consent form from each participant prior to any data collection taking place (Appendix 4).

It ultimately remained my responsibility to ensure that any potential conflicts of interest were minimised throughout. As this study was based in the unique, ethnically diverse and multi-racial countries of the UK and Singapore, cultural and religious sensitivity was fully maintained at all times.

Chapter 5

5.0 Findings and analysis

Through semi-structured group interviews and collection of curriculum artefacts, I was guided by my research questions to research a small sample of economics lecturers' in the UK and Singapore from June to December 2014. Through analysis of my semi-structured group interviews (See Appendix 5 and 6), online curriculum artefacts pertaining to the CORE project (See Appendix 17) I aim to answer research question 1.1. More specifically, evidence from the CORE curriculum artefacts helped to identify the features of the CORE project and data from my semi-structured group interviews helped to identify the goals of the CORE project. In combination, the curriculum artefacts pertaining to the features of the CORE project and the semi-structured group interviews, pertaining to the goals of the CORE project aim to appropriately address research question 1.1.

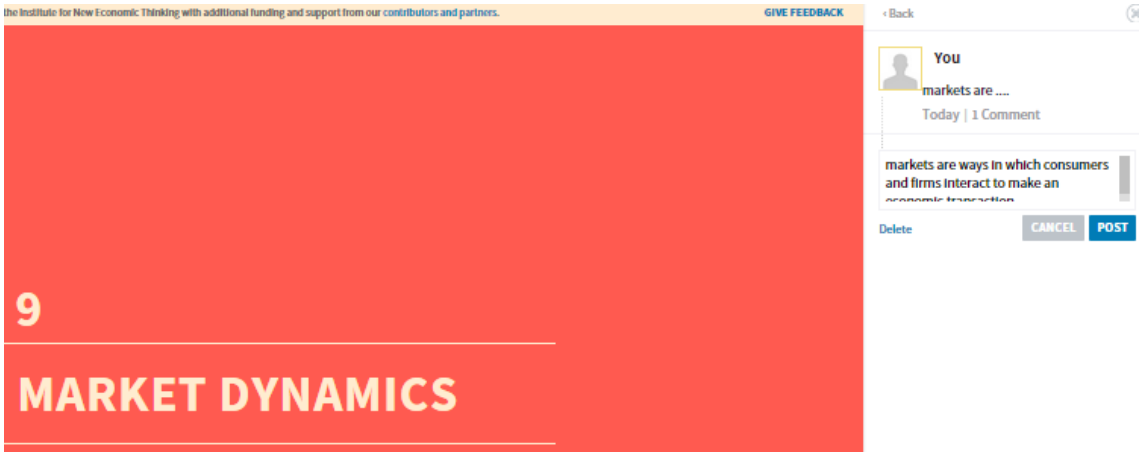
In this section, I make frequent references to screenshots (See Appendix 17) from the CORE curriculum website to analyse CORE curriculum artefacts with the purpose of identifying the key features of the CORE curriculum under specific headings. Information regarding the core project curriculum and the e-book for undergraduate economics students is available for public access on the website: www.core-econ.org.

5.1 Openness

The core e-book is free to use, open and available for any member of the public through a computer, smartphone or tablet device. This feature of openness allows any reader, whether student, lecturer or curious member of the public, to first register and then comment and possibly recommend changes or improvements to any given aspect of the curriculum. A registered user can click on the 'Give feedback' link and leave their suggestions regarding technical issues to do with the website or post comments or questions in relation to academic issues relating to the curriculum content. Wenger et al. (2002) state that groups of people who share concerns, problems, or passions about a topic may deepen their knowledge and expertise through constant interaction. Such learner centred collaboration may also give rise to 'community building' (Pallof and

Pratt, 2003). An example is shown from Chapter 9 which details a sample comment and displays the 'Give feedback' link. This degree of inclusivity supports Barnes (1976, p. 14) who builds on the notions of communication and critical scrutiny by adding that a 'meaningful' curriculum is one that must be 'enacted' by pupils and teachers coming together in a meaningful communication. Therefore by actively enacting students to take ownership and a degree of responsibility for their curriculum may point to the CORE curriculum as being an example of a meaningful curriculum.

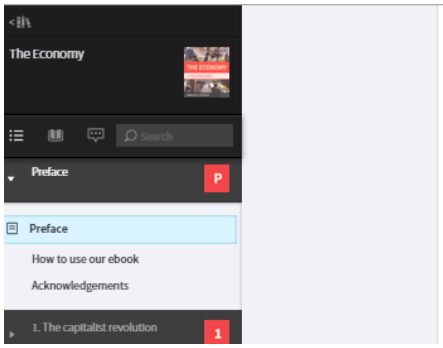
Fig. 8: A screenshot depicting the 'Feedback' link (Source: CORE Website, 14/01/15)



5.2 User friendly

The CORE e-book provides an overview of units in a given topic for the user to easily identify units by chapter and navigate accordingly using a traditional personal computer or a touchscreen tablet device. A search tool is available, which allows for direct search of key words and individual chapters can also be viewed as in the layout of a traditional hard copy book to suit the user's reading preferences. The e-book has also been designed to be aesthetically appealing as it incorporates colour images, graphs, charts and represents text through various fonts and sizes.

Fig. 9: A screenshot depicting the contents page of Unit 1: The Economy (Source: CORE Website, 14/01/15)



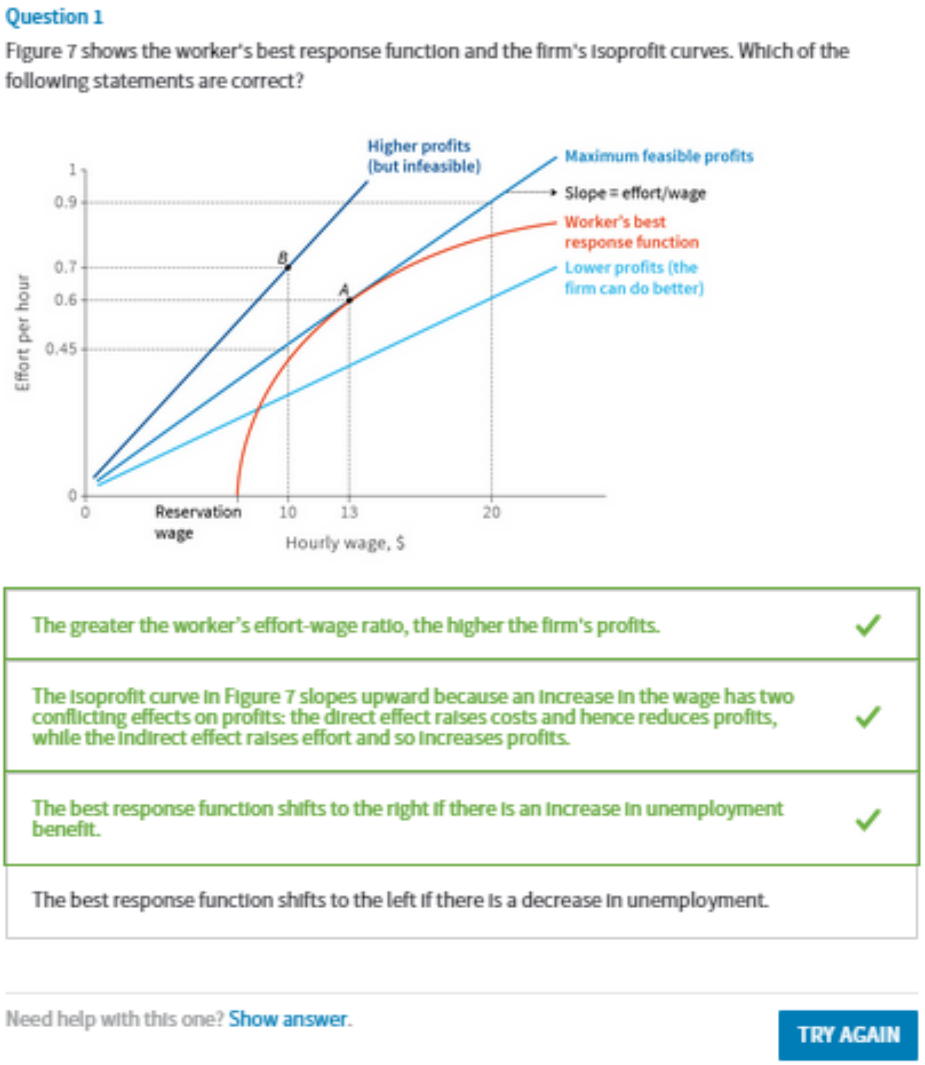
Unit	Title	Author(s)
1	The capitalist revolution	Sam Bowles (Santa Fe Institute), Wendy Carlin (University College London), Arjun Jayadev (University of Massachusetts, Boston)
2	Innovation and the transition from stagnation to rapid growth	Kevin O'Rourke (University of Oxford)
3	Scarcity, work and progress	Robin Naylor (University of Warwick), David Hope

5.3 Interactivity

Users can click on what CORE terms as 'liebnitz' buttons to access the more empirical parts of the course and complete self-assessment questions and view answers to short exercises. Even such short interactive exercises may give rise to better engaged students through instant feedback. Such continuous and instantaneous feedback my confer benefits to students' learning (Kuh, 2003). This type of interactivity encourages the reader to explore theoretical and mathematical content at their own pace and to the depth they are most comfortable with.

Fig. 10: A screenshot depicting a self-assessment exercise (with answers)

(Source: CORE Website, 14/01/15)



5.4 Historical contextualisation

Units of the CORE project typically begin with reference to historical figures in order to provide an applied historical context to the learning before introducing the relevant economic theory. This arrangement of application before theory is termed as the 'back to front' method (Brant, forthcoming) and may benefit student engagement through providing greater contextualisation. In the example below, the travels and observations made by Ib'n Battuta is used to highlight a growing income inequality between countries that may be commonplace in the world today, as documented by Piketty (2014), but

were not so prevalent in the 1300s. Additionally, the use of case studies, such as these historical examples, have also been linked with increased student motivation and overall interest in a subject (Mustoe and Croft, 1999).

Fig. 11: A screenshot depicting a historical example to illustrate an economics concept (Source: CORE Website, 14/01/15)

"Even in the smallest villages, rice, flour, butter, milk, beans and other vegetables, sugar and sweetmeats, dry and liquid, can be procured in abundance..."

At the time of Ib'n Battuta's travels India was not richer than the other parts of the world. But India was not much poorer, either. An observer at the time would have noticed that people, on average, were better off in Italy, China and England than in Japan or India. But the vast differences between the rich and the poor, which the traveller would have noted wherever he went, were much more striking than these differences across regions. Rich and poor would often have different titles: in some places they would be feudal lords and serfs, in others royalty and their subjects, slave owners and slaves, or merchants and the sailors who transported their goods. Then—as now—the prospects of a daughter or a son depended on where their parents

IB'N BATTUTA

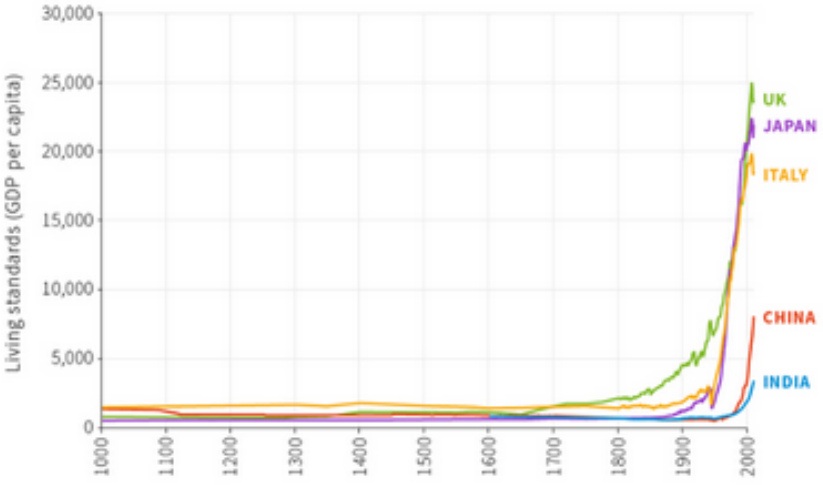
Ib'n Battuta (1304-1368) was a Moroccan traveller and merchant whose travels were published in his book *Rihla* (The Journey). His travels, lasting 30 years, took him across north and west Africa, eastern Europe, the Middle East, south and central Asia and China. He travelled more than 70,000 miles (113,000km); much further than the distance covered by his better-known contemporary, Marco Polo (1254-1324).

5.5 Contextualisation through visualisations

The use of graphs and charts to represent data help students to visualise trends and contextualise learning through every day examples which are likely to be familiar to students. The example below shows the analogy of a 'hockey stick' to represent widening income inequalities over time. Relating this to Kolb (1984) who suggests that there are four stages in learning, which follow one another cyclically. The use of this 'hockey stick' analogy to represent income inequality may be example of what Kolb terms as 'concrete experience', which is followed by 'reflection' on that experience on a personal basis. This may then be followed the application of known theories or concepts relating to income inequality such as Gini co-efficients or the Lorenz curve, through a process which Kolb terms as 'abstract conceptualisation'.

Fig. 12: A screenshot depicting the 'hockey stick' analogy to illustrate an economics concept

(Source: CORE Website, 14/01/15)



...

INTERACT >

History's hockey stick

The figure looks like a hockey stick, and our eyes are drawn to the kink. As can be seen from the figure, the kink is less abrupt in Britain, where slow growth began around 1650. In Japan the kink is around 1870, in China around 1980, and in India even more recently. What happened to make the long flat section of the hockey stick suddenly turn upwards? The answer is what we call the *capitalist revolution*, which combines changes in technology with the emergence of a new economic system.

5.6 Access to further reading and definitions

Perhaps underlining the importance of curricula incorporating a 'body of knowledge' (Hirsch, 1987), the CORE curriculum not only provides users with access to a database of definitions and online glossary, links are also made to further readings around the given topic in unit via 'information' buttons in the text. Flexibility is given to the reader to access further sources of information at their own will.

Fig. 13: A screenshot depicting the 'information' button

(Source: CORE Website, 14/01/15)

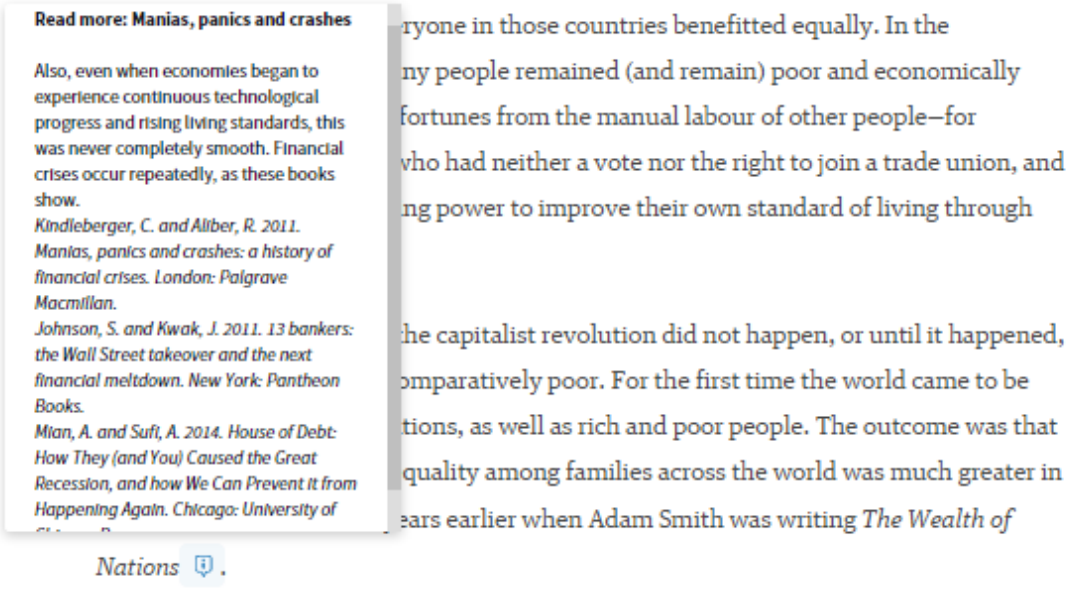
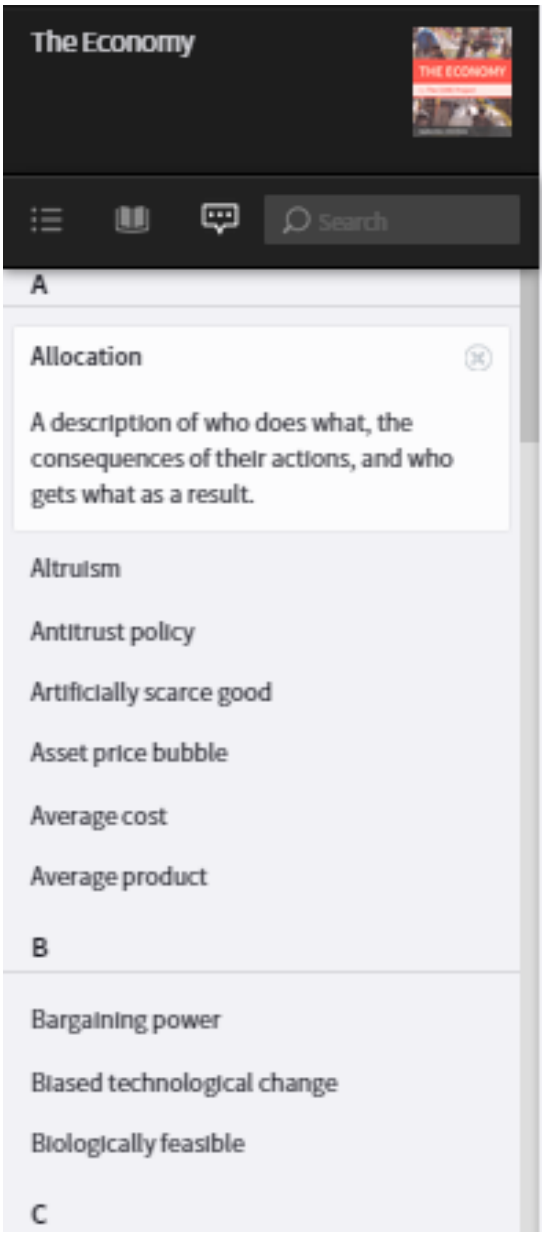


Fig. 14: A screenshot depicting the online glossary

(Source: CORE Website, 14/01/15)



5.7 Summary of my CORE curriculum artefacts

My above analysis of online CORE curriculum materials purport to show the CORE as being an interactive, user-friendly and open curriculum in the sense that it is open to a process of continuous update through comments and feedback from users, shown by Barnes (1976) as being 'meaningful' in regards to curriculum design and implementation. The CORE places an emphasis on the provision of evidence, at first, with which to allow for a contextualised learning experience in accordance with Kolb's (1984) learning cycle, whether in the form of historical context, case studies or empirical data. The evidence is then followed up by theories and concepts with which students may attempt make sense of the data. This is an example of the desired 'back to front' approach in economics, as suggested by Brant (forthcoming). The presence of self-assessment exercises and through allowing student access to an online glossary, suggested readings and calculus brings an element of experiential learning (Dewey, 1910) to the CORE curriculum.

5.8 What are the goals of the CORE curriculum?

In this section, I analyse my semi structured group interview with Professor Wendy Carlin (CORE project leader and economics lecturer at UCL) and Dr Jacek Brant (Head of department of curriculum, pedagogy and assessment at IoE and economics education lecturer) with the purpose of identifying the key goals of the CORE curriculum. The full transcript of this interview is provided in Appendix 5 and 6. I proceed by providing details of my coding process.

5.9 My coding process

My interview data was initially recorded live in digital audio format and stored as password-secured MP3 files. I subsequently played back the audio recording and typed out the transcripts (See Appendix 5 and 6). Tesch (1990) underlines that a researcher must read all of the data to achieve a holistic understanding of the data. Bearing this in mind, I proceeded to re-read my transcripts and replay my audio files whilst making

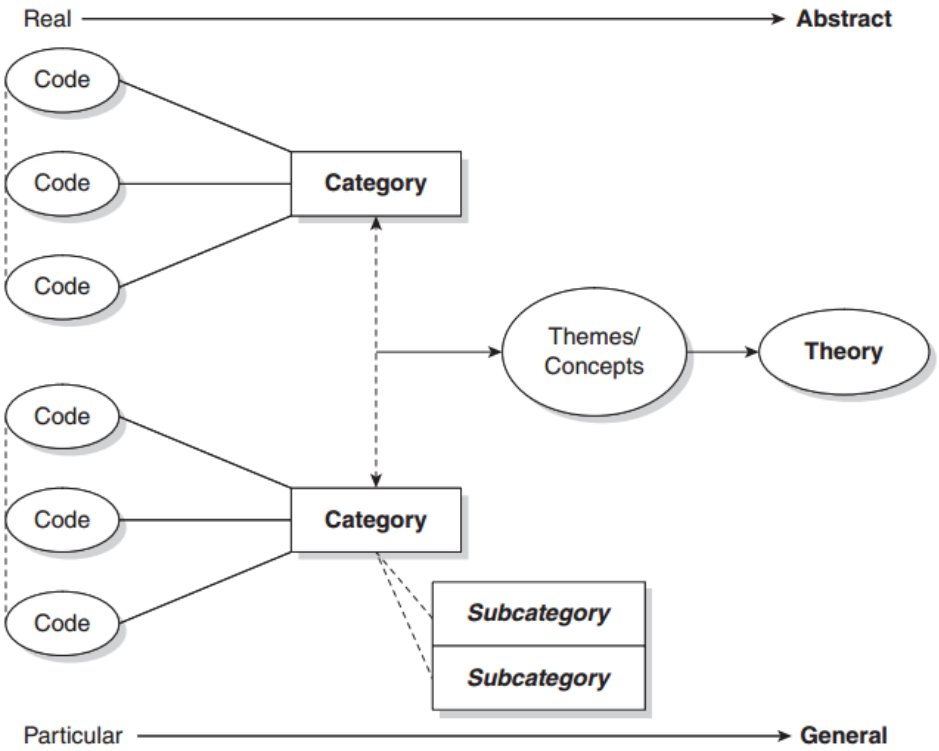
notes, and paying attention to emerging themes along with areas of agreement and disagreement amongst my interviewees.

Having repeated this process several times, I proceeded to transcribe interviews manually, in preference to using a CAQDAS (Computer Assisted Qualitative Data Analysis Software) package designed to assist with the analysis and interpretation of data. Advantages to employing such software packages for analysing qualitative data include organised storage and efficient data searches, the ability to write and store notes and to link these to codes, more efficient coding of data, encouragement towards a close examination of the data and a general enhancement of the overall rigor of the study (Merriam, 2009; Creswell, 2007). However, in remaining cautious about overemphasising the capabilities of CAQDAS packages, Hammersley and Atkinson (1995) suggest that CAQDAS packages cannot be seen as a substitute for the complex processes of reading and interpretation and that CAQDAS packages cannot provide 'automatic' answers in regards to representation and analysis. Bearing in mind these arguments for against the use of CAQDAS software and given that my data set was largely manageable to be analysed manually, I opted against the use of CAQDAS. In processing my qualitative data manually, I gained a greater 'feel' for my data which therefore allowed me to conduct my data analysis more meaningfully.

In this section, I provide details of the key goals of the CORE curriculum and the process I used in coding my interview transcripts. Before detailing my own coding process, it may be useful to firstly define the term 'code' and its place in quantitative research. As described by Saldana (2009, p3), a code in qualitative research is usually a word or phrase that "symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data". In my thesis, this data consists of interview transcripts. However, Sipe and Ghiso (2004, p482–483), note that "all coding is a judgment call" since we bring "our subjectivities, our personalities, our predispositions, [and] our quirks" to the process. Saldana (2009, p12) provides a very basic process of coding which usually follows an ideal and streamlined scheme illustrated in Figure 15. The process seems simplistic in theory, but can be quite problematic in practice as categorising collected data into 'neat' groups of theories and concepts involves a set and series of subjective arguments and, to borrow the term used by Sipe and Ghiso (2004), 'judgement calls'. Richards & Morse (2007, p157) clarify that

"categorizing is how we get 'up' from the diversity of data to the shapes of the data, the sorts of things represented. *Concepts* are how we get up to more general, higher-level, and more abstract constructs". Our ability to show how these themes and concepts systematically interrelate lead toward the development of theory (Corbin & Strauss, 2008, p. 55), contends that pre-established sociological theories can inform, if not drive, the initial coding process itself. Mason (2002) argues that the development of an original theory is not always a necessary outcome for qualitative inquiry, but acknowledge that pre-existing theories drive the entire research enterprise, whether the researcher is aware of them or not.

Fig. 15: A streamlined codes to theory model for qualitative inquiry (Saldana, 2009, p12)



Regarding the organisation of collected data and codes, Liamputtong & Ezzy (2005, p270–273) recommend formatting pages of data into three columns. The first and widest column contains the collected data, in my case the interview transcripts. The second column contains space for preliminary codes and general notes pertaining to collected data, while the third column lists the final codes. The 3-column layout provides

a visual and transitional link between the collected data and final codes. Applying the 3-column model (Liamputtong & Ezzy, 2005) to my interview transcripts, I constructed the tables shown in Appendices 7 and 8, which illustrates my coding process.

5.10 The results of my coding process

On the completion of my coding process (Appendix 7 and 8) as described in the previous section, I manually counted the frequency of occurrences of my final codes. I counted the number of times each final code was evident in Interview 1 and Interview 2, separately at first, and then combined this information to get an overall picture from my two interviews. Figure 16 displays this information as tables and Figure 17 displays this information as graphs to allow more of a visual picture of my collected data and guide me in my analysis section. Whilst tables are commonly used to represent everyday data in rows and columns, their use and appearance appears somewhat familiar to the reader.

However, I have also used 'radar charts' to represent the data I have collected through semi-structured interviews and email surveys which may seem less familiar as a means of data representation. I now provide a general note about radar charts and then comment on the implications of my use of 'radar charts' to represent the main themes discussed in my interviews and email surveys in Figure 17b and Figure 17d, respectively. A radar chart (also known as web chart, star chart, star plot, cobweb chart, irregular polygon, polar chart, or kiviat diagram) was first used in 1877 by Georg von Mayr, a German statistician (Friendly, 2009) and is a graphical method with which to display multivariate data in the form of a two-dimensional chart of three or more quantitative variables represented on axes starting from the same point (Tague, 2005, p. 437). Radar charts therefore offer a useful way to display multivariate observations with an arbitrary number of variables and each 'star' represents a single observation. Typically, radar charts are generated in a multi-plot format with many 'stars' on each axes where each star represents one observation (Chambers et al., 1983). The possibility for different radar charts to be superimposed onto each other on a common axes gives rise to a greater flexibility in data representation and makes radar charts suitable for me to represent the views and opinions of different participants' that are discussing

common ideas and themes in a semi-structured group interview or email survey setting. Radar charts are particularly useful in representing outliers or establishing areas of commonality in qualitative data and can therefore help me to make sense of my collected data. For the sake of clarity and in order to prevent a 'cluttering' of different 'stars', I have decided against representing all of the themes that emerged from my data collection in figures 17b and 17d. Inclusion of all of emerging themes in a radar chart would limit the effectiveness of this method of data representation for my purposes of discussion. I have therefore limited the number of items in each of my radar charts to the top five and six recurring themes in my semi-structured group interviews and email surveys respectively. I believe that a visual representation of the top five and six themes emerging from my data collection provides ample information for me to effectively analyse in an investigation of this magnitude and therefore answer my research questions sufficiently and confidently.

Fig. 16a: A table to show frequency of occurrences of final codes by Interview

Final Code	**Frequency of occurrences in Interview 1 with WC and JB**	**Frequency of occurrences in Interview 2 with PA and PB**	**Total frequency of occurrences**
Improving pedagogy	4	2	6
Deep learning	9	1	10
Surface learning	5	3	8
Contextualised learning	5	3	8
Student engagement	8	5	13
Collaboration	7	1	8
Review and feedback	2	3	5
Challenging students appropriately	5	1	6
Transferable Skills	2	1	3
Reducing mathematical focus	4	0	4
Increasing mathematical focus	0	1	1
Sense of pride in Economics	5	2	7
Exploratory	2	1	3
Diversity	3	1	4
English Medium	1	1	2
Open access	6	0	6
Resource constraints	2	1	3
Flexibility	4	1	5
Critical realism	3	0	3
Pluralism	2	1	3
Government Education Policy	1	0	1
Critiquing Economics Epistemology	1	0	1
Economics embedded as core units	0	2	2

Fig. 16b: A table to show frequency of occurrences of final codes by Email Survey

Final Code	Frequency of occurrences in Email Survey 1 with EC	Frequency of occurrences in Email Survey 2 with JT	Frequency of occurrences in Email Survey 3 with ES	Frequency of occurrences in Email Survey 4 with IP	Total frequency of occurrences
Deep learning	1	1	1	4	7
Surface learning	2	0	0	0	2
Contextualised learning	0	1	1	0	2
Challenging students appropriately	1	2	1	2	6
Reducing mathematical focus	0	0	0	0	0
Increasing Mathematical focus	3	0	1	3	7
Increasing links to philosophical roots	1	1	1	1	4
Increasing links to history	2	1	2	1	5
Increasing links to pluralist schools of economics	1	1	3	0	5
Increasing links to Politics	1	1	0	1	3
Increasing links to Psychology	1	0	0	0	1
Facts and logic	1	0	0	0	1
Evolutionary change	1	1	1	0	3
Towards a new paradigm	1	1	1	0	3
Theory and application together	0	1	1	1	3
Critical realism	1	2	0	1	4
Critiquing Economics Epistemology	2	2	1	0	5

Fig. 17a: A graph to show frequency of occurrences of final codes by interview

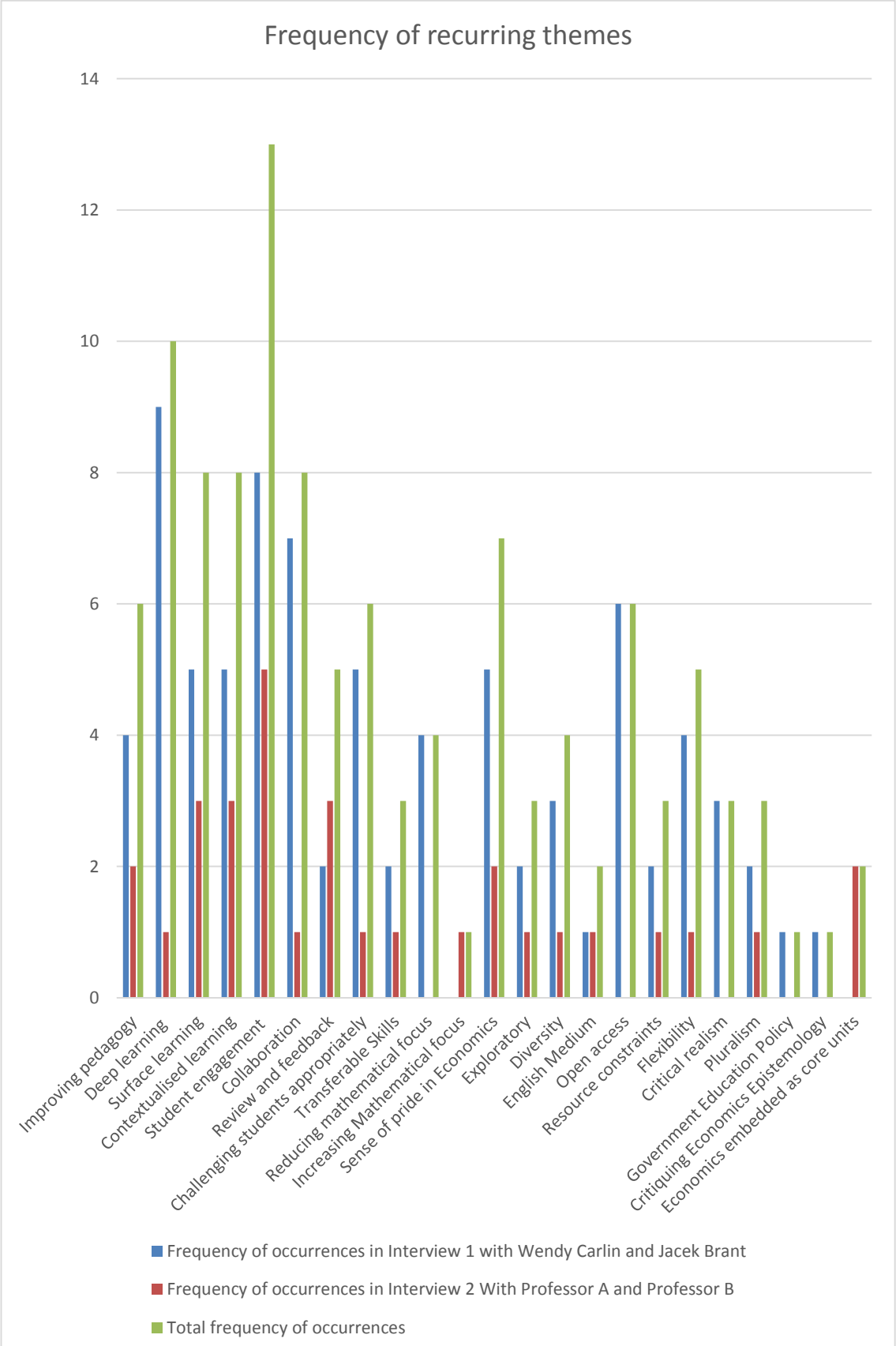


Fig. 17b: A radar chart to show the degree of overlap by frequency of occurrences in the top 5 recurring themes in my semi-structured group interview 1 and 2

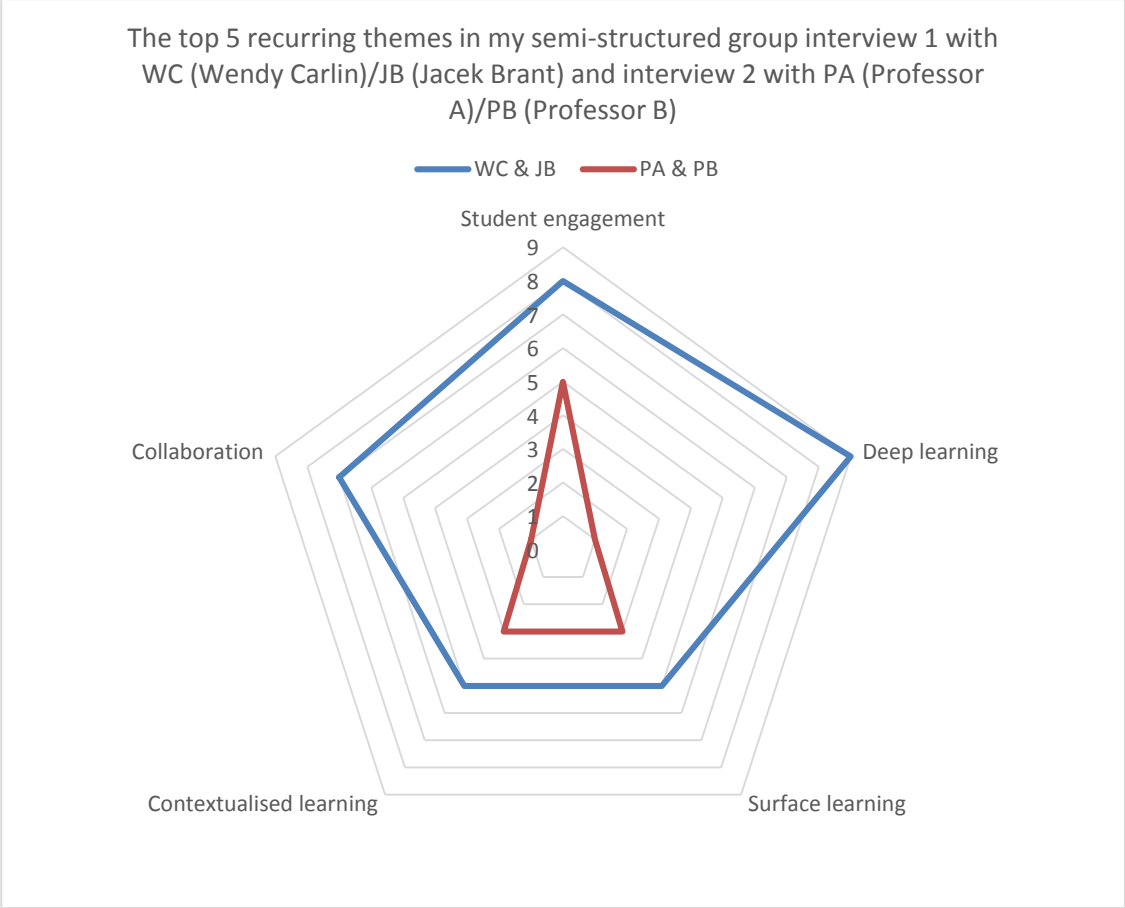


Fig. 17c: A graph to show frequency of occurrences of final codes by email survey

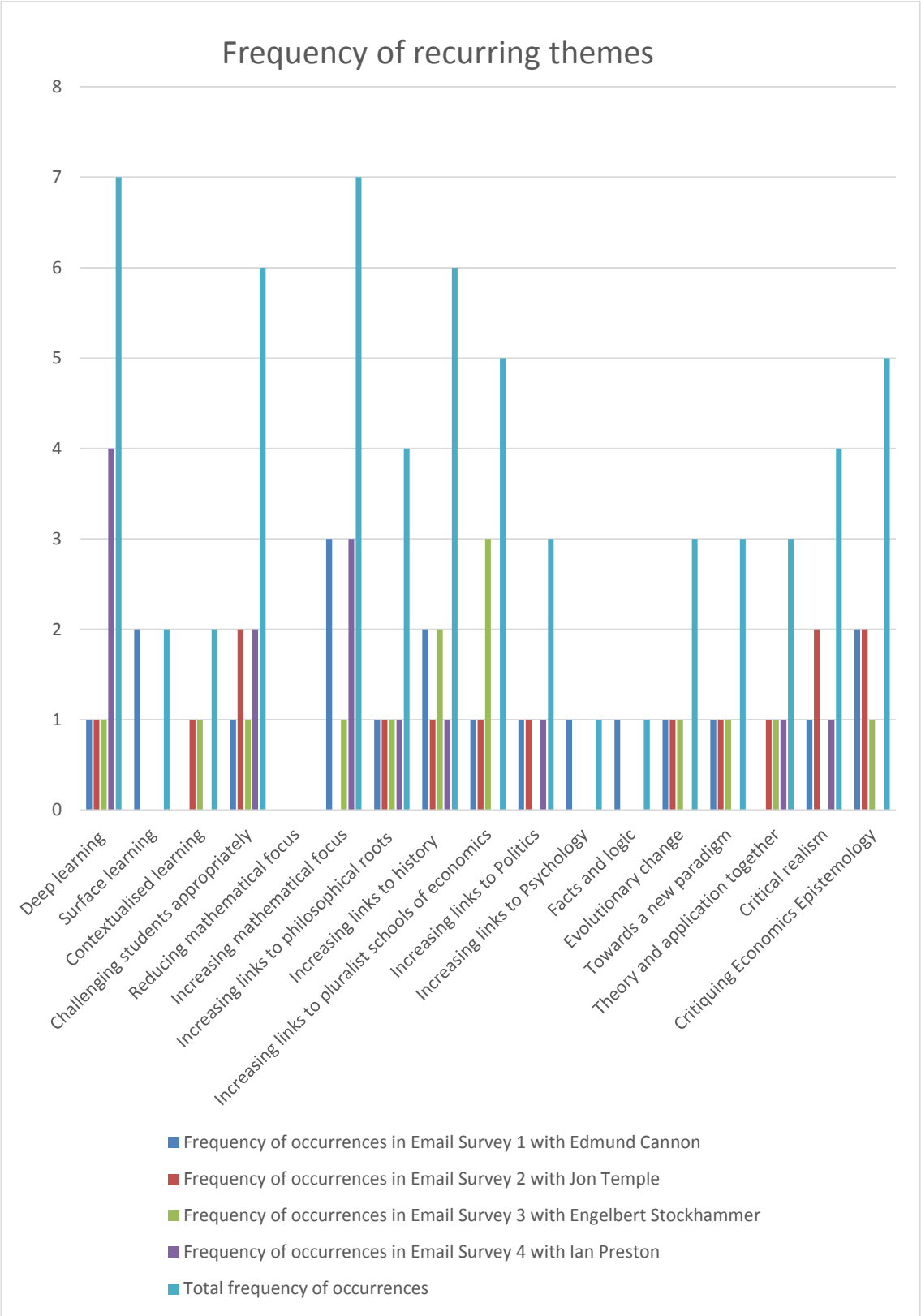


Fig. 17d: A radar chart to show the degree of overlap by frequency of occurrences in the top 6 recurring themes in my Email Surveys

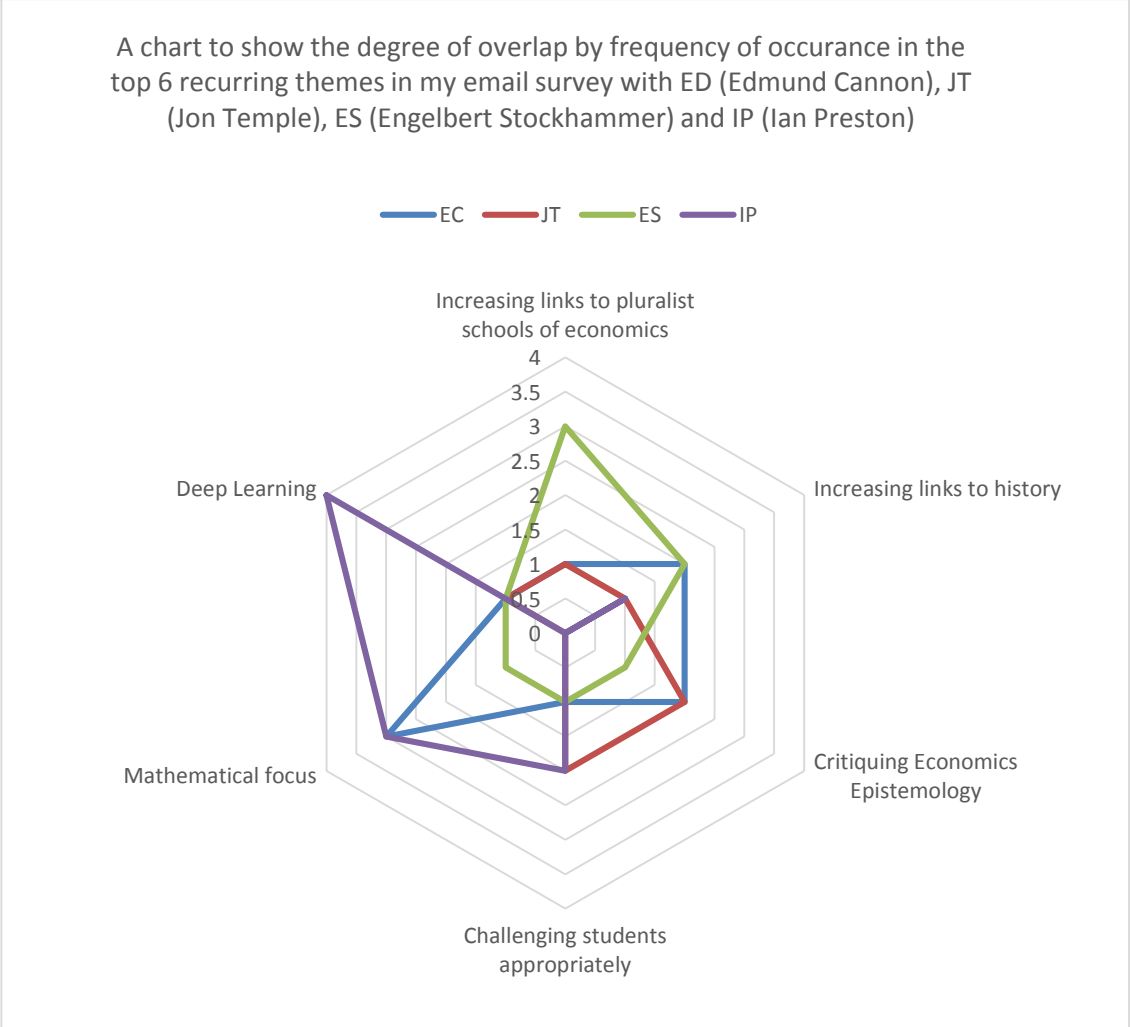


Fig. 18: A table to show final codes, total frequency of occurrences, themes, concepts, theories and related authors from my literature review.

Final Code	**Total frequency of occurrences in Interview 1 (with WC and JB) and interview 2 (with PA and PB)**	**Themes and/or concepts**	**Theories**	**Authors**
Improving pedagogy	6	Teaching	Reflective teaching Collaborative pedagogy Innovative teaching	Dewey (1910), Wenger et al (2002), Schon (1995) and Anderson (1987)
Deep learning	10	Learning	Experiential learning, Problem-based learning Inquiry-based learning Project-based learning Critical thinking Collaborative learning	Torp and Sage (2000) Hmelho-Silva (2002), Van den Bossche (2002) Vygotsky (1997), Marton and Saljo (1976), Dewey (1910), Kolb and Fry (1975)
Surface learning	8	Learning	Memory-based learning Didactic learning	Marton and Saljo (1976),
Contextualised learning	8	Learning	Case studies Local projects	Mustoe and Croft (1999), Grant (1997), Raju, P. and Sanker, C. (1999)
Student engagement	13	Teaching	Student engagement	Chalmers (2007), Kuh (2003), Tinto (1993), Pace (1984), Astin (1991)
Collaboration	8	Learning	Collaborative Learning	Barnes (1976) Dewey (1910), Wenger et al. (2002), Schon (1995) and Anderson (1987), Torp and Sage (2000) Hmelho-Silva (2002), Van den Bossche (2002) Vygotsky (1997), Marton and Saljo (1976),
Review and feedback	5	Feedback	Reflective practice	Dewey (1910), Wenger et al. (2002), Schon (1995) and Anderson (1987)
Challenging students	6	Teaching	Student engagement	Chalmers (2007), Kuh (2003), Tinto (1993), Pace (1984), Astin (1991)
Continued…				

Final Code	Total frequency of occurrences	Themes and/or concepts	Theories	Authors
Reducing mathematical focus	4	Teaching	Curriculum change	Bernstein (1971), Stenhouse (1975), Barnes (1976), Hirsch's (1987), Moore (2006), Furedi (2007), Tyler (1949), Biggs (2002), Havelock (1970)
Mathematical focus	1	Teaching	Curriculum change	Bernstein (1971), Stenhouse (1975), Barnes (1976), Hirsch's (1987), Moore (2006), Furedi (2007)
Sense of pride	7	Feedback	Praise and reward	
Exploratory	3	Innovation	Curriculum innovation	Barnes (1976), Bernstein (1971), Stenhouse (1975), Barnes (1976), Hirsch's (1987), Moore (2006), Furedi (2007), Tyler (1949), Biggs (2002), (Havelock (1970)
Diversity	4	Diversity	Diversity	ISIPE (2014), INET (2012), YEN (2012), CORE (2013)
English Medium	2	Communication	Language and Communication	ISIPE (2014), INET (2012), YEN (2012), CORE (2013)
Open access	6	Access	Access	CORE (2013)
Resource constraints	3	Resources	Physical resources	
Flexibility	5	Adaptation	Innovation and change	
Critical realism	3	Critical Realism	Critical realism	Bhaskar (1979), Lawson (1997), Collier (1990), Hodgson (1999)
Pluralism	3	Pluralism	Pluralism	Stockhammer et al. (2013), ISIPE (2014), Rankin (2003), INET (2012), YEN (2012), CORE (2013)

Continued…

Final Code	Total frequency of occurrences	Themes and/or concepts	Theories	Authors
Critiquing Economics Epistemology	1	Epistemology and ontology	Epistemology and ontology	Stockhammer et al. (2013), ISIPE (2014), Rankin (2003), INET (2012), YEN (2012), CORE (2013)
Embedded as core units	2	Curriculum	Curriculum	Fullan and Stiegelbauer (1991), Bernstein (1971), Stenhouse (1975), Barnes (1976), Hirsch's (1987), Moore (2006), Furedi (2007)

Chapter 6

6.0 Discussion

In this section, I investigate the key goals and features of the CORE project as provided by my semi-structured interview with Wendy Carlin and Jacek Brant. Next, I analyse the results of my email interviews' with four lecturers' of undergraduate economics: Professor Edmund Cannon, Professor Jon Temple, Professor Engelbert Stockhammer and Professor Ian Preston to draw out key findings and identify key areas of agreement and contrast. I then proceed to my analysis by investigating the key goals and features of a Singapore-based American economics curriculum through my semi-structured interview with Professor A and Professor B at the Singapore-based American university with reference to the respective curriculum artefacts. Next, through a thorough and critical process, I compare and contrast the two curricula in order to address research question 1.1.

Using my findings from answering research question 1.1, I then attempt to present arguments on the likely implications of the project CORE on the Singapore-based American undergraduate economics curriculum in order to answer research question 1.2. Ultimately, by critically examining my findings to research questions 1.1 and 1.2 through the above process, my overall aim is to uncover the answer to my overarching research question: 1) What is the impact of the CORE project on the teaching of undergraduate level economics in the UK and Singapore?

6.1 Discussion around the CORE project

From my semi-structured group interview with Wendy Carlin, CORE project leader at University College London and Jacek Brant, at time of interview, Head of Department of Curriculum, Pedagogy and Assessment at the Institute of Education, London, I gained valuable insights pertaining to the rationale, ideas and pedagogic thinking behind the CORE project. Carlin firstly described CORE as a way "to change the way that students learn economics and the way we teach economics" and then went on to identify other aspects such as the specific reasons for this change. I now attempt to provide a narrative of my discussions under individual subheadings describing the overall theme addressed.

In this section, I make continuous and frequent references to my interview transcript in Appendix 5.

6.1.1 Has economics lost touch with the 'real world'?

The economic crisis has led some academics such as Brant (forthcoming) to look inwards and reflect on the limited explanatory and predictive capabilities of economics. Carlin admitted that the "feeling of being slightly embarrassed" in the aftermath of the economic crisis provided one of the main motivations for the CORE project. When posed with the question "well you're studying economics, why can't you explain what is going on?" students would say "well, that's not what we are really learning". Central to the CORE project is the notion that it allows economics to move forward from abstract concepts into one where "you can sort of promise that at the end of the day we will be able to apply it". Carlin also identified the widening gap between economics research and the economics taught in the actual classroom, particularly over the last three decades. Carlin added that:

> "…the idea is that there is a big gap between what we as research active Economists do in our practice of doing research in Economics and how we teach the students. So there is a lot that has happened in the last three decades. Economics has made a lot of progress, it has made mistakes, but there is also a lot of progress we should be putting into the classroom, the things we have learnt."

CORE therefore aims to allow students to not only benefit from the progress made by researchers, but to also learn from the mistakes economics has made as a subject. Indeed, the CORE slogan is to "teach economics as if the last three decades had happened". This was also an important aspect of feedback from the Economics Network (2012) survey of UK based undergraduate and postgraduate economics students who underlined a greater need for real-world relevance in economics courses. This stance is supported Stockhammer et al. (2013) asserting mainstream economics must re-engage with core historical concerns such as growth, underemployment, financial instability and the distribution of income and wealth. This call to expand the scope of the undergraduate economics curriculum is supported by ISIPE (2014) who argue for

widening of the curriculum to include current, relevant and what they call 'multi-dimensional' challenges such as financial stability, food security and climate change.

The mainstream economics curriculum has been somewhat criticised for being too reliant on mathematics and static models. As such, the CORE curriculum reduces the emphasis on calculus but students do have the option to explore calculus, which is available for individual students to explore on the CORE curriculum. This individualised and flexible approach to learning is consistent with the notion of experiential learning (Dewey, 1910; Kolb and Fry, 1975). As Carlin emphasised, "we don't want a kind if slippery slope back to just teaching calculus… that should be a tool, that's quite useful to answer but is not an excuse for not learning economics." Piketty (2014), Stockhammer et al. (2013), Brant (forthcoming) and ISIPE (2014) provide arguments in favour of a move towards humanist themes to be explored. (Lawson, 1997; Collier, 1990 and Hodgson, 1999) argue that the world that mainstream economists study is the empirical world. However, an empirical world is inconsistent with the underlying ontology of economic regularities. The mainstream view in economics is thus a limited reality because empirical realists presume that the objects of inquiry are solely at the level of the experienced. Indeed, economics has its early roots embedded in moral philosophy (Smith, 1759) with moral theories following on from ordinary moral judgments. Piketty (2014) asserts that an over-reliance on simple mathematic models and unrepresentative agents in economics may have led academics to neglect important issues such as the distribution of wealth.

Through wider reading, discussions and classroom exercises, students should benefit from engaging with the early philosophy, humanist and moral values already inherent in economics as a subject. Vygotsky (1997) underlines the importance of social interaction and in particular, meaning making, in the development of cognitive ability. A distinction may perhaps be drawn towards the type of student that may prove to be successful under the CORE curriculum as opposed to the mainstream curriculum. As Carlin highlighted, the CORE curriculum may prove to be a greater challenge to those students chasing "high marks for solving equations" than other students who "want to understand the world" and will therefore find the CORE curriculum "more satisfying than the current way things are taught." Indeed, Carlin was overwhelmed given the early reaction by students and lecturers in particular to the CORE project and stated that:

> "We have been very surprised by the enthusiasm. We thought it was worth doing but we didn't expect it to be greeted with the kind of enthusiasm that it has"

6.1.2 Student engagement

Student engagement was another area which the CORE aims to redress. Carlin asserted that a key motivation for the CORE project was to empower students with confidence in the subject and possibly a sense a pride in the subject. Through the CORE, Carlin asserts that

> "…students' will feel that they will have much more context for what they are learning so they will be rewarded for their ability to talk about Economics with their friends and families in a much more confident way."

Carlin noted a disparity in the level of student engagement on economics courses and acknowledged the gap between student expectations prior to starting their undergraduate course and what they actually get taught in the course once they begin "which is often quite dry and abstract". As Carlin summarised, an important and perhaps unique feature of CORE is

> "…the fact that we don't draw the distinction between micro and macro. We don't say that you will begin with micro for 10 weeks and then you will do macro for 10 weeks. We start with the kind of giant macro picture but we are always asking the question about why particular decisions are being taken by the different actors."

This may point towards what I call an 'Ideas first, concepts later' or as termed by Brant (forthcoming) as the 'back to front' approach where more applied topics are taught at the start of the course in order to effectively engage students with economics as a subject and then only introduce more static concepts at a later stage. Carlin used a specific example from the CORE curriculum that incorporates "a visual image of an ice hockey stick which is very flat for a long time and then sort of goes up and that's the living standards". Grant (1997) outlines the benefits of using case studies as an interactive learning strategy, shifting the emphasis from teacher-centred to more student-centred activities. The use of everyday examples to illustrate and immerse students into the topic are a key feature of the CORE curriculum. Case studies have also been linked with increased student motivation and overall interest in a subject (Mustoe

and Croft, 1999). Carlin contrasted students who may become disengaged with the subject and "have given up because it wasn't meeting their expectations" with more engaged students as

> "…the ones that stick it out, by the end, hoorah, they kind of see the light and they get to do the stuff that is kind of closer to the research frontier and they find that much closer to policy and they find that very exciting."

This assertion touches upon the theory of student engagement as provided by Kuh's (2003) idea that actively engaged students are more likely to become adept at the given subject and therefore more likely to enjoy what they study and 'stick it out' over a sustained period of time.

6.1.3 Assessment in the CORE curriculum

Student assessment was another area of my interview with Carlin and Brant. In a traditional mainstream economics setting, students are typically either asked to sit a terminal examination at the end of the academic year or face a blended assessment which comprises of assessed coursework and terminal examinations. However, as Carlin pointed out, the assessment of students' studying the CORE curriculum is an area which is open for tailoring by the adopting institution and one that depends on the availability of physical resources:

> "That's going to be entirely up to the local context. Some people have resources, we at UCL are particularly challenged when it comes to resources. For example it is very hard for us to use an online exam because we just don't have the physical facilities to do it. Other universities, I'm sure in Singapore they do, but we don't have enough rooms with enough machines that are working to confidently do an online exam."

When elaborating on the use of summative and formative assessment in her local context at UCL, Carlin asserted that:

> "…there is a lot of formative assessment where students go to classes, do problem sets and so on. All of what counts for the final classification is the end of year exam. There is no coursework component. That is very unusual in universities and even unusual in UCL, so there is enormous heterogeneity and nothing that we are doing in some sense speaks to

> that. We are offering every opportunity for teachers to do what they can do within their local environment."

Adopting institutions are therefore under no restrictions on the bias they choose to put on summative, formative assessment in their economics courses when assessing students' levels of understanding.

6.1.4 The role of technology and innovation

An important area with much potential to improve teaching, learning and student engagement is the use of technology as a teaching tool. Particularly in economics, where economic models are usually built up in a set of logical sequential steps, the use of electronic tools was cited by Carlin as having great potential as

> "…we now have access to much better technology for teaching, yet our methods for instruction has not changed. In particular in Economics, where we have to spend a lot of time building models, there really is a huge benefit in having interactive methods, electronic materials that allows you to click through the construction of the diagrams for example in a given model."

This process may also give rise to a beneficial form of 'Experiential Education' (Dewey, 1910). Kolb and Fry (1975) also noted that concrete learning experiences are critical to meaningful learning and that learning takes place as a result of being personally involved in this pedagogical approach. An example was cited by Carlin to explain how this may be achieved by individual students. As the CORE curriculum is online and accessible on any compatible PC, laptop or tablet device, Carlin explained that

> "…they (students) get to kind of have it with them wherever they are and the intention is that they will actually find it engaging enough to want to use it."

When asked about the possibility of other subjects adopting a similar technology or format offered by the CORE project Carlin noted the importance of a 'can do' attitude and seizing an 'auspicious time', to borrow Carlin's own words, in making a curriculum innovation like the CORE project possible:

> "I'm sure other subjects are way ahead of Economics and probably are doing brilliant things in this dimension and we have kind of got up a head steam and done it without conducting a massive exercise to find out

> everything else there was, just because we didn't have time. The idea was that if you have a moment where you have enough people who are enthusiastic, you should just seize the moment and not do feasibility studies and just do it."

Indeed, the degree of 'entrepreneurial spirit' or innovative experimentation and risk-taking involved in starting the development of the CORE project in what was a challenging time-frame was cited by Carlin by means of a comparative example:

> "Yes, it's a bit like 'Just-in Time' production techniques, that you set very kind of ridiculous deadline. Any commercial publisher would think what we are doing is insane. And in fact Kahn, if you have a look at his book 'Thinking slow and thinking fast' gave an example about writing textbooks. If this thing works, we have totally falsified his presumption. I think the project he refers to was a group of people who were due to write a textbook and they found that it would take 2 years and it took 8! So we will see whether it confounds."

6.1.5 Open access

Barnes (1976, p. 14) defines a 'meaningful' curriculum is one that must be 'enacted' by pupils and teachers coming together in a meaningful communication. The CORE curriculum is quite unique from other undergraduate curricula in that it is 'open'. Indeed, as Sethi (2014) who is part of the CORE curriculum development team, wrote on the CORE website in a blog titled: "The 'O' in CORE: open-access". The CORE curriculum is 'open', in the sense that "any user can customise, translate, or improve it for their own use or use of their students". He goes on to state, the CORE curriculum is not a standalone text but rather a "foundation on which an entire curriculum can be built". Inherent in this approach to curriculum design is collaboration. Carlin underlines the importance of collaboration to the creation of the CORE project materials:

> "…the idea was to get together a group of academics who are very keen on research but who also care about teaching and put together their efforts and have a collective approach and then we would provide what we did at marginal cost which is zero, so we will supply this online free. So not just students, as there is a lot interest from people who are aren't students, who are interested in having a better understanding of the economy."

The influence of the CORE project may indeed be far reaching in its appeal to other students besides economics students. Carlin recalled:

> "I gave a talk at Oxford on Tuesday, I think it was, and a student came up to me afterwards and they were medical students and they just heard about this and they also wanted to understand Economics, and he was interested and said that I can imagine and can use these resources myself and not go to a class or anything but just read them. Then some other students said yes, we would have an online community of people who are not even in a formal education setting but were willing to start and then they could talk to each other and that sounds good, as long as they organise it."

Wenger et al. (2002) state that groups of people who share concerns, problems, or passions about a topic may deepen their knowledge and expertise through constant interaction. Drawing on a wealth of diverse contributions, experiences and backgrounds from students, lecturers, employers and professional bodies, Carlin explains that the collective expertise of these various groups of people were essential in the conception of the CORE project:

> "…we have produced a lot in the last few months and we have now got it out for review in a very short time-frame and we have done that through the Economics Network which is organised through Bristol University and, that's their business, they recruited reviewers and there's also a set of international reviewers who have been leading the process and that will be analysed by Economics Network for which we have a presentation of the project next week. And there is a group of students, as well, involved in the review process and some employers."

Furthermore, Carlin highlighted that the CORE project remains an open project in that adopting institutions have complete freedom to the extent they choose to apply the CORE curriculum to match their individual requirements and parameters in their given contexts.

> "Yes, so we will be teaching using the materials in autumn. It is going to be used in UMASS Boston, with a very different kind of student, a lot of the mature students for example, students much less prepared in an academic sense than the sort of high fliers that we see…And then a very interesting case is going to be in Sydney in their academic year which starts in March…they will teach it for a semester and UCL will teach it over 2 terms. They are going to teach a shorter version of it and they will then allow those students (from Arts and Science) who pass to join in their Economics stream…So at the moment the priority is to get stuff ready and also it is very decentralised. We work on material, we will produce the material but the decision about whether to do it is obviously the decision of any particular university, that's not down to us."

Moreover, when I asked about the potential of perhaps using the CORE curriculum at the secondary level of education, Carlin replied:

> "A number of people have approached us about high school, actually people from very different countries as well, and there is a brilliant project on the web called the 'History Project', which started off as a school project in Australia and is funded by the Gates Foundation, it's a really big thing and they have got fantastic graphics and it's the most amazing resource, so that's quite inspiring about how it could be possible to have an effect in schools. But just using the material we have got, I think a very interesting course at the high school level would just take the first unit what we have produced, just that unit and that would be an extremely rich resource to teach students a huge amount about how the world got to look like this and hopefully wetting their appetites to do Economics. So yeah, I think those resources could be used widely."

The CORE project is therefore meant to be curriculum which is flexible with regards to timeframe and one which may be tailored or customised to suit a localised institutional and cultural setting. Indeed, it was through the CORE project that Carlin harnessed the capabilities of a diverse group of people across national borders, including "people in Chile, Turkey, Colombia, Russia, India, US, France, people here, so people with very different backgrounds to contribute". She states that the main challenge

> "…has been to knit together their contribution and to marshal their enthusiasm, but at the same time trying to create something entirely coherent with a common language."

Carlin also cited the scarcity of time and the 'public good' nature of the CORE project in that the CORE Curriculum is essentially available to any member of the public without a fee to access its materials. Carlin explains that the open access and availability of the CORE project results in a

> "…public good problem which is that it is a huge amount of work to create new teaching materials and for any individual teacher, it is prohibitive if they are engaged in research."

6.1.6 Pluralism and the CORE Curriculum

Carlin noted that one of the distinguishing features of the CORE project is pluralism. "Economics has to be seen as embedded in a social system and in a kind of natural environment". Authors such as Piketty (2014) agree with the need for greater pluralism

in economics. Indeed, Stockhammer et al (2013) call for a need to move towards pluralism, similar to other social science subjects, where students have exposure to "competing paradigms" as opposed to a closed "dogmatic commitment". This recommendation towards pluralism, as provided by lecturers, seems to be supported by students of the subject. ISIPE (2014) argue that pluralism, particularly in terms of theoretical, methodological and interdisciplinary aspects are essential for a 'healthy and democratic' public debate.

6.1.7 Fostering deep learning through the CORE curriculum

'Deep learning' is described by Marton and Saljo (1976) as the type of learning that encourages students to relate new ideas to previous knowledge and look for patterns and underlying principles in order to provide meaning. This is distinguished from 'surface learning' (ibid) as the type of learning that encourages student comprehension through the reproduction of knowledge and is sometimes called 'rote learning'. As explained earlier, Carlin noticed that some students self-selected themselves into studying economics mainly due to their high mathematical competence in a somewhat misguided belief that they could score 'easy' marks in the subject through reproducing or solving a set problem. Referring to current students, Carlin explains that:

> "They are very good at solving maths problems but when they get into the workplace that is not what they are being asked to do and therefore it is coming back to us as instructors and teachers and educators that we should be teaching them to present an argument to explain in words what the economics of a particular problem is and not simply be able to rely on reproducing some you know 'solve this equation or constrained optimisation problem and if you do that you will get x equals blah' and they are asked to explain what we should do about or what they think about high-speed rail."

Indeed, Anand and Leape (2012) survey findings in favour of greater practical application of economics may postulate a move away from surface learning in favour of deep learning and as implied by Carlin, the impetus "is in part the employers who have been quite disappointed with the lack of skills economics students have". This is an area that supports the findings of Dearing (1997), that transferable skills such as interpersonal, communication, presentation and team work must form a key part of the repertoire of a graduate entering the workforce. One way that CORE aims to develop these

transferable skills in students is the use of interactive pedagogic approaches. CORE supports collaborative learning, towards which Carlin highlighted a need to be "stimulating teachers to think much more about things like peer-assisted learning and group work". Indeed, as Brant stated during the interview, he had earlier attended an event at the Department for Education and had met a colleague of Carlin's where the two of them had:

> "…both actually argued for a project where the school children could actually investigate and do something real, and why that wouldn't be assessed because it doesn't meet the Government criteria. They are thinking about the project being assessed."

Indeed Brant noted that there was a line of argument for 'rote learning' and critiqued the unfounded idea that "If it is evident, it is valid. They don't sort of care about it being reliable".

6.1.8 PBL in the CORE curriculum

PBL may be viewed as an alternative to the traditional, more didactic pedagogic approaches that students' often criticise as it is a pedagogic approach that uses problem scenarios as contexts for students to learn problem solving skills and acquire knowledge (Albanese and Mitchell, 1993; Barrows and Kelson, 1995). CORE incorporates an element of PBL, as explained by Carlin, where students form into groups and are

> "…sent to some location in London and given a question, somehow related to this first unit…then they will have to develop a three minute video that's not going to count for their mark in the course but it will certainly count for their CV and their portfolio of skills and things that will help them to be better prepared for the workforce and it will be fun as well!"

Moreover, teaching economists how to communicate their knowledge when they apply it to the world around them is increasingly important, and often overlooked. The need for approaches that may be deemed as PBL were implicit in recommendations of the Economics Network (2012) survey where most students agreed that learning in smaller groups through more seminars and tutorials should encourage more student-teacher interaction and student-student interaction. Some suggested more imaginative and

innovative teaching techniques with the use of role-plays and games specifically cited as improvements. Indeed, Carlin cites one of the benefits of the CORE project is that:

> "…it will be very challenging for students who select themselves into economics because they think that they can get very high marks for solving equations and they would really have to think a lot harder. But I think some other students who select into Economics because they want to understand the world will find it more satisfying than the current way things are taught."

Thus, PBL has the potential to have a significant bearing on the level of challenge faced by students of economics by making the subject more satisfying through greater practical application. Regarding academic challenge, I questioned Carlin with how she feels that the CORE project ranks in terms of its level of academic challenge of rigour when compared to the current mainstream economics course offered by universities such as UCL.

> "I thinks it's definitely rigorous, and so are many textbooks. I think we are using slightly different principals. It is evidence based in the way that many textbooks are not. They present a bit of evidence in boxes and things but they do not have this view that you have to have evidence or some serious context to introduce concepts. So that's a more vigorous test. I think the modelling is a bit in this initial version, we are not providing calculus. We have endless first-order conditions but we don't actually provide calculus but I think we will."

The CORE curriculum, backed by context and evidence, is therefore seen by Carlin to be a more vigorous test of a student's academic capabilities than the current mainstream economics course although the development of empirical content and therefore mathematical challenge is an area which is ongoing.

6.1.9 The CORE curriculum and a 'body of knowledge'

Although PBL does not place emphasis on students directly learning a set of facts or theories through 'rote learning' techniques such as memorisation, there are however other authors' that suggest that there may yet be a place for rote learning. Hirsch (1987) underlined the importance of a having a curriculum that teaches a 'core' body of background knowledge such as geographic and historical facts of national significance to facilitate learners in becoming knowledgeable and rounded citizens. Access to a stock

of data and factual information do form an integral part of the CORE curriculum and is therefore supportive of Hirsch's 'body of knowledge'. Carlin confirmed that CORE benefits from having a stock of

> "…so the e-book will be online and what we are going to do is have a registration process for instructors and we have got to work out whether we should have a nominal fee for instructors, who pay for something like you pay for a library. Then they get access to the animated power-points and the excel files with all the data, and also the files with the fact checking. So we have done that systematically, there could be a hundred facts that have all been checked that gives you references and resources so that you can get students to do projects based on facts, for example."

There should, therefore, be an element of economics history and the history of economic thinking in a modern economic curriculum. Carlin also supported the inclusion of historical underpinnings in the CORE curriculum as accumulation of knowledge and appreciation of history should be

> "…a form of osmosis really, that you absorb the idea, you absorb the economic history and you absorb the history of thought as you go along as you are building up your competence and your confidence with the basic framework."

However, Carlin did emphasise the importance of starting with the evidence, building a coherent framework and maintaining a flexible approach throughout the CORE process. Carlin cites an example of the 'hockey stick' analogy (See Figure 12) in illustrating current and real world economic challenges such as congestion and climate change using a visual aid which students may easily relate to, backed by data and evidence:

> "Another one is the speed with which news travels, so we collected data on how long it takes for information to get from A to B within a country or across countries and it goes from about 1 mile an hour and then gradually goes up to about 3 and half miles per hour in the 19th century and then as soon as you get the trans-Atlantic cable it very crowded. So again, you get the same shape if we look at carbon emission into the atmosphere. So that is where we start and that is very different to where many students start Economics and it highlights the fact that we don't draw the distinction between micro and macro."

Moore (2006) also agrees that curriculum selections are culturally, historically and socially produced and must therefore remain transient. Furthermore, the lack of explicit distinction between microeconomics and macroeconomics is quite a bold and unique feature that differentiates the CORE curriculum from a mainstream economics course.

6.1.10 The CORE curriculum and the heterodox approach to economics

In a heterodox economics curriculum, students are encouraged to look at the various economic schools for contrasting views and therefore stimulate debate in an attempt to understand the interaction of the various mechanisms and forces at work in explaining observed economic phenomena. This is consistent with Bhaskar's (1979) critical realist idea of retroduction: going back from, below, or behind observed patterns or regularities to discover what produces them in order to discover the true causes of observed phenomena. Carlin was interested in Brant's forthcoming study in using critical realism as an alternative conceptual framework in Economics in his critique of the teaching of neo-classical economics:

> "Right, yes, I think you could definitely. I think a rather interesting project, if someone were to do a sort of ethnography of this project, then they would kind of uncover all of these things, which we haven't really kind of conceptualised, we have just done it. There is a kind of meta-logic to what we are doing, although we are not following any recipe book."

Brant argued that Economics should encompass a variety of schools of economic thought "Of which neo-classical economics is one of the range of tools". Carlin underlined that the CORE project is indeed a move away from neo-classical economics and supports greater pluralism in the subject:

> "Yes, we are certainly not doing the same old neo-classical economics. We are making use of whatever tools there are so we are genuinely open and pluralist. We don't care who had the idea… we use stuff from Hayek, from Minsky, from Hecsher-Ohlin, you know whoever had a good idea. It doesn't matter and of course another interesting question is how those ideas rose to the cream and whether they didn't and whether they were rather overlooked like Minsky for example, but that is a different issue."

Adding to this Carlin notes the importance of providing students with a historical context to an idea or economic thought as a form of evidence with which to introduce a topic or a concept as opposed to beginning with a methodology to aid students' understanding of an economics concept:

> "What we are trying to do is to say let's start from the evidence, let's think of how we build a coherent framework and then we should be very flexible. Also we should bring this to the attention to the students, not sort of here is the methodology, because I don't think many students

> have really read it, they want to understand the world, but as we go along, it is quite interesting to think that this idea actually emerged in the 18th century, this idea actually emerged in Germany or Austria at that particular time, why was he thinking like that, this came out of someone sitting in England. That should be a kind of like osmosis really, that you absorb the idea, you absorb the economic history and you absorb the history of thought as you go along as you are building up your competence and your confidence with the basic framework."

Carlin even suggested that some students may, after gaining a foundation in the subject may "relish a later course that really focuses on these different schools of thought". However, with the move towards pluralism, it is important that students do not interpret a heterodox approach to Economics with the perception that economics was about "some sort of warring factions". Lawson (1997) argues the need for a social ontology in economics that places emphasis and equal weighting on social structure and human agency. Both social structure and human agency are each a condition and consequence of the other. This interaction, as argued by Lawson (1997), implies that humans draw on or are governed by social actions and it is only through humans that social actions are produced, reproduced and transformed over time.

Through the interview, Carlin and Brant remained conscious of the political influences on curriculum, teaching and assessment and believes in a constructive dialogue to push curriculum innovation forward as opposed to regressing backwards, how Carlin described, "in the direction that universities were actually teaching thirty years ago".

However, teachers are a constant factor in the education system and thus have a key role for classroom innovation (Havelock, 1970). The degree of motivation with which teachers engage with an innovation is central to the successful implementation of any new curriculum. Indeed, Carlin added that:

> "What is interesting about this project is the kind of international dimension. People coming from different national systems have different experiences and different battles that they are fighting as well."

6.2 Surveys with undergraduate economics lecturers at UK universities

As part of my thesis into improving the teaching of undergraduate economics, I created and sent out a set of four questions by email in a survey of current undergraduate economics lecturers at UK universities. The respondents to my survey were Professor Edmund Cannon and Professor Jon Temple, both at University of Bristol, Professor Engelbert Stockhammer of Kingston University and Professor Ian Preston of UCL. Questions were based around the current state of undergraduate level economics, the CORE, desired changes to the undergraduate economics curriculum and pluralism were devised by myself and the responses were collected, coded and analysed (as shown in Appendices 9 to 16). I now attempt to provide a narrative of my discussions with these academics in the field of economics under individual subheadings describing the overall theme addressed.

6.2.1 The current state of economics

When posed with the question: 'Given your experience of teaching undergraduate economics, what is your general view on the current state of undergraduate economics and how does it compare to when you first started to teach the subject?' I gained insights pertaining to the current state of undergraduate economics in the UK context. Stockhammer asserted that there was an emphasis on economic policy and economic history, when reflecting on his own experiences as an undergraduate economics student in Vienna. Stockhammer argued that:

> "At the time (in Vienna) there were more social science classes required, there was a mandatory economic history and there were more (institutionally oriented) economic policy classes. Economics became streamlined and history and social sciences have been cut off. It is absurd that economics students don't have to take economic history or history of thought classes (which were required classes not too long ago)."

In accordance with the ISIPE (2014) manifesto arguing for undergraduate economics courses that encourage a greater awareness of historical and social issues, Stockhammer found it absurd that students could now complete a "first class economics degree without having learned about the Great depression or without knowing Marx, Schumpeter or Minsky". This was also a concern raised by Carlin in the interview and

served as one of the reasons behind the CORE project. Cannon noted that the undergraduate economics had become "more model based, less applied and less discursive" compared to the time he began teaching undergraduate economics, an assertion also backed up by ISIPE (2014).

Preston argues that although the particular maths that economics courses focus on is tied to particular ways of modelling that are likely to evolve and be superseded, a thorough understanding of economies as "complex highly interactive systems" makes the use of advanced quantitative techniques necessary. Preston adds that "reliance on maths only becomes a problem if it obscures the underlying economic issues". Moreover, in a critique of undergraduate economics in its current form, Cannon pointed out that although there is a greater discussion of empirical testing at present, there used to be more discussion around plausibility. On the current state of economics, Cannon opines:

> "…that it is more model based, less applied and less discursive. In the past one would discuss the plausibility of a model's assumptions and the robustness of its results to get some idea whether it was applicable to a given situation. There was a greater understanding that models were imperfect."

Students should be encouraged to go 'above and beyond' a simple acceptance of a given economic model by going back from, below, or behind observed patterns or regularities to discover what produces them in a retroductive process (Bhaskar, 1979). This may help students' to uncover and therefore more likely to discuss the various limitations or plausibility of models that that may be used to explain the economic phenomena observed in real life. Temple highlights the on-going tension in the minds of economics lecturers' when choosing whether to emphasise either the foundations or the applications of the subject:

> "The basic dilemma in teaching undergraduate economics is whether to emphasise the foundations of the subject (in which case students may not understand the relevance of what they are being taught) or to teach the course in a more applied way (in which case, without enough foundations, the treatment might be superficial or leave common ideas unchallenged). I think the dilemma has been much the same for decades, and faces everyone who teaches a course in this area."

6.2.2 Pluralism in economics

I enquired about views on pluralism through the question "Some academics argue that economics needs to move away from its focus on empirical tools and methods, make greater connections with its humanist or moral philosophical roots and re-engage with its social science cousins through greater pluralism. What are your views on each of these?" Indeed, in accordance with ISIPE (2014), greater pluralism was endorsed by Cannon, Stockhammer and Temple. Temple states that:

> "…there are some areas where it makes sense for economists to engage with other disciplines - a good example would be interdisciplinary work on development, like some of Amartya Sen's."

This aligns with an assertion by Stockhammer et al (2013) towards students being exposed to "competing paradigms" as opposed to a closed "dogmatic commitment" in their study of economics. Cannon stated that:

> "The most promising social science links are with psychology which is one of the "hard" social sciences. I have already said that I think we should link to economic history. In both cases we are interested in facts."

Cannon's support of the inclusion of historical facts may hint at the argument provided by Hirsch (1987), who underlined the importance of a having a curriculum that teaches a 'core' body of background knowledge such historical facts. Although pluralism and the greater inclusion of historical facts were seen to be positive steps in developing the undergraduate economics curriculum, there perhaps needs to be a hint of caution as to how greater pluralism is actually enacted in the subject. Temple was of the opinion that it is important for economics lecturers' to be cautious and not try to 'rush' students towards a pluralist approach on their economics course. Temple asserts that:

> "…it is a question of building on a good disciplinary training rather than trying to straddle, from the start, multiple ways of thinking and of seeing the world. I think it would be a mistake to introduce the interdisciplinary approaches too early in a degree course."

Preston suggests that economics as a subject is actually "a broad one" which opens up the need for widening the range of degree programmes in economics such that key topics, approaches, concepts and theories are not neglected. Furthermore, Cannon puts forward the argument that pluralism must be carefully controlled for it to be effective. A new undergraduate economics curriculum must only take into account only those

theories that are 'tested' as Cannon did not see the gain from "teaching lots of different theories if some of them are wrong." Cannon goes on to explain that:

> "…schools such as the Austrian school or the post-Keynesian school purport to have a better explanation of how the world works but studiously avoid testing their theories. What do they have to hide? If there theories are "better" in some sense then how do we measure that without going to data."

Cannon, Preston and Stockhammer also agreed that empirical aspects of the course should not be sacrificed in the move to towards greater pluralism on economics courses. Although it reduces the emphasis on empiricism, The CORE has retained the empirical aspects of the course through the use of 'liebnitz' buttons that students may click in order to uncover the calculus behind a given economic concept or theory. Cannon asserts that he in disagreement with economics becoming less focused on empirical methods:

> "What is the claim here - that we will make economics "more relevant" by looking at what is going on in the world *less*? There is something seriously confused with this line of thought."

Cannon called for more econometrics to be included in the undergraduate economics curriculum as "doing just a little econometrics is no good - a little knowledge may be less than none at all". Stockhammer furthers this argument and suggests that instead of becoming less empirical, lecturers' must ensure that they adopt a wider set of empirical tools as

> "…empirical methods currently employed are rather narrow, but overall it's the theoretical narrowness that I regard as the main problem."

Therefore, a call for greater pluralism in the undergraduate economics curriculum may also encompass a call towards the inclusion of a widening set of empirical tools and exposure to a greater range of empirical methods in the subject.

6.2.3 Recommended changes to the undergraduate economics curriculum

When asked "What are the main things you would like to see incorporated into a new economics curriculum and why?" Preston asserts the need for an evidence-based approach as current undergraduate economics courses under emphasise questions

about the nature of economic evidence and the empirical applicability of economic theory. Further, Temple argued that the fallacy of human beings must be taken into account when studying the subject. This highlights the argument put forward by Brant (forthcoming) when critiquing the assumptions of neo-classical economics with regards to 'rationality and 'self-maximisation'. Temple argues that undergraduate economics courses should provide students with:

> "…a greater awareness of the limitations of over-simplified economic analyses, of the kind they might hear from politicians or see in the media. I also think the notion of market failure needs to be replaced with a broader notion of the way things can go wrong: organisations sometimes fail, institutions sometimes fail, governments sometimes fail - all this has played a role in the development of the financial crisis."

This argument point towards the inclusion of critical realism, particularly retroduction, in economics courses. Rather than the use of the term 'market failure', there was also a recommendation by Temple for "a broader notion of the way things can go wrong: organisations sometimes fail, institutions sometimes fail, governments sometimes fail - all this has played a role in the development of the financial crisis". Cannon and Stockhammer highlight the need for the inclusion of more economic history in undergraduate economic curriculum.

Perhaps again highlighting the importance to Hirsch's 'Body of knowledge' argument, Cannon again emphasised that "students know too few facts". According to Stockhammer, the association with social sciences is an area that could be made stronger through "systematic treatment of different paradigms in economic theory (like in other social sciences)". In line with advocates of PBL such as Albanese and Mitchell (1993) and Barrows and Kelson (1995), Stockhammer seemed supportive of the use of PBL methods in the classroom and argued for a:

> "Systematic treatment of different paradigms in economic theory (like in other social sciences); more historical and (interdisciplinary) problem-oriented classes."

Indeed, the inclusion of more group work and interactive lessons were also advocated by students themselves (Economics Network, 2012). Preston seemed supportive of the CORE's evidence-based approach towards the teaching of economics to undergraduate students when underlining that:

> "…I would like to see the focus of teaching of economics shift somewhat away from theory towards evidence. I think we lead a bit too heavily with economic theory, teaching it as if it were self-evidently the same as teaching about the economy, and under stress questions about the nature of economic evidence and the empirical applicability of the theory. That is how it was taught when I was an undergraduate, it is how textbooks are written and it is predominantly how it is still taught."

6.2.4 Views on the CORE project

Responding to my question "In what ways do you see the CORE project impacting on students' learning?" it was clear that CORE was a positive step in the direction of improving the teaching of undergraduate economics. Preston welcomes the evidence-based approach adopted by CORE, and believes that the CORE changes the way that students' are introduced to the economics as a subject and therefore enhance students' awareness of the breadth of perspectives within the discipline. Preston asserts that such approach may lead to economics students in having a "better understanding of its past intellectual development". Temple noted that the CORE encourages students' "to build an understanding of foundations and applied issues simultaneously".

However, being in its infancy, the CORE project was judged by Stockhammer to be a "mild improvement" but "not going far enough" as it represents an "update to mainstream research to incorporate more behavioural economics" so therefore does not represent the "paradigmatic shift that economics needs". Cannon also agreed that due to being in its developmental stages, the CORE will require a "few rounds of revision" before it "converges on a new paradigm" and states his preference for gradual evolution as opposed to revolution in developing the undergraduate economics curriculum.

6.3 The Singapore-based American university economics curriculum

From my semi-structured group interview with two Professors' at the Singapore-based American university and through collection of curriculum artefacts pertaining to the economics curriculum at the university, I gained valuable insights pertaining to the ideas and pedagogic thinking behind the economics curriculum. I now attempt to provide an

overview of the economics curriculum artefacts before I proceed to provide a narrative of my semi-structured group interview under individual subheadings describing the overall theme addressed.

6.3.1 What are the features of the Singapore-based American university economics curriculum?

In this section, I analyse curriculum artefacts from the Singapore-based American university with the purpose of identifying the key features of their economics curriculum. Information regarding the Economics curriculum for undergraduate economics students is available to all economics lecturers at the institution, having been developed by and made available to me by Associate Professor Kelly George. In this section, I make reference to the following curriculum artefacts: Developer to instructor memo (See Appendix 18) and the syllabus templates for microeconomics and macroeconomics (See appendix 19 and 20 respectively).

6.3.2 The developer to instructor memo

In Appendix 18, Professor Kelly George clearly states in her memo to instructors of economics that there is a requirement as of May 2014, for all instructors to complete a 'multi-modality template'. This template is an individually customisable document for instructors and outlines the assignments and is used across the university in different subjects to satisfy the program, college and university goals' with the aim of assessing 'student across all course delivery methods' and to help 'all instructors deliver high quality content' (Appendix 18, p. 1). Economics instructors must comply with this template by adding to a set of required assignments as follows: an online weekly test (called 'Aplia' problem sets) and termly research paper activities (involving a topic idea, draft and final paper). A summary of grading, weightings and grade boundaries are provided below.

Fig. 19: A table to illustrate assignments and associated grade weightings

(Source: Developer to instructor memo, Dr Kelly George, March 2014)

Grading

The table below shows the graded assignments and course grade weights that are used in the online course. The required assignments in the multi-modality template retain their grade weights. I've highlighted these for you. These assignments comprise 70% of the course grade. As the instructor, you must create the remaining 30% of graded content for this class. The Grade Center will **not** calculate the course grade, however; you will need to do that.

Evaluation Criteria	Percentage of Course Grade
Aplia weekly problem sets	50%
Research Topic Idea	% (10 points)
Research paper draft	% (30 points)
Research paper final submission	20 % (60 points)
Discussions	30%
Total	100%

Although the economics curriculum, be it microeconomics or macroeconomics, at the Singapore-based American university has a distinct prescriptive 'feel' to it (the contents of which I discuss further in a later section), the delivery of the material by the instructor in the classroom is indeed quite flexible. To this end, 'Special instructions' are provided in this memo to instructors, as detailed below. Professor Kelly recommends in keeping the course 'fun' in this paragraph which may be interpreted by instructors as interesting, interactive and applied to the real world, as the CORE attempts to do. Through delivering the course in an interactive and applied way, instructors may attempt to dispel students' preconceptions prior to studying this economics course in relation to 'writing, math and a perceived un-interest of this weird social science'. Making an economics course 'fun' was an area that the Economics Network Survey (2012) comprising 1440 respondents from undergraduate and postgraduate economics students across 56 UK universities, shed light on. Students' highlighted the need for greater need for real-world relevance in economics courses through learning in smaller groups, should encourage more student-teacher interaction and student-student interaction. Some suggested more

imaginative and innovative teaching techniques with the use of role-plays and games specifically cited as improvements, which is typical in pedagogic approaches such as PBL.

Such learning may be characterised as 'deep learning' as described by Marton and Saljo (1976) as the type of learning that encourages students to relate new ideas to previous knowledge and look for patterns and underlying principles in order to provide meaning. This idea supports the inclusion of a critical realist retroductive approach as deep learning may be implicit in a heterodox economics curriculum where students are encouraged to look at the various economic schools for contrasting views and therefore stimulate debate in an attempt to understand the interaction of the various mechanisms and forces at work in explaining observed economic phenomena. Further, a retroductive approach may help economics students to develop their transferable skills such as writing which is explained below by Professor Kelly as being 'crucial to success in so many careers'.

Fig. 20: Instructions from the developer to instructor memo pertaining to teaching and learning

(Source: Developer to instructor memo, Dr Kelly George, March 2014)

Special Instructions

There are no special instructions for teaching this course successfully. If it fits your teaching style, I recommend that you keep trying to make the course fun. Students often come to economics courses with a lot of tension about writing, math and a perceived un-interest of this weird social science. They will learn more and learn better if they can relax a bit and relate the course to the world around them. Since the ability to communicate well in writing is crucial to professional success in so many careers, it behooves us as teachers to do everything we can to help them become proficient writers. And besides, it's more enjoyable for us to have fun while we teach!

This multi-modality template is designed to be an open and live document in that Professor Kelly encourages instructors to contact her with their ideas, suggestions and questions with the aim of improving the course (Ibid). Students are also encouraged to provide feedback via an online survey of the instructor and course towards the end of the course for the course developer to review. Barnes (1976) advocates greater

communication and critical scrutiny of a curriculum to make it a 'meaningful' curriculum, by becoming a curriculum which is 'enacted' by pupils and teachers coming together in a meaningful communication.

6.3.3 Course description, goals and learning outcomes for microeconomics

From Appendix 19, an excerpt of the microeconomics course description is shown below. The microeconomic course includes topics central to mainstream or neo-classical undergraduate economics courses, thus covering theories and concepts such as supply, demand, theory of the firm and market structure. However, as separate and distinct from mainstream economics courses in standard economics curricula is the focus of applying microeconomics theories and concepts to the context of aviation and airline industries in particular. This is in keeping with the aeronautical focus of indeed the university and its offered courses.

The use of contextualised examples and particularly case studies and its importance to teaching and learning was included in my literature review. Raju and Sanker (1999) demonstrate the importance of using case studies in engineering education to expose students to real-world issues with which they may face in the work place. Furthermore, case studies were also linked with increased student motivation and overall interest in a subject (Mustoe and Croft, 1999). The Americanised examples and applications in the syllabus can be tailored to students in Singapore in order to make the subject relevant to Singaporean students and it is within the instructors' power to do so. As evident in Appendix 19, the microeconomics course utilises audio, video and articles in the syllabus in an attempt to engage students with the course material.

Fig. 21: The microeconomics course description

(Source: Microeconomics curriculum, Dr Kelly George, March 2014)

Course Description:

This course is an introduction to the economic principles of free enterprise supply and demand, private and social implications of revenue maximization, cost minimization, profit maximization, market structure, and resource markets. Current microeconomic issues in aviation (such as elasticity, pricing, taxes, subsidies, market implications, liability reform, evolution of airline completion, etc.) are discussed. Lecture hours per week (4:45 hours) Blended lecture hours (3 :20 per week). **Prerequisites**: MATH 111 or equivalent and ENGL 123, 143 or equivalent.

As evident from the course goals, outlined below the purpose of the microeconomics course is to present the theory of price and output determination. The focus then shifts on to an application of these presented microeconomic concepts to real world situations in the context of current aviation examples. An explicit reference is made to 'maintain student interest' which perhaps points to the importance of student engagement to this microeconomics course. Kuh (2003), Astin (1991) and Pace (1984) assert the importance of student engagement for students to master a given subject and Shulman (2002) argues further that student engagement is also essential in developing in a foundation of skills essential for life-long-learning and personal development.

Fig. 22: The microeconomics course goals

(Source: Microeconomics curriculum, Dr Kelly George, March 2014)

Course Goals:

The purpose of this course is to present the theory of price and output determination. The student will learn how to apply elementary microeconomic principles to domestic and international policies. In order to maintain student interest and better perform our mission, professors will utilize current aviation examples to illustrate these economic principles as frequently as possible.

In reference to the learning outcomes of the microeconomics course shown below, the inclusion of command words such as 'understand', 'describe', 'explain', 'identify' and

'recognise' are quite typical to the learning outcomes of various courses across a range of subjects. The Kolb (1984) learning cycle may be manifested in this curriculum and may therefore be used to explain the learning outcomes of this course. This microeconomics course begins with a concrete experience in that it exposes students to introductory economic theories such as scarcity and choice the theories and concepts of supply and demand. Then the course continues to develop students understanding of the economic theory through reflective observation and through abstract conceptualisation, students identify and solve economic problems using analytical tools or calculations such as elasticity. Central to this process is an application of the economic theory to the context or case, which may be rooted in aviation. It is therefore through active experimentation that students may begin to feel comfortable with their learned materials and begin to grasp how individual aspects of the economy may actually fit together in the context of the macroeconomy with an integration of theories, concepts and ideas.

On a further note and regarding the chronological ordering of topics in this macroeconomics course, it is evident from Appendix 20 that this course follows a conventional or neo-classical approach. This approach is one which firstly introduces theories and concepts and then goes on to an application of these theories in practical settings. This may be in contrast to the evidence-based idea of 'ideas first, labels later' approach as per the CORE project and as recommended by Konczal (Washington Post, 2013) that applied topics such as unemployment should be introduced to students before static models such as perfect competition to benefit students' learning.

Fig. 23: The Microeconomics Course Learning Outcomes

(Source: Microeconomics Curriculum, Dr Kelly George, March 2014)

Learning Outcomes:

Upon completion of the course, students will be able to:

1. Understand introductory economic concepts.

2. Recognize basic supply and demand analysis.

3. Recognize the structure and the role of costs.

4. Describe, using graphs, the various market models: perfect competition, monopoly, monopolistic competition, and oligopoly.

5. Explain how equilibrium is achieved, in the various market models, in both the long and short run.

6. Recognize how resource markets relate to the product markets.

7. Identify problem areas in the economy, and possible solutions, using the analytical tools developed in the course.

8. Recognize how all the parts of the economy integrate into the whole.

9. Recognize the international economy, and describe how it works.

10. Recognize the crucial use of elasticity theory in pursuit of revenue maximization, output efficiency, inter-commodity relationships and the impact of income changes.

6.3.4 Course description, goals and learning outcomes for macroeconomics

From Appendix 20, an excerpt of the macroeconomics course description is shown below. Similar to the microeconomic course as described above, the macroeconomics course includes topics central to mainstream or neo-classical undergraduate economics courses, such as national income, business cycle, unemployment, inflation and international trade. However, as like the microeconomics course outlined above and as separate and distinct from mainstream economics courses in standard economics curricula is the focus of applying macroeconomics theories and concepts to the context of aviation and airline industries, which is expected due to the aeronautical focus of the university and its offered courses.

Fig. 24: The macroeconomics course description

(Source: Macroeconomics curriculum, Dr Kelly George, March 2014)

Course Description:

This course is an introductory analysis of employment, inflation, recession, GDP economic growth, national income/output and international trade with an emphasis on practical policy alternatives. Macroeconomic aviation applications such as the counter-cyclical growth of start-up airlines and consideration of ATC privatization are incorporated. Lecture hours per week (4: 45 hours). Prerequisite(s): MATH 111 or equivalent and ENGL 123, 143 or equivalent

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As evident in the macroeconomic course goals below, the focus of the fundamental macroeconomic topics of fiscal policy and monetarism has an American slant through focusing on US fiscal and monetarist policies. The course goals also make specific references to practical and localised applications such as the privatisation of ATC (Air Traffic Control) in the USA. Such explicit, practical and local contextualisation of topics in the form of case studies, may not only benefit teaching and learning through greater student engagement but also increase student motivation and overall interest in a subject (Mustoe and Croft, 1999). Such Americanised examples and applications in the syllabus can be tailored to students in Singapore in order to make the subject relevant to Singaporean students and it is within the instructors' power to do so. As evident in

Appendix 20 and in keeping with the microeconomics course, the macroeconomics course also utilises audio, video and articles in the syllabus in an attempt to engage students with the course material.

Fig. 25: The macroeconomics course goals

(Source: Macroeconomics curriculum, Dr Kelly George, March 2014)

Course Goals:

This course is designed to give the student the necessary tools to understand the ideological framework of American capitalism, an understanding of the national banking system, as well as application of fiscal and monetary policies. In order to maintain student interest and better perform our mission, professors will utilize current aviation examples to illustrate these economic principles as frequently as possible.

In reference to the learning outcomes of the macroeconomics course shown below, the inclusion of command words such as 'understand', 'describe', 'explain', 'identify' and 'recognise' are also evident in the microeconomics course. Additional to the microeconomics learning outcomes, 'state' and 'define' are included as command words in the macroeconomics learning outcomes. In contrast to the microeconomics course, where elements of Kolb's (1984) learning cycle may manifest in a more explicit sense, this macroeconomics curriculum is rather more prescriptive and may therefore lend itself more towards surface learning strategies (Marton and Saljo, 1976). This is distinguished from 'deep learning' (ibid) as the type of learning that encourages student comprehension through the reproduction of knowledge and is sometimes called 'rote learning'. Rote learning was discussed in my literature review, and may have a place in an economics course, for instance, when students are faced with making sense of the economy by learning factual knowledge of fiscal and monetarist policies.

Although being a study of primary education in the USA, the conclusions drawn by Hirsch (1987) may have applications in higher education. Hirsch (1987) asserts the importance of a curriculum in teaching a 'core' body of background knowledge to facilitate learners in becoming knowledgeable and rounded citizens. The existence and therefore the importance of a 'core' body of knowledge in the macroeconomics

curriculum is more explicit in the learning outcomes of the macroeconomics curriculum than in the microeconomics curriculum of the Singapore-based American university.

Fig. 26: The macroeconomics learning outcomes

(Source: Macroeconomics curriculum, Dr Kelly George, March 2014)

Learning Outcomes:

Upon course completion, students will be able to:

1. Understand introductory economic concepts.(PO 10)

2. Identify and exemplify the difference among political systems, economic systems and economic policies.(PO 10)

3. Recognize the evolutionary characteristics of Capitalism or a Market Economic System; and demonstrate the ability to identify several of the alleged "virtues" and alleged "vices" of capitalism. (PO 10)

4. State the laws of demand and supply and define the terms: demand, quantity demanded, supply, and quantity supplied. (PO 1)

5. Explain the causes and predict the effects of changes in demand and supply on the equilibrium price/quantity. (PO1, PO10)

6. Understand the unique perculiarities of such concepts as inflation, deflation, stagflation, economic growth, economic development, expansion, recession, employment theory and types of employment.(PO 10)

7. Describe the two approaches to determining Gross National Product (GNP) and state the relationship between GNP, Net Domestic Product (NNP), National Income (NI), Personal Income (PI), and Disposable Income (DI). (PO1, PO7)

8. Define fiscal policy and demonstrate the mechanics of discretionary fiscal policy within the Keynesian framework. (PO7, PO12)

9. State the fundamental objective of monetary policy, identify the three tools of monetary policy, and explain how each may be used to expand or contract the money supply. (PO10, PO12, PO3)

10. State the reasons for a fractional reserve system of banking, describe the process by which the banking system creates and destroys money, and the assumptions that underlie the multiplier theory. (PO10, PO12)

6.3.5 What are the goals of the Singapore-based American university economics curriculum?

I organised a semi-structured group interview with two professors, who are both teaching the macroeconomics and microeconomics units at the Singapore-based American university. Both professors chose to remain anonymous during this interview and did not want to be named individuals in my thesis so I adopt the pseudonyms 'Professor A' and 'Professor B' to refer to both participants respectively. Through my interviews with Professor A and B, I gained valuable insights pertaining to the rationale, ideas and pedagogic thinking behind the economics curriculum at the Singapore-based American university. The matters addressed firstly centred on the curriculum structure and content and then we moved on to wider aspects of the curriculum such as feedback from students and industry, calls to change the economics curriculum, pluralism and the epistemological and ontological premise on which economics is situated. I now attempt to provide a narrative of our discussion under individual subheadings describing the overall theme addressed. In what follows, I make frequent references to my interview transcript (See Appendix 6).

6.3.6 Summary of a Singapore-based American university's curriculum artefacts

My above analysis of curriculum materials purport to show the undergraduate economics curriculum at a Singapore-based American university as being straightforward, user-friendly for lecturers and open in the sense that it is open to a process of continuous update through comments and feedback from students and lecturers, shown by Barnes (1976) as being 'meaningful' in regards to curriculum design and implementation. This curriculum places an emphasis on teaching theories and content first before application and may be more typical in a neo-classical or mainstream undergraduate economics curriculum. This is in contrast to the CORE curriculum, where the presentation of evidence was subsequently followed up by theories and concepts with which students may then use in an attempt to make sense of the data. The CORE curriculum is perhaps therefore a better example of the 'back to front' approach in economics (Brant, forthcoming). The presence of regular and a variety

of assessment exercises and through allowing student access to an online question bank (Aplia), brings an element of Hirsch's 'body of knowledge' to this curriculum.

6.3.7 The economics curriculum at the Singapore-based American university

The economics curriculum at the Singapore-based American university was described by Professor A as one which is embedded in each of the overall degree programmes offered in the areas of aeronautics and aviation, at both undergraduate and post-graduate levels. Professor B explained the structure of the courses offered at the university quite succinctly:

> "The courses (here) are designed to fit the needs of our students here in Singapore as much as possible. Although (this) is an American university based in Daytona, our degrees are all internationally accredited and we do tailor things to meet the needs of our Singaporean students at this, our Asia campus. Our students are enrolled in either the Aviation Business Administration or Aeronautics subjects at bachelors or masters level which are both available to students for full-time and part-time study and so can take around 3 to 5 years to complete."

As explained by Professor B, "It is compulsory for our students to study what we call 'general education core' courses, and that is where subjects such as maths, economics and english communication courses fit in for all students". The structure and logistical organisation of the economics course at the university were explained by Professor A as being separated into two strands, namely, microeconomics and macroeconomics. Each strand is studied over 8 week terms and is followed by an assessment week.

> "The two economics courses are weighted to provide students with 6 credits towards their 36 credits required to complete their general education core course units required for their degrees."

Furthermore, as mentioned, somewhat enthusiastically, Professor A mentioned the rising importance of Massive Open Online Courses (MOOCs).

> "…we are now offering our degrees as an online degree, which with the rise of the MOOCs in general, is gaining in popularity."

The wide ranging and variety of applications afforded by information communication technology has changed teaching and learning. Professor B added that in a process termed by the university as 'blended learning':

> "Lessons are sometimes conducted online and this allows us to be very flexible to offer lessons outside the usual timetable."

Professor B may perhaps be inferring that an economics curriculum should incorporate an element of online teaching and learning in order to cater for the student needs of flexibility and access.

> "Students have commented that they value the use of online learning alongside their classroom lessons."

Professor B emphasises the importance of having a curriculum in place in which learning occurs both inside and outside the classroom to provide a scenario that encompasses continuous learning and reinforcement. This positive relation between student engagement, continuous learning and feedback is supported by authors such as Kuh (2003), Astin (1991) and Pace (1984).

6.3.8 Contextualised Learning

Contrary to the CORE curriculum, 'microeconomics' and 'macroeconomics' are indeed explicitly differentiated and classified as such. The grounding of microeconomic and macroeconomic theories and concepts in real world in contextualised scenarios, as like the CORE project, was a theme that was quite apparent throughout my semi-structured interview with Professor A and Professor B. Economic theories and concepts are introduced at the beginning of the two courses. An example was provided by Professor B, who stated that

> "In Microeconomics we start off with decision making at the individual level with constrained maximisation problems using indifference curves and budget constraints. We then move onto the theory of the firm, with reference to practical settings…"

Professor B also explained that macroeconomics follows a similar pattern where theoretical topics are introduced before applications.

> "Macroeconomics, starts off with a look at common macroeconomic objectives and indicators in particular, using national accounting and measures such as GDP. We then move onto looking at how the aviation industry contributes to this through tourism, job creation and capital expansion and so on."

The introduction of theoretical and perhaps abstract concepts before their practical application is usually a feature of mainstream economics courses and is an area the CORE curriculum redresses by introducing applications and historical contextualisations before theories and supports Konczal (Washington Post, 2013). Professor A did seem to acknowledge this recommendation in admitting that "the case studies type questions do seem to prove popular with our students as it tends to engage them more than the theoretical topics such as indifference curves". This claim is supported by the literature where case studies have been linked with increased student motivation and overall interest in a subject (Mustoe and Croft, 1999). Professor B underlined the educational value that comes from using applied examples chosen from the local context, in the classroom.

> "Across the two courses, we always try to change things from what our American counterpart is doing, by providing up to date localised examples to make the subject as relevant and engaging to Singaporean students as possible."

Professor B concurred that individual tasks, activities and examples throughout the curriculum "are designed to fit the needs of our students here in Singapore as much as possible, in a manner to "tailor things to meet the needs of our Singaporean students". The economics curriculum makes use of real-life examples, as explained by Professor B who strives to "incorporate local names, brands and regional case studies into our materials". The rationale for the use of contextualised example and case studies is backed up in the literature.

Raju and Sanker (1999) demonstrate the importance of using case studies in engineering education to expose students to real-world issues with which they may face in the work place and moreover, case studies have also been linked with increased student motivation and overall interest in a subject (Mustoe and Croft, 1999). This idea was further developed by Professor B who mentioned the value in "providing up to date localised examples to make the subject as relevant and engaging to Singaporean students as possible" and cites a recent example of work completed by students on "Malaysian Airlines in the aftermath of the two disasters". Student engagement may therefore benefit through the practice of using not only case studies, but up to date and current issues in the mainstream media, as a way to situate and therefore to contextualise students' learning.

Gibbons et al (1994) argue that the development of formal knowledge relies more on traditional teaching methods such as lectures and problem sets, whereas tacit knowledge incorporates more applied activities such as case studies, field trips and work placements. Professor A mentioned that "All of our students have been heavily involved in working with the organisers of the Singapore Air Show and some have had work placements with Singapore International Airlines too with many projected to go on and begin their careers with both the Singapore national carrier and Changi Airport". The role of industrial exposure through work placements and participation in public events may allow students to gain greater tacit knowledge and therefore confidence in the application of that knowledge in a practical setting. The practical application of knowledge is a key part in the fourth stage of Kolb's learning cycle (Kolb 1984), 'active experimentation' and is therefore grounded in experiential learning.

6.3.9 Critical realism in economics

There may be an argument towards greater discursion in the economics being taught at the Singapore-based American university. In acknowledging that students may often discuss their subjects or topics outside of the classroom, Professor B explains:

> "…some students find it very interesting to study the economics behind current events in class as they get the chance to relate economic concepts and theories to what they are seeing in the news. We imagine that they can have interesting discussions at home with their families and friends!"

The idea that economic arguments could form the source of debates and discussions in environments outside of the classroom, such as social and informal settings, give further strength to the idea of the inclusion of critical realism and in particular, Bhaskar's (1979) notion of retroduction in economics. From a critical realist viewpoint, students should be encouraged to look at the various economic schools for contrasting views and therefore stimulate debate in an attempt to understand the interaction of the various mechanisms and forces at work in explaining observed economic and real world phenomena. Students are thus encouraged to take on a multiple perspective and go above and beyond to critically uncover the true underlying causes of the observed aspect of current affairs. Economists such as Lawson (1997), Collier (1990) and Hodgson

(1999) are supporting the incorporation of critical realism into economics through greater debate and discussion. In particular, they argue for a move away from empiricism in economics as an empirical world is inconsistent with the underlying ontology of economic regularities and therefore gives rise to a limited reality because empirical realists presume that the objects of inquiry are solely at the level of the experienced. Supporting the sentiments of Carlin (during my interview with her), the move away from empiricism may however, disadvantage some students who are more mathematically inclined. One of the rationales of the CORE project was to make economics more challenging and applied, in order to encourage 'deep' learning over 'rote' learning. This phenomenon was described by Professor A who mentions that more mathematically inclined students:

> "…seem to find unique ways of taking shortcuts in their quest for high grades and end up taking the more mathematical route where possible."

Moreover, the benefits of deep learning from greater contextualised learning may confer benefits on students' learning that may last longer than simply the duration of the case study, unit or indeed the degree course. Shulman (2002) points out that the very act of being engaged also reinforces the skills and dispositions essential for life-long learning and personal development.

6.3.10 The call for a new economics curriculum in the Singaporean context

When specifically asked about the call for change to the economics curriculum, which was predominant in the western context, both Professor A and Professor B were aware of the move and rationale towards a curriculum overhaul in economics. Referring to their understanding of the media, PA cited the Economist magazine serving as a specific source of information on this movement towards a curriculum innovation in economics, while Professor B pointed out that both Professor A and Professor B:

> "…have been following with some interest. We read about the student protests at Manchester University"

Further, there was a general feeling of positivity and support towards a new curriculum, particularly the way it was instigated by the actual students of economics. Professor B stated that:

> "…it is positive that it is the students that have enacted this progress and successfully lobbied for change in what and how they are taught at university."

Curriculum reforms or changes in approaches, usually tend to come from the state or relevant ministries of education. One such example, I had investigated in my MOE 2 and IFS (Patel 2013, 2014) was the implementation of a Problem Based Learning approach at a tertiary institute in Middle East. This 'bottom up' approach to curriculum overhaul in the economics curriculum is something that is distinct about this movement that was possibly instigated in 2000, as previously mentioned, by a group of students in France who campaigned for an end to what they described, in problematic terms, as the 'autism' of economics as an academic discipline (Rankin, 2003). Professor A was enthusiastic in stating the benefits a new curriculum may have on

> "…engagement and relevance while exposing students to a variety of schools of economic thought and therefore encouraging a pluralist outlook to their studies."

As enthusiastic and intrigued Professor A and Professor B seemed by what is an exciting time for both students and teachers of economics, an air of caution was apparent as our discussion moved forward. Professor B reminded us that:

> "As economists in the 21st century, it is important for us a subject to remain relevant to our times but also keep true to our founding theories and concepts. It is a balance that must be struck."

This is consistent with the arguments towards greater pluralism (for instance, Stockhammer et al., 2013 and ISIPE, 2014) along with the incorporation of critical realism and an appreciation of historical theories and concepts in the subject. In his email survey (See Appendix 10), Temple also noted the need for lecturers to strike the right balance between 'substance' and 'application' when delivering the economics curriculum. Temple emphasised the:

> "…the dilemma has been much the same for decades, and faces everyone who teaches a course in this area."

Without my prompting through direct questioning, the discussion with Professor A and Professor B moved towards how these changes may have impact on how economics is delivered in the Singapore context. Professor A rather openly disclosed that:

> "Thus far, we have not actually adapted or changed our curriculum per se."

Adding that:

> "We are actually looking at updating materials in the future, but talks about substantial change to our curriculum is quite embryonic at this stage".

Professor A proceeded to outline some specific reasons to explain this seeming lack of progress. One reason being that changes to curriculum "must be put through and passed through our head office in America". Professor A also reminded us of "limits on the timescales of our microeconomics and macroeconomics courses here" which may impose a physical time restriction "in getting students to discuss various heterodox approaches in great detail". Professor A summed up by succinctly summing up as follows:

> "So yes, it is an exciting time to be teaching and learning Economics but we must exercise a degree of caution at our university and look at making perhaps smaller and subtle changes over a period of time. I feel this may be the approach that works better for our staff and students."

A 'wholesale' change, such as the somewhat 'quick' introduction of the CORE project at UCL, may therefore not be suitable at this Singapore-based American university according to Professor A and Professor B. However, Professor A and Professor B were both supportive of "smaller and subtle" changes, in the words of Professor A, to the economics curriculum at their university. Favouring an 'evolutionary' change as opposed to a 'revolutionary' change to the economics curriculum was also an idea put forward in the email survey by Edmund Cannon.

6.4 A comparison of the CORE project and the Singapore-based American curriculum

In the previous section, I have individually addressed the key goals and features of the CORE project and the Singapore-based American curriculum. However, in order to fully answer research question 1.1 'What are the key goals and features of the CORE project and how does this contrast with a Singapore-based American undergraduate economics curriculum?' I now proceed to compare and contrast the two curricula. For not only the sake of better organisation and clarity, but in order to allow me to address the key areas for comparison, I make use of the most frequently recurring themes in my semi-structured group interviews and email surveys to serve as my sub-headings in this section. Figure 17b and Figure 17d illustrated the top recurring themes.

The most frequently recurring themes for basis of comparison of curriculum and therefore discussion in this section are: Deep learning, surface learning, student engagement, collaboration, contextualised learning, challenging students, greater links to history, greater links to pluralist schools of economics, critiquing economics epistemology and mathematical focus. As these separate areas are inter-related to varying extents, they can therefore be grouped into the broader areas of student experience (which includes deep and surface learning, engagement, collaboration, contextualisation and degree of challenge), breadth of coverage (which includes links to history, pluralism and mathematical focus) and critiquing economics epistemology. These three categories should allow for a clearer comparison of the CORE curriculum and a Singapore-based American curriculum.

6.4.1 Student experience

This section aims to compare and contrast the area of student experience in both the CORE and Singapore-based American curriculum. Deep learning is described by Marton and Saljo (1976) as the type of learning that encourages students to relate new ideas to previous knowledge and look for patterns and underlying principles in order to provide meaning. This was contrasted with surface learning which was defined (ibid) as the type of learning that encourages student comprehension through the reproduction of knowledge and is sometimes called 'rote learning'. The CORE curriculum emphasises the

importance of deep learning as an evidence-based approach is taken to encourage students to look at the world around them and ask 'why is the world as it is?' Students must therefore look at the evidence, historical data and artefacts to determine the answers with the help of relevant economic theories and understanding to make sense of the world which they live in. However, the Singapore-based American curriculum has a more traditional feel in placing an emphasis on teaching theories and content first before application and may be more typical in a neo-classical or mainstream undergraduate economics curriculum.

The CORE curriculum is perhaps therefore a better example of the 'back to front' approach in economics (Brant, forthcoming). As Carlin had explained during her interview, the CORE attempts to move some students away from their "somewhat misguided belief" that they could score 'easy' marks in the subject through reproducing or solving a set problem. The reproduction of knowledge or solving a set problem which may be answered by following a set of predetermined steps are characteristics of surface learning. This was also an area of concern with the Singapore-based American curriculum. In the interview, Professor A mentioned that some students may seem to prefer this 'easy' route, often associated with surface learning, "in their quest for high grades and end up taking the more mathematical route where possible". Deep learning may therefore offer a greater degree of challenge to students of economics and is an area that the CORE project aims to develop. Deep learning may be implicit in the CORE curriculum, where students are encouraged to look at the various economic schools for contrasting views and therefore stimulate debate in an attempt to understand the interaction of the various mechanisms and forces at work in explaining observed economic phenomena. Carlin highlighted a need to be "stimulating teachers to think much more about things like peer-assisted learning and group work".

The PBL approach may be of significance here as student engagement may benefit through learning in smaller groups, through completing projects and also through practical means such as planning, organising and going on field trips. Carlin provided an example of an immersive and engaging practical field challenge which the CORE will make use of to introduce first year undergraduates to economics prior to beginning their course at UCL. This challenge involved small groups of students going to specific off-campus locations, completing a task and then producing a video to present

their findings in a competitive format. Similarly, the Singapore-based American curriculum incorporates off-campus projects, work placements and field trips. Professor A explained that students get the chance to work in collaboration with the organisers of the Singapore Air-show or gain practical work experience with Singapore International Airlines and Changi International Airport. Gibbons et al (1994) underlined the importance of developing tacit knowledge through applied activities such as case studies, field trips and work placements and this practical application of knowledge is a key part in the fourth stage of Kolb's learning cycle (Kolb 1984), 'active experimentation'. This type of 'back and forth' interaction and collaboration between students and also between students and teachers to uncover patterns and draw conclusions is inherent to a retroductive approach.

The Singapore-based American curriculum encourages teachers to an interactive approach in the classroom. The developer to instructor memo in Appendix 18 states that an element of 'fun' and some contextualisation of learning is recommended in the classroom. The memo states that "If it fits your teaching style, I recommend that you keep trying to make the course fun. Students often come to economics courses with a lot of tension about writing, math and a perceived un-interest of this weird social science. They will learn more and learn better if they can relax a bit and relate the course to the world around them." Contextualisation of learning has importance in making the learning relevant to students' experience. Professor B iterated the importance of 'tailoring' the Americanised curriculum to meet the needs of Singaporean students. The Singapore-based American economics curriculum therefore makes use of real-life Singaporean or South-East Asian examples, as explained by Professor B who strives to "incorporate local names, brands and regional case studies into our materials".

Moreover, the CORE curriculum uses historical, pictorial and international examples to contextualise and illustrate economic theories and ideas. The travels of the great explorer, Ibn-Battuta is used to explain rising inequalities in income across countries and the 'hockey-stick' analogy serves as a visual reminder of this pattern. In practice and irrespective of the actual curriculum or instructions provided by the course developer, the teacher is responsible for delivering the course and it is up to the individual teacher to carry out strategies that best allow for 'deep learning' in the classroom.

6.4.2 Summary of student experience

In this section, I have shown that both the CORE curriculum and Singapore-based American curriculum strive to enhance the student experience with regards to collaborative learning, contextualisation, encouraging deep learning over surface learning, fostering greater student engagement and sense of challenge on their respective undergraduate economics course. The CORE project is innovative in that it presents economics in a 'back to front' way that covers topics in an order which is different to mainstream economics courses. Actually, as pointed out by Jon Temple in his email survey, the CORE may be innovative in that it attempts to address theory and application simultaneously.

Conversely, the Singapore-based American curriculum has a more traditional or mainstream style in that the topics are ordered in a way which can be described as more neo-classical, with theories being introduced before applications. However, taking an overall view of student experience, the CORE project is much better presented in a visual style that should work to engage students and introduce a topic much more effectively than the Singapore-based American curriculum. Moreover, being freely available online and on any computer or Apple or Android electronic portable device, the CORE is more 'open' than the Singapore-based American curriculum in the sense that it allows for students, lecturers and indeed any member of public that accesses it online to suggest changes, improvements, clarification and ask questions about the content at any point. In contrast, the Singapore-based American curriculum is available for students and lecturers to download on the university's internal VLE. Although the course developer in the USA is accepting of comments, queries and suggestions, as explained in the developer to instructor memo, the curriculum is therefore only open to a closed community of teachers and learners enrolled in economics at the University in USA and Singapore.

6.4.3 Breadth of coverage

This section attempts to compare and contrast the area of breadth of coverage of the economics course in both the CORE and Singapore-based American curriculum. Preston suggests that economics as a subject is actually "a broad one" which opens up the need for widening the range of degree programmes in economics such that key topics, approaches, concepts and theories are not neglected. Although this is a very relevant and valid point, it is a recommendation that I comment on in a later section. However, as a single economics curriculum, the CORE curriculum is open and inclusive to incorporating competing economic paradigms and schools such as the Austrian, Marxist and Post-Keynesian. Carlin mentioned the need for economics to be seen "as embedded in a social system and in a kind of natural environment" and this is consistent with the stance taken by ISIPE. ISIPE (2014) calls for the hiring of lecturers with a 'broader outlook', the use of a wider range of texts and moreover an interdisciplinary approach that 'blends' economics with other fields through departmental collaboration within the Social Sciences. Indeed Stockhammer in the email survey, believed that association with social sciences is an area that could be made stronger through "systematic treatment of different paradigms in economic theory (like in other social sciences)".

The Singapore-based American curriculum seemed to exercise a balanced caution with regards to pluralism and the syllabus, much like mainstream syllabi, focuses on monetarism and Keynesian schools. In the interview, although Professor A mentioned the benefits to student engagement and senses a greater relevance coming from more pluralism in economics, Professor B was mindful that greater relevance cannot come by sacrificing the founding theories and concepts that form the basis of the subject. Furthermore, in his email survey, Cannon puts forward the argument that pluralism must be carefully controlled for it to be effective. The economics curriculum must only include 'tested' theories as there was no benefit to "teaching lots of different theories if some of them are wrong." Overall, pluralism is embraced by CORE and although it is looked on favourably, it is somewhat treated with caution by in the Singapore-based American curriculum. The nature and degree of widening pluralism in the undergraduate economics curriculum is a controversial and fascinating issue that continues to generate a healthy debate.

The CORE also makes frequent and visual links, citations and reference to historical data and examples. Students having access to a bank of information is important as Cannon emphasised in the email survey when stating that "students know too few facts". There is therefore a bank of historical data and this aligns with Hirsch's argument to incorporate a body of knowledge, which includes historical data, in a curriculum. The Singapore-based American curriculum makes some reference to historical data and examples such as the Federal Reserve System. However, the curriculum, through the syllabus and developer to instructor memo, emphasises the use of 'current' examples to illustrate economic theories and concepts.

With regards to mathematical focus, the CORE has visibly reduced the emphasis of empirical methods and calculus in its curriculum. Although it has reduced the emphasis on empiricism, The CORE has retained the empirical aspects of the course through the use of 'liebnitz' buttons that students may click in order to uncover the calculus behind a given economic concept or theory. The Singapore-based American curriculum has mathematical elements and calculations of economic relevance such as price elasticity of demand but calculus is absent from the syllabus. The inclusion of maths, focus on maths and the particular type of maths included in the undergraduate economics syllabus is something which is quite controversial. Piketty (2014) and Stockhammer et al. (2013) have asserted that an over-reliance on maths and static models have led to important concerns such as inequalities to be somewhat ignored. However, in their email surveys Cannon, Preston and Stockhammer also agreed that empirical aspects of the course should not be sacrificed in the move to towards greater pluralism on economics courses. Cannon called for more econometrics to be included in the undergraduate economics curriculum as "doing just a little econometrics is no good - a little knowledge may be less than none at all". Further, Stockhammer suggests that lecturers' must ensure that they adopt a wider set of empirical tools. Therefore, a call for greater pluralism in the undergraduate economics curriculum may also encompass a call towards the inclusion of a widening set of empirical tools and exposure to a greater range of empirical methods in the subject.

6.4.4 Critiquing economics epistemology

Whether it is written into the curriculum or recommended for teachers to apply in the classroom, an undergraduate economics curriculum should include an element of debates and discussions. The inclusion of critical realism has the potential to transform economics. From a critical realist viewpoint, instead of simply reading and accepting a theory or concept as a given, students should be encouraged to look at the various economic schools for contrasting views and therefore stimulate debate in an attempt to understand the interaction of the various mechanisms and forces at work in explaining observed economic and real world phenomena. Students are thus encouraged to take on a multiple perspective and go above and beyond to critically uncover the true underlying causes of observed economic phenomena to remain conscious that economic phenomena occurs in open systems and structures as opposed to in closed and isolated systems. Moreover, Cannon supports greater awareness of the fallacies of models and therefore discussion around the plausibility of assumptions and the robustness of models. Students should be encouraged to not simply accept a given economic model in producing an economic phenomenon but instead discover what produces them in a retroductive process (Bhaskar, 1979). Temple argued that the fallacy of human beings must also be taken into account when studying the subject. This highlights the argument put forward by Brant (forthcoming) when critiquing the assumptions of neo-classical economics with regards to 'rationality and 'self-maximisation'.

In her interview, Carlin accepts that economics needs changing and therefore the CORE project is addressing this by using an evidence-based approach to explain economic phenomena to students before introducing theory. In support, Preston asserts the need for an evidence-based approach as current undergraduate economics courses under emphasise questions about the nature of economic evidence and the empirical applicability of economic theory. In the Singapore context, Professor A and Professor B are open to and in support of curriculum change and innovation but at present the curriculum remains largely representative of a mainstream economics curriculum. Reasons for this were cited and include bureaucratic procedures involved in making changes to curriculum and physical time restrictions due to the tight scheduling of the course which would impede detailed discussions regarding pluralist ideas and empirical

plausibility of models. Overall, Professor A and Professor B were both supportive of curriculum innovation offered by the CORE but felt that “smaller and subtle” changes, in the words of Professor A, to the economics curriculum at their university was currently more suitable.

Whether a critical realist approach is explicitly stated on the curriculum or not, the lecturer therefore remains as the key factor in stimulating a critique of economics epistemology in the classroom and enabling a critical realism approach in economics. My concept of ‘pseudoception’ I had introduced in my IFS (Patel, 2014) as based on Giddens’ (1976) notion of double hermeneutics is of relevance here: The situational meaning of an interaction may change without regard to the intentions of the participants, which may result in an unintended action being observed. Teachers may believe that they are planning, creating and implementing an undergraduate economics curriculum which incorporates critical realism but this may contradict what is actually produced or observed in reality.

Chapter 7

7.0 Conclusions, recommendations and considerations

My thesis set out to explore an undergraduate economics curriculum by way of a case study of lecturers in the UK and Singapore. I proceeded by taking a closer look at the CORE project which was being piloted at UCL from September 2014, and is an example of a curriculum change in economics. I asked the question: 'What is the impact of the CORE project on the teaching of undergraduate level economics in the UK and Singapore?' as guided by my two sub-questions: 'What are the key goals and features of the CORE project and how does this contrast with a Singapore-based American undergraduate economics curriculum? And 'What, if any, are the possible implications of the CORE project on teaching of undergraduate level economics at a Singapore-based American university?'

I proceeded to collect data by way of semi-structured group interviews with curriculum leaders in London and Singapore in order to understand the CORE project and current economics curriculum used at a Singapore-based American university in greater depth. Alongside my interview data, I gathered curriculum artefacts pertaining to each course to provide me with further information to analyse and therefore better understand the two curricula. Furthermore, I made use of targeted email surveys, which I sent out to four current lecturers in undergraduate economics courses in order to provide me with wider information about subject matters, curriculum content and developments in undergraduate economics in the UK. My findings evidenced that the undergraduate economics curriculum is based on overly simplified, positivist and abstract assumptions that are removed from history and societal concerns. Mainstream or neo-classical economics seems to be the only economics taught by schools and universities in a regular undergraduate economics degree where economics is the 'major' as opposed to a degree which incorporates an element of economics within its overall degree such as politics, philosophy and economics (PPE) or political economy. As

a social science subject, undergraduate economics is inconsistent with regards to its ontology and epistemology.

On a personal level, my findings aided me in understanding the curriculum changes in economics, the reasons behind such changes and the potential impacts to my students. I have therefore arranged presentations, forums and workshops in the UK and Singapore with the intention to disseminate good practice to other departments both within and outside of Social Sciences and therefore make a contribution to professional knowledge, practice and development at not only my institution but also at other similar academic institutions.

The results of my study were internally disseminated and reported through means of a presentation to the Academic Dean and Research Committee members at my institution. The Quality Assurance Department and Professional Development Centre at my institution has continued access to my results to possibly inform areas of interest to Human Resources such as teacher recruitment, training and development. My thesis aims to make contributions to the literature on undergraduate economics education in the field of curriculum and teaching. Above all, being more than a superficial study of surveys, curriculum content and relevance, my thesis represents a fundamental shift in shaping the teaching of economics as I firstly research and then challenge the ontological premise on which economics is based. Through looking at economics with a critical lens my thesis set out to uncover and then propose recommendations as to how mainstream economics can be adapted in order to make it better for teaching and learning. My thesis therefore not only contributes to, but also widens the ongoing debate around the epistemological foundations of a reconceptualised economics curriculum.

7.1 Recommendations

My thesis makes three key recommendations. Firstly, there is a need for a new underpinning conceptualisation for economics. The adoption of critical realism as the conceptual framework for economics will enable undergraduate economics students, teachers, policy makers and indeed the wider society to see economics as a subject as

an explanatory tool. Economics should be an explanatory tool that facilitates a better understanding of the world and therefore a subject that enables individuals, firms and Governments to make better decisions towards improving the world around us. I argue for retroduction as an appropriate methodology as retroduction encourages a more discursive and wider or pluralist approach to undergraduate economics. Retroduction was shown to be a component of the critical realist DREIC approach in Figure 1. When applied to economics topics, DREIC offers undergraduate students and teachers an alternative and powerful means with which to explain economic phenomena in contrast to the imperfect and positivist models of prediction as utilised by neo-classical economics. I recommend that students are primarily opened up to the view that economics is not a subject that can be seen in isolation but one which is embedded in the social system in relation to other social sciences and humanities subjects. The decisions made by economic agents, such as firms, consumers, and governments will have wider impacts on society and the environment, which reach far, over and above the economy. The greater awareness of social agency and 'social ontology' (Lawson 1997) is what I recommend to further develop economics education. In my thesis, I argue that the incorporation of critical realism offers economics a better methodological framework for undergraduate students to make use of the subject as an explanatory science. Furthermore, from my understanding of social agency and interactions (Lawson, 1997; Collier, 1990 and Hodgson, 1999), economic phenomena are not formed in isolation, but rather in open systems. The CORE project provides a fresh approach to the undergraduate economics curriculum in offering a move away from neo-classical economics. The CORE approach uses an online, open platform to evidence in the form of case studies and historical data in order to explain why the world is as it is today. The CORE provides an exciting alternative to the mainstream economics curriculum, which may be evidenced by its increased adoption by tertiary institutions around the world. Although the CORE is an exciting, albeit small, step in the evolution of the economics curriculum towards a new and possibly revolutionary paradigm, the overall impact of the CORE project on teaching and learning will only emerge over time.

Secondly, I align with the rationale of the CORE project as emphasised by the CORE project Leader, Professor Wendy Carlin, during my semi-structured interview, in making the recommendation to widening the economics curriculum through greater

pluralism. Economics should be conceptualised as a social science which is grounded in a social, historical and political context. The CORE takes the approach of immersing students in a historical view with which to try to understand the world as it is today. Students should be able to base their understanding of economics against the appropriate social, historical and political setting which had previously prevailed or is currently prevailing. Such contextualisation of the subject may further students' understanding of the economics behind an observed trend or phenomenon.

Thirdly, I make the recommendation supporting the implementation of deep learning strategies in the classroom. This aligns with Brant's (forthcoming) argument of exploring reality first and then using economic theory as an explanatory tool. This classroom approach is termed by Brant (ibid) as the 'back to front' method leading to lessons that prove more interesting, relevant and therefore engaging to students with the result that more of them may wish to study economics in the first place and then continue their study of economics into the future. For example, the observation that income inequalities are widening over time are presented to students pictorially using the 'hockey stick' shaped graph as demonstrated by Professor Wendy Carlin during my interview with her and Dr Jacek Brant. The CORE, much like the approach taken by the popularised author Piketty (2014), takes the useful starting point of presenting empirical data or a view of the world as it is and then examine this data with conceptual links in order to make meaning and draw conclusions on the given topic. By starting with real world evidence, students are immediately drawn to the topic and hopefully more likely to engage with the subject matter. This approach to teaching or presenting economics to students is perhaps underpinned by Kolb's (1984) learning cycle. Kolb suggests that learning is a cyclical process that begins from students' experiences and these concrete experiences are the basis for observations and reflections which in turn are integrated and refined into abstract concepts. Such approach to teaching economics should keep help to keep economics both vibrant and relevant. Students, by visualising the data and by reflecting on their own experiences, can bring their experience of the given topic into their current awareness which may help it to gain further significance. However, the extent of undergraduate students' commercial or business experience may be at best limited or at least vary significantly across students. This strengthens the value of using real world data, case studies and historical references to address this area.

7.2 How might economics look?

I have recommended that economics as it is currently taught to undergraduate students in most universities must be reconsidered. I am of the view that an economics curriculum should not be seen as being independent, in isolation or 'in a vacuum' to ethics, morals and value judgements. Economics should not be taught and seen as a 'hard' science as is physics or chemistry. Instead an undergraduate economics curriculum should encompass morals and values as per Adam Smith and involve students discussing matters through greater debates and by an overall widening of the discursive elements in the course.

I agree that a return to the moral philosophy as envisaged by Adam Smith through greater discussion through debates, games, role plays, presentations and simulations in the classroom is key to transforming the economics curriculum and the way it is viewed by students and teachers alike. 'Deep learning' is described by Marton and Saljo (1976) as the type of learning that encourages students to relate new ideas to previous knowledge and look for patterns and underlying principles in order to provide meaning. Deep learning may be implicit in a curriculum where students are encouraged to have a more discursive approach to their study of economics and indeed, this complements a retroductive approach ala Bhaskar (1979). Students should be given ample opportunity to be go back from, below, or behind observed patterns or regularities to discover what produces them and look at the various economic schools for contrasting views and therefore stimulate debate in an attempt to understand the interaction of the various mechanisms and forces at work in explaining observed economic phenomena with a greater awareness of possible fallacies, inaccuracies, irrationality and failure as areas that are endemic to human decision making and may indeed be manifested in economic data.

I now draw on an analogy of a maximisation problem faced by a lecturer in a typical mainstream undergraduate economics courses. The economics lecturer is faced with the constraint of delivering the contents of a unit of study as prescribed in the curriculum as fully and efficiently as is possible in order to optimally prepare students for the assessments requirements of the course, be it summative or formative. Within

the constraints of a prescribed curriculum, the economics lecturer has the power to shape the way that economics is taught and delivered to the students in the classroom. Following Kolb's learning cycle and my understanding of social constructivism, I recommend economics lecturers to start with what is known through students' reflections on the observed phenomenon and to move from the concrete to the abstract. Lecturers should use economic models to explain possible causes of observed phenomena rather than to wrongly teach them as independent and meaningful entities. Economics can be made relevant, exciting and more meaningful to undergraduate students by being engaging and interactive in order to make meaning through discursive and collaborative means.

One such constructivist pedagogic approach in the classroom is PBL, which I had wrote about extensively in my MOE II (Patel, 2013) and IFS (Patel, 2014). PBL uses problem scenarios as contexts for students to learn problem solving skills and acquire knowledge (Albanese & Mitchell, 1993; Barrows & Kelson, 1995). Greater interaction in lessons and the inclusion of group work were indeed key recommendations by students in the surveys conducted by the Economics Network (2012). A sound economics education provides students with a sound theoretical grounding and application of this theory to the real world. A greater practical application of knowledge to real world examples and communicating this is something that is increasingly important, and often overlooked. The lack of such practical application in the classroom is usually looked back by a degree of regret by students who have graduated in economics and began their careers (for instance see Anand and Leape, 2012). Therefore the opportunity for greater application of theory and its effective communication remains an area that must be collectively resolved by curriculum developers, teachers and academics involved in teaching economics to undergraduate students. The findings of this survey by Anand and Leape (2012) point to shortcomings in current curricula or teaching and learning on university courses and this may contribute towards graduates lacking in key transferable skills, such as communication skills, required by industry. As outlined in my literature review, the existence of this 'skills gap' was identified in Dearing (1997) in the context of UK undergraduates and postgraduates. Dearing (1997) argues for the development of key skills in students prior to entering the workforce such as communication, numeracy, ICT and independent learning along with transferable skills, termed as

'professional' skills (ibid). Therefore, 'professional skills' such as interpersonal, communication, presentation and team work form a significant part of the repertoire of skills available to a graduate entering the workforce. A lack of development of these 'professional skills' at university may exacerbate the disparity between the skills possessed by a graduate and that required by a particular job or industry and therefore widen the 'skills gap'. The presence and extent of the 'skills gap' has wider ramifications on political and often controversial or topical matters which lie outside the scope of my thesis, such as immigration. Ultimately, the existence of a skills gap and its possible impact on undermining the future economic competitiveness of the UK economy is a matter of concern to businesses, industry leaders and politicians and one which may possibly be dealt with, at least in part, through firstly critically evaluating and then addressing the shortcomings in curriculum and teaching at undergraduate level. I also believe that a greater exposure to pluralist schools of economic thought will be encountered by future students of economics.

Chang recalls the saying "he who has a hammer sees everything as a nail" (2014, p. 453). Therefore, as Chang continues, if you approach a problem from only a certain theoretical point of view, you will ask only certain questions and only answer them in particular ways. By chance, you may have the correct hammer to answer a certain problem but at other times you would need access to a wider range of tools in answering a given problem more fully and effectively. Economics students will therefore be required to have a greater understanding of the various schools of economics in order to see the multitude of potential options available to him or her in answering any given question around economics and this is why pluralism must be a key feature of an undergraduate level economics curriculum. Furthermore, as stated by Chang 'the economy is much bigger than the market' (2014, p. 455) and therefore I am of the view that economics is also bigger than just being a study of the market. As discussed in my rationale, neo-classical economics has been criticised for being too narrow, for instance by ISIPE (2014) and Stockhammer et al. (2013). Furthermore, a widening of the breadth and range of economics was called for by Stockhammer, Temple and Cannon in my email surveys. Indeed, ISIPE (2014) argue for widening of the curriculum to include current 'multi-dimensional' challenges such as financial stability, food security and climate

change. Furthermore, as exemplified by Temple in his email survey, empirical methods must also be widened as currently they are simple 'too narrow'.

Furthermore, I agree that empirical or quantitative methods and econometrics, must continue to remain as part of the curriculum and not just simply removed or cast aside from the undergraduate economics curriculum. Although it is not my recommendation to have an economics curriculum that perhaps over relies on empirical methods, I believe that sound mathematical knowledge can help to add value to the subject and help students to make meaning from the data and therefore solve problems or bring certain trends or phenomena to light. The mainstream popularity of Piketty (2014) showed that this 'data-centric' approach can indeed have a wide appeal across people and disciplines. In the words of Chang 'the economy is too important to be left alone to the professional economists alone' (2014, pp. 457).

As my various screenshots of the CORE project illustrate, an economic curriculum akin to the CORE project seems to be visually engaging for students particularly through its use of vivid and high quality images, a variety of colour, bold text and a graphical representation of data. With regards to aesthetics and technology and as elaborated on by Professor Carlin during my interview with her and Dr Brant, modern students are more likely to pick up and read an e-book installed on a portable device and therefore become engaged by something they can carry around and refer to easily, customise, interact with and therefore take ownership of. In taking ownership for their course material, students are more likely to take ownership for their own learning and therefore become more engaged as an active member of the learning community. Kuh (2003) asserts that students who are actively engaged in educational activities, through continuous practice and feedback, are more likely to become adept at the given subject. Furthermore, increased student engagement was shown to correlate with greater motivation for the study of the subject (Shulman, 2002). Moreover, the very act of being engaged also adds to the foundation of skills and dispositions essential for life-long learning and personal development (ibid). The end result from studying a course as 'aesthetically pleasing' as the CORE project may well be the fostering of a sense of pride and even love for the previously labelled 'dismal' subject of economics in students who may in turn, decide to pursue to study the subject in greater depth at post-graduate level and beyond.

7.3 Meta considerations

During the industrial revolution, a transformation has not only occurred to major world economies, but indeed the undergraduate economics curriculum. Economics has undergone a change from being a discursive subject that was rooted in morality and philosophy in the study of the study of how markets and economies work into one which was moving towards theorising humanity's growing needs for technical progress, mass production and consumption during the industrial revolution. This evolutionary change to the subject in the face of the industrial revolution has altered the historical and social understanding economics as a subject. Even, Adam Smith probably did not envision what economics would transform into and eventually become. Indeed, he saw economics as a branch of moral philosophy (Smith, 1759) where capitalism was a means towards a greater good through a process which required political commitment to social justice and freedom, not merely an understanding of economic logistics (Brant and Panjwani, 2015). Smith stressed the necessity of motives besides one's selfish gains, particularly motives that allowed the less wealthy to benefit from the prosperity created by capitalism (ibid). Instead of capitalism, consumerism and the accumulation of wealth being represented as an end, Smith believed that economics was a means to achieve other purposes of life arrived through philosophical, religious or ethical reflections.

However, despite these roots in moral philosophy, economics underwent a transformation in the twentieth century. Brant (forthcoming) points to the rise of the use and over-reliance on mathematical modelling resulted in economics shifting away from its discursive roots and moral grounding towards the clarity, prediction and certainties of the 'hard' sciences such as physics and chemistry. This type of 'cut and dried' economics came to be known as 'neo-classical' economics. The subsequent growth and reach of neo-classical economics focuses on individuals acting solely for self-interest, has taken economics away from its underpinning as a 'social' science. Brant explains that the methodology of the hard sciences seemingly allows economists to form testable hypotheses and therefore make generalizable claims and the adoption of such methodological approaches gives this neo-classical economics apparent scientific respectability and therefore means that it is increasingly adopted by schools as being the only economics (ibid). The focus of neo-classical economics on 'self-maximisation' of the individual detracts the subject of undergraduate economics in its' current form

from the notions of compassion and empathy in human beings in the form of greater fairness, equality and also the human impact on the environment such as climate change.

As argued by Brant, although the market is an effective mechanism for coordinating complex economic activities across numerous economic agents, it is no more than that, it is a mechanism. Hence, the rationalist underpinning of mainstream economics, ignores the understanding of the human being. There is a not only the need to include the human being in mainstream economics, rather there is a need to seek a broader conception in economics that would entail a move away from individual maximisation and towards social relations, values and the inter-dependence of structure and agency (Brant and Panjwani, 2015). The study of economics therefore should not equate to undergraduate economics students as individuals becoming more selfish in their decision making and outlook on the world. Economics education has become increasingly abstracted and decontextualised in regards to the human being and has therefore resulted in the 'absence' of human concerns (ibid). Bringing back this human aspect into economics, especially as a subject rooted in humanities and social sciences, is essential to a modern undergraduate economics curriculum. The emphasis placed by positivist, mainstream economics on neo-classical economics has elevated the use of assumptions of self-maximisation and self-interest and the oversimplification of the world into abstract and static terms in the economics taught to undergraduates. These fundamental assumptions lead to a critical realist critique of the ontological basis and content of economics (Brant, forthcoming).

To understand economics, a critical realist ontology and social constructivist epistemology are needed and is indeed a stance advocated by economists such as Lawson (1997), Collier (1990) and Hodgson (1999) in support of incorporating critical realism into economics through greater debate and discussion. Neo-classical economics is critically individualistic and lacks a discursive, social context. Indeed, neo-classical economics is characterised by an over-use of theoretical models that are based on unrealistic and questionable assumptions. Due to these oversimplifications, neo-classical economics has essentially isolated itself from other social sciences by allowing no place for social and human concerns. In my thesis, I argue that economics should be seen as one of the 'social sciences' and that through greater pluralism in the subject, the

complexities of the real world which is a result of various underlying and interacting mechanisms and structures, may then be understood in a social, psychological, political and historical context.

Critical realism forms the conceptual framework to my thesis and therefore informs my recommendations and conclusions. Bhaskar's (1998) 'Transformational Model of Social Agency' (TMSA) provides me with a powerful tool to explain how the incorporation of critical realism in a reconceptualised economics curriculum relates to my recommendations and conclusions. The TMSA asserts that social structures precede, enable and constrain agency, implying that individuals (agents) are both a condition and result of social structures. It is through a process of reflection and retroduction that individuals can better understand, reproduce and transform the structures, practices and conventions which make up society (ibid). The TMSA therefore shows how society may have a profound or transformative effect on how agents think and act and it is through these transformative actions that agents may in turn reproduce or transform prevailing social norms. As an agent in the field of economics education, I am bestowed with the Foucauldian sense of power through individual agency to firstly reflect on and then bring about a modification or change to the prevailing neo-classical curriculum in my professional role as an economics lecturer. Additionally, my application of TMSA to improve the teaching of undergraduate economics may lead to my undergraduate economics students' having a better understanding of agency and social structures. Moreover, I recommend for the incorporation of critical realism, through the use of the DREIC model of inquiry (Bhaskar, 1979) as a retroductive methodology in the classroom, to teach economic concepts to undergraduate economics students. The use of retroduction to generate plausible hypotheses to explain economic phenomena should lead to students' having a better understanding of the generative structures and mechanisms behind observed patterns and regularities. Furthermore, through the application of the TSMA and DRIEC model of inquiry together in their studies of undergraduate economics, it may become apparent to students' that they as individual agents, they too have the agency to bring about change to the social structures around them. After graduation, upon entering their chosen industry, students may be empowered to use their own agency to reflect and then transform the prevailing social structures, such as regulatory and taxation systems to foster moral and human values

such fairness and equality in markets and industries, which may be operating sufficiently albeit with inequalities or inefficiencies. Fostering the notion of empowerment in individual students may encourage them to reflect, transform and therefore improve the world around them collectively. This idea demonstrates the transformative potential that future economics graduates may have as a result of taking a critical realist view of the world in their undergraduate studies of economics. A transformative and critical view, which was instilled into them by their undergraduate economics lecturers teaching under a reconceptualised and critical realist economics curriculum.

As I have shown, the nature of economics has shifted from being one which is rooted in morals, values, ethics and human empathy to one that became a subject that is overly mathematical and scientific in its approach with an associated divergence from its moral roots. However, western economies were to experience a huge exogenous shock through the financial crisis of 2008 and not be able to predict it beforehand or answer questions about why it occurred adequately. Students and teachers of economics had thus seemingly lost some of the faith it had placed in the overly simplified neo-classical economics that is being taught in schools, colleges and universities around the world. United by a will to change the way economics is being taught and learnt, students and then teachers decided to make a stance and change the manner in which the subject is perceived, taught and delivered.

The CORE project spearheaded by Professor Carlin at UCL is indeed an exciting curriculum development but it still however remains as just one example in which economics may change for the better. The CORE project serves as a useful starting point to reinvigorate the discipline but more needs to be done in order to make this moment in time one that is indeed transformational for students and teachers of economics. With further developments to the subject, curriculum, pedagogical approach, technology and greater collaboration of the kind seen in the CORE project, maybe only then can Economics be transformed into what Adam Smith had initially envisioned for economics and capitalism.

Economics should be an enlivening subject that seeks to stimulate the thoughts of students, encourage debate and make positive strides in appealing to their human side. Economics should be a discursive subject that discusses ethics, values and morals

surrounding economic actions and policies. Economics should be a subject that aims to help to reduce poverty and equality, slow down climate change, promote sustainability, fosters a sense of community, empower individuals to work for the greater good.

Ultimately economics should be a subject that promotes Adam Smith's ideals to lead to an overall enhancement and advancement of mankind. In the words of Professor Carlin, this is indeed an 'auspicious time' for change the way economics is being taught and learnt by a new generation of students who are lucky enough to be able to study economics in a different form. What is a possible outcome of students' experiencing an excellent undergraduate economics education? Undergraduate economics students too may realise their own purpose as human beings and upon graduation help to improve the real world that they once studied in a discursive, pluralist and retroductive sphere on their undergraduate economics degree course. UCL is leading this global movement by example and educational institutions in other countries as far reaching as India, Chile, France and Australia have in turn embraced this change. Under my personal guidance, passion, devotion and energy for teaching economics, a university in Singapore will follow suit.

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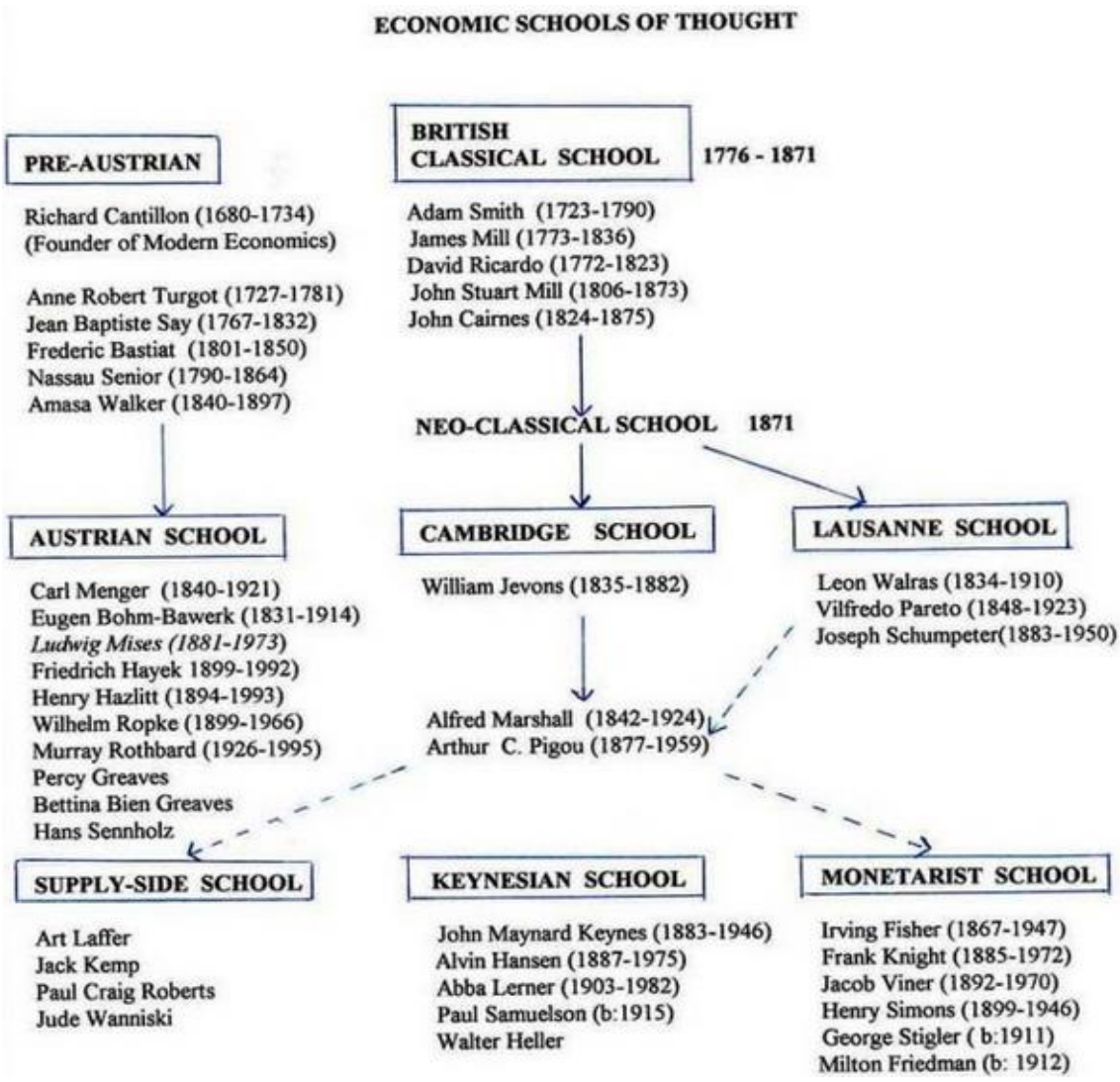
Appendix 1

A summary of the different schools of economics (Source: Patton, 2000)



Appendix 2

Elements of Kolb's learning cycle with their associated activities in the classroom

Concrete experience	**Reflective observation**	**Abstract conceptualisation**	**Active experimentation**
readings examples fieldwork laboratories problem sets trigger films observations simulations/games text reading	logs journals discussion brainstorming thought questions rhetorical questions	lecture papers projects analogies model building	projects fieldwork homework laboratory case study simulations

Appendix 3

Research timeline

Date	Action	Evidence
March 2014 – June 2014	Finalise thesis proposal, complete Ethics Form for approval and begin thesis planning.	Thesis proposal and ethics form
June 2014 – July 2014	Meet supervisor, lecturers and curriculum leaders (in London and Singapore).	Qualitative data: Interview transcripts
December 2014	Analyse collected data	Qualitative data: Interview transcripts and curriculum documents
April 2015	Complete first draft of thesis	First draft
June 2015	Revise and update successive drafts of thesis to create and submit final draft for examination	Final draft
Autumn 2015	Oral examination of the thesis to take place	Viva voce

Appendix 4

Letter requesting informed consent from participants

June 2014

Dear Lecturer/Curriculum Leader,

As part of my Ed.D programme, I am conducting a case study of lecturers and curriculum leaders in the UK and Singapore to explore a re-conceptualised Economics Curriculum. To this end, I will be collecting data from June 2014 to December 2014 in order to gain information regarding your views, opinions and thoughts on the new Economics curriculum.

The data collection methods that I will employ include the following: A semi-structured group interview (including a follow up semi-structured group interview at in December 2014). Your participation is **voluntary** and all collected **information** will remain **strictly confidential** and **anonymous**. All data will be stored in a **safe and secure** location in digital, audio and paper format. You have a **right to anonymity** should you wish and it is **your right to withdraw** your participation in my study **at any time, for any reason**, in which case, all collected evidence from you will be immediately destroyed and therefore not included in my thesis.

Your time, work and commitment is much appreciated and should hopefully provide me with valuable insights into the new Economics curriculum and therefore inform lecturers as to ways of improving teaching and learning of Economics at the undergraduate level in the future.

Please provide your consent or otherwise by filling in your details below and returning this consent form back to me for safe and secure storage.

I hereby give/do not give* my consent to participate in this study

Name:

Signed : Date:

*Delete as appropriate

Appendix 5

Full interview transcript 1

Venue: Drayton House, Room 216, 30 Gordon Street, London,

Private Office of Wendy Carlin,

Time and Date: June 20th 2014, 3pm

In attendance: Wendy Carlin (WC), Jack Patel (JP) & Jacek Brant (JB)

JP: We are here with Professor Wendy Carlin in her nice London Office, in the presence of Dr Jacek Brant and I am here to ask you a few questions about the CORE project. Hi Wendy, nice to see you this afternoon on this glorious sunny day in London!

1) JP: So Wendy, describe the main rationale behind the CORE project?

WC: Well, the rationale is to change the way that students learn Economics and the way we teach economics. We are really trying to close three gaps, which is now turning out to be four. So the idea is that there is a big gap between what we as research active Economists do in our practice of doing research in Economics and how we teach the students. So there is a lot that has happened in the last three decades. Economics has made a lot of progress, it has made mistakes, but there is also a lot of progress we should be putting into the classroom, the things we have learnt. The second thing is the gap between what students come to learn, the questions they often come to Economics with and what they get, especially at the beginning of their degree course at present, which is often quite dry and abstract. The ones that stick it out, by the end, hoorah, they kind of see the light and they get to do the stuff that is kind of closer to the research frontier and they find that much closer to policy and they find that very exciting. Whereas, meanwhile a lot them have given up because it wasn't meeting their expectations. The third thing is that we now have access to much better technology for teaching, yet our methods for instruction has not changed. In particular in Economics, where we have to spend a lot of time building models, there really is a huge benefit in having interactive methods, electronic materials that allows you to click through the construction of the diagrams for example in a given model. The final one is sort of a public good problem which is that it is a huge amount of work to create new teaching materials and for any individual teacher, it is prohibitive if they are engaged in research so the idea was to get together a group of academics who are very keen on research but who also care about teaching and put together their efforts and have a collective approach and then we would provide what we did at marginal cost which is zero, so we will supply this online free. So not just students, as there is a lot interest from people who are aren't students, who are interested in having a better understanding of the economy.

2) JP: Excellent, thanks for that and where are you at the implementation stage at the moment of the CORE project?

WC: So we began and we got funding last October so the project is a very new one and where we are is we have initial versions. We are planning to produce material for an 'Introduction to Economics' course which would comprise 21, we had 20 and it's now 21, units, which we call them and we are preparing them in an e-book format and so the stage of actually dividing these units and then writing them, getting all the materials and having it rendered in e-book format which is happening in Bangalore. So we have materials that are in all stages of the production process and we have 1 through 9 and 12 in e-book format and we have another 3 sort of being copied and edited and ready to go there and then another 4 in kind of first draft format and the rest will come along. So, we have produced a lot in the last few months and we have now got it out for review in a very short time-frame and we have done that through the Economics Network which is organised through Bristol University and, that's their business, they recruited reviewers and there's also a set of international reviewers who have been leading the process and that will be analysed by Economics Network for which we have a presentation of the project next week. And there is a group of students, as well, involved in the review process and some employers. So we will have a certain amount of feedback next week and then we will decide what we need to do and then we will do it. And the first versions will be publically released in September, so 1 to 10 will be the first of the rank.

3) JP: OK, Brilliant, thank you. So, in what ways is the CORE project unique or different in comparison to some of the other projects that had gone before it to reform the curriculum in other ways?

WC: We are trying to teach Economics. That Economics has to be seen as embedded in a social system and in a kind of natural environment. So we are sort of trying to teach students to think when they are learning Economics that it doesn't kind of exist by itself and we have to incorporate these other tiers as well. So that is one dimension and the second is that we think that it is good to start students off in Economics by helping them to understand why the world looks like it does now. In other words, to take historical views and say if you go back more than 250 years and if you were wandering around the world then you wouldn't actually find there's much difference in living standards between India, England, Italy and so on. So how does it come today that there are really big differences? That's how we begin, we start with a lot of time series on different aspects of economic development and living standards. So we kind of develop a visual image of an ice hockey stick which is very flat for a long time and then sort of goes up and that's the living standards. For measures of technological development, we have the amount of light emitted through one hours work, one hours labour, how much light. Another one is the speed with which news travels, so we collected data on how long it takes for information to get from A to B within a country or across countries and it goes from about 1 mile an hour and then gradually goes up to about 3 and half miles per hour in the 19th century and then as soon as you get the trans-Atlantic cable it very crowded. So again, you get the same shape if we look at carbon emission into the atmosphere. So that is where we start and that is very different to where many students start Economics and it highlights the fact that we don't draw the distinction between micro and macro. We don't say that you will begin with micro for 10 weeks and then you will do macro for 10 weeks. We start with the kind of giant macro picture but we are always asking the question about why particular decisions are being taken by the different actors.

JP: OK, thanks for that. That sounds very visual, interesting and very helpful for the students to put it in that way.

WC: Yes, I think it will be very challenging for students who select themselves into economics because they think that they can get very high marks for solving equations and they would really have to think a lot harder. But I think some other students who select into Economics because they want to understand the world will find it more satisfying than the current way things are taught.

4) JP: And, what has been the initial reaction from students and teachers when hearing about the CORE project, you know both within UCL and even outside?

WC: We have been very surprised by the enthusiasm. We thought it was worth doing but we didn't expect it to be greeted with the kind of enthusiasm that it has and especially when people haven't seen what we are doing, which I will show you in a minute.

JP: I would appreciate that.

WC: So, students will feel that they will have much more context for what they are learning so they will be rewarded for their ability to talk about Economics with their friends and families in a much more confident way. I think that feeling of being slightly embarrassed was one of the motivations for what we are doing. Especially in the crisis, people would say, 'well you're studying Economics, why can't you explain what is going on?' and they would say 'well, that's not what we are really learning'.

5) JP: Excellent. And what are the main challenges you have come across and may face in the future?

WC: Well, it's really interesting being in designing any research project I have done, trying to figure out how to teach Economics on an introductory level. Taking a blank piece of paper, so taking no preconceptions, just how you think is a good way to do it and then working with a big group of people from very diverse parts of the world. So we have people in Chile, Turkey, Colombia, Russia, India, US, France, people here, so people with very different backgrounds to contribute. A big challenge has been to knit together their contribution and to marshal their enthusiasm, but at the same time trying to create something entirely coherent with a common language. So we have some principals of model building and it is there throughout but a smaller group of us has had to kind of impose discipline in that sense.

JP: So you must speak a lot languages now!

WC: Ah! Fortunately the domination of English is on our side. But then the Chileans are intending to translate it into Spanish for teaching it in their academic year in 2015, so that will be very hard and I don't know if they will manage it.

6) JP: So is the pilot being held in UCL and also other places?

WC: Yes, so we will be teaching using the materials in autumn. It is going to be used in UMASS Boston, with a very different kind of student, a lot of the mature students for example, students much less prepared in an academic sense than the sort of high fliers that we see. But our student body here, has a very substantial proportion of Asian students. They will find it very challenging because they will have to read and they will have to write, and there will be less learning, mimicking how we solve a certain equation which they are very good at, but they are less good at the other skills. And then maybe in some other places, we are not trying to recruit people, put it that way. And then a very interesting case is going to be in Sydney in their academic year which starts in March, because they won't have the project, they kind of heard about it and then decided to do it. Including they have got approved by their university bodies and they will teach it to, this is kind of an elite university in the Australian context, their arts and social science students and they will teach it for a semester and UCL will teach it over 2 terms. They are going to teach a shorter version of it and they will then allow those students who pass to join in their Economics stream. So that is also very interesting and we are hoping that the head of department there, who is very over-stretched, he wants to conduct an evaluation of this so we are trying to design that into it as well. The problem is that we are trying to do everything at top speed so some things may have to wait a bit. Then there is a university in Bangalore doing it in June and Syon Po in Paris in January and then the University of Chile in, I think March. And then there is other people in Italy and so on. So at the moment the priority is to get stuff ready and also it is very decentralised. We work on material, we will produce the material but the decision about whether to do it is obviously the decision of any particular university, that's not down to us.

7) JP: So it is very flexible and collaborative. Excellent and a bit more about the teaching and learning side of things, how do you think that students will benefit from the CORE curriculum as opposed to the traditional one and also do you think that some students will be disadvantaged by that?

WC: Yes, I think that students will have the benefit of a much richer set of materials which will provide context. So our principal is that we don't introduce any concept without a curricula. So I will show you, even when we introduce a demand curve, it is a real estimated demand curve so I think that will be a benefit. Instead of it seeming a very abstract subject, you can sort of promise that at the end of the day we will be able to apply it. From the beginning they won't be asked to kind of accept anything that there hasn't been a kind of justification for. So that's a benefit. I think another benefit I had mentioned was in model building using the electronic thing that they can have on their tablet or phone. (WC showing her tablet to JP and JB) So these are all the different topics and all the different units. So they get to kind of have it with them wherever they are and the intention is that they will actually find it engaging enough to want to use it. We will see if that's true! The disadvantages are that the students who are very oriented towards taking Economics because it's possible to get high marks because there is essentially the mathematical problem solving will find it that it is going to be much harder to get high marks because we are trying to develop a broader range of skills and the push for that is in part the employers who have been quite disappointed with the lack of skills Economics students have. They are very good at solving maths problems but when they get into the workplace that is not what they are being asked to do and therefore it is coming back to us as instructors and teachers and educators that we should be teaching them to present an argument to explain in words what the economics of a particular problem is and not simply be able to rely on reproducing some you know 'solve this equation or constrained optimisation problem and if you do that you will get x equals blah' and they are asked to explain what we should do about or what they think about high-speed rail.

8) JP: About the academic rigour, do you think it is more rigorous than the existing system or would you say it's on par?

WC: I thinks it's definitely rigorous, and so are many textbooks. I think we are using slightly different principals. It is evidence based in the way that many textbooks are not. They present a bit of evidence in boxes and things but they do not have this view that you have to have evidence or some serious context to introduce concepts. So that's a more vigorous test. I think the modelling is a bit in this initial version, we are not providing calculus. We have endless first-order conditions but we don't actually provide calculus but I think we will. In fact we had a volunteer here in the department to write some of the, what we call 'liebnitz' buttons. So if you could press a button or 'liebnitz' then that will go to there to capture the life behind the modelling. But we don't want a kind if slippery slope back to just teaching calculus. That should be a tool, that's quite useful to answer but is not an excuse for not learning Economics.

9) JP: OK. About the assessment of students, will it be done predominantly online or would it be done in a traditional exam setting?

WC: That's going to be entirely up to the local context. Some people have resources, we at UCL are particularly challenged when it comes to resources. For example it is very hard for us to use an online exam because we just don't have the physical facilities to do it. Other universities, I'm sure in Singapore they do, but we don't have enough rooms with enough machines that are working to confidently do an online exam. So I think that one in Japan is not a local setting and isn't integral.

10) JP: About the emphasis on formative and summative assessment, would there be a bias either way?

WC: Well, again, that is entirely up to the institution. So UCL for example, there is a lot of formative assessment where students go to classes, do problem sets and so on. All of what counts for the final classification is the end of year exam. There is no coursework component. That is very unusual in universities and even unusual in UCL, so there is enormous heterogeneity and nothing that we are doing in some sense speaks to that. We are offering every opportunity for teachers to do what they can do within their local environment. I think one thing we are definitely doing is stimulating teachers to think much more about things like peer-assisted learning and group work. So for example at UCL we are going to have a little project for the students which will begin the week before their lectures begin so they will get access to this and they will have the first unit which is called 'The Capitalist Revolution'. In their personal tutor groups, which will be their groups for their first year course, they will be sent to some location in London and given a question, somehow related to this first unit. Then they will have to develop a three minute video that will be submitted after the reading week that term. Then there will be a judging, so that will be a competitive thing and the best ones will get shown at a student conference in the second term. So that's not going to count for their mark in the course but it will certainly count for their CV and their portfolio of skills and things that will help them to be better prepared for the workforce and it will be fun as well!

JP: I'm sure it will be!

11) JP: In terms of the bigger picture, do you see the CORE idea being rolled out in other subject areas or specialisms?

WC: I don't know. I'm sure other subjects are way ahead of Economics and probably are doing brilliant things in this dimension and we have kind of got up a head steam and done it without conducting a massive exercise to find out everything else there was, just because we didn't have time. The idea was that if you have a moment where you have enough people who are enthusiastic, you should just seize the moment and not do feasibility studies and just do it.

JP: You wrote a great quote on that about this being an auspicious time to make a change happen

WC: Yes, it's a bit like 'Just-in Time' production techniques, that you set very kind of ridiculous deadline. Any commercial publisher would think what we are doing is insane. And in fact Kahn, if you have a look at his book 'Thinking slow and thinking fast' gave an example about writing textbooks. If this thing works, we have totally falsified his presumption. I think the project he refers to was a group of people who were due to write a textbook and they found that it would take 2 years and it took 8! So we will see whether it confounds.

JP: I told you so!

12) JP: Also regarding the level of education, we are at the bachelor or undergraduate level at the moment with the CORE project, could you envisage it to work at the secondary level or at maybe at masters' level?

WC: A number of people have approached us about high school, actually people from very different countries as well, and there is a brilliant project on the web called the 'History Project', which started off as a school project in Australia and is funded by the Gates Foundation, it's a really big thing and they have got fantastic graphics and it's the most amazing resource, so that's quite inspiring about how it could be possible to have an effect in schools. But just using the material we have got, I think a very interesting course at the high school level would just take the first unit what we have produced, just that unit and that would be an extremely rich resource to teach students a huge amount about how the world got to look like this and hopefully wetting their appetites to do Economics. So yeah, I think those resources could be used widely. We have also had responses, I gave a talk at Oxford on Tuesday, I think it was, and a student came up to me afterwards and they were medical students and they just heard about this and they also wanted to understand Economics, and he was interested and said that I can imagine and can use these resources myself and not go to a class or anything but just read them. Then some other students said yes, we would have an online community of people who are not even in a formal education setting but were willing to start and then they could talk to each other and that sounds good, as long as they organise it.

13) JP: Good. Looking forward into the future, would there be a sort of review process or evaluation?

WC: Yes, we are trying to design evaluation into it. So we are trying to see the affect in the long run, who does Economics, whether it changes their attitude and whether they learn anything differently, whether they retain anything. So there is an idea of having an evaluation.

14) JP: I am in the Singapore context, teaching at a University, if I was to try and implement CORE, would it be quite easy just to implement it at my current university?

WC: Yeah, well that depends on how persuasive you are.

JP: I'm quite persuasive!

WC: So all the resources, so the e-book will be online and what we are going to do is have a registration process for instructors and we have got to work out whether we should have a nominal fee for instructors, who pay for something like you pay for a library. Then they get access to the animated powerpoints and the excel files with all the data, and also the files with the fact checking. So we have done that systematically, there could be a hundred facts that have all been checked that gives you references and resources so that you can get students to do projects based on facts, for example. So there is extra materials that we will make available to teachers. Then it is just up to you, whether you can persuade your department and again there will be a great variety in the method of instruction. Some people will flip the classroom, not every week but a lot, the second unit is called 'Escape from the poverty trap' I think it is called, 'Innovation and the Escape from the poverty trap' and it is set in the industrial revolution and also introduces the modelling. Some people are going to say well it is really interesting but I don't know the fanciest thing about the industrial revolution, so I'm going to tell the students to read that in bed, whatever, answer these questions, before they come to class, I am going to look at their answers, and then there is the 'face time' in our lecture where I am going to do the modelling, which I am more comfortable about, and I am also going to do some work with them on measurement for example, how we measure living standards and how are we going to think about measuring production technologies, where do we get these relative price data, so we show them the relative price data. So you can imagine that is a better use of the teachers time with the students, because the student is not going to bother on their own to worry much about the measurement issues, this and that, but they will be swung along by the narrative in the e-book to pick up the economic history. That's the idea.

JP: Thank you.

JB: So, in four years as a head of department, basically what happened back in November, I bid for twenty Economics PGCE numbers, got them from the National College, I was going to employ someone as I thought I really want to do this. So, I have made it happen so it my job from September.

WC: OK

JB: I am very interested in your work, I don't know very much about your particular work, but in the approach to heterodox economics. At the end of August, I am presenting a keynote in France and the title is something like 'what is wrong with secondary school economics and how can teachers make it right?' I think that approach to Unit 1 sounds absolutely fascinating in terms of developing a connective empathy and understanding…

WC: Yeah, yeah, yeah

JB: and using Economics as an explanatory tool and using something like Roy Bhaskar would call a 'retroductive' approach

WC: Right, yes, I think you could definitely. I think a rather interesting project, if someone were to do a sort of ethnography of this project, then they would kind of uncover all of these things, which we haven't really kind of conceptualised, we have just done it. There is a kind of meta-logic to what we are doing, although we are not following any recipe book.

JB: Yes I understand that, so as a researcher what I want to do in the next two years is a critique of positive economics, a critique of the methodology, looking at the ontology, the epistemology and putting forward different frameworks. As my work as a teacher educator, I simply want school teachers not to start with theory, but to start with the real world and use models to explain.

WC: Yes, that's exactly right and what is so interesting is that the harshest critiques of what we are doing are so called 'heterodox economists' which I think is bizarre. Totally bizarre because it strikes me as a very non-pluralist attitude to us. So they are kind of saying we are doing nothing new, just same old neo-classical economics, which is just completely crazy.

JB: Which is not, it's different.

WC: Yes, we are certainly not doing the same old neo-classical economics. We are making use of whatever tools there are so we are genuinely open and pluralist. We don't care who had the idea.

JB: Of which neo-classical economics is one of the range of tools.

WC: Yes, exactly, we use stuff from Hayek, from Minsky, from Hecsher-Ohlin, you know whoever had a good idea. It doesn't matter and of course another interesting question is how those ideas rose to the cream and whether they didn't and whether they were rather overlooked like Minsky for example, but that is a different issue. What we are trying to do is to say let's start from the evidence, let's think of how we build a coherent framework and then we should be very flexible. Also we should bring this to the attention to the students, not sort of here is the methodology, because I don't think many students have really read it, they want to understand the world, but as we go along, it is quite interesting to think that this idea actually emerged in the 18th century, this idea actually emerged in Germany or Austria at that particular time, why was he thinking like that, this came out of someone sitting in England. That should be a kind of like osmosis really, that you absorb the idea, you absorb the economic history and you absorb the history of thought as you go along as you are building up your competence and your confidence with the basic framework. Some students would indeed, I'm sure relish a later course that really focuses for example on these different schools of thought and they would have a firm foundation for that. But they wouldn't be done with their study of Economics thinking that it was about a warring, some sort of warring factions. I don't believe that's a useful way of equipping students to understand important questions. So that is the philosophy. It is very interesting to think about going down to school level, there was actually an inquiry about A Level Economics and they asked me to be on it or do something, but I was just too busy.

JB: I met one of your colleagues at the Department of Education, six or nine months ago.

WC: Was it Ian Preston?

JB: It was Ian Preston.

WC: He told me he was going to go, which was very good.

JB: we are both under the school people as well.

WC: He said he thought they were going in the wrong direction and that they kind of needed to be pulled.

JB: Yeah, that's right.

WC: They were kind of going in the direction that universities were actually teaching thirty years ago.

JB: We both had a similar argument, we both actually argued for a project where the school children could actually investigate and do something real, and why that wouldn't be assessed because it doesn't meet the Government criteria. They are thinking about the project being assessed.

WC: Yes, absolutely I think we can get much more imaginative about it as well.

JB: Where the Government is going, it is going back thirty or forty years.

WC: They kind of want the rote stuff.

JB: They want the rote stuff. If it is evident, it is valid. They don't sort of care about it being reliable.

WC: What is interesting about this project is the kind of international dimension. People coming from different national systems have different experiences and different battles that they are fighting as well.

JB: I would love, it is very cheeky of me, access to that chapter 1. Is it on the web?

WC: Yes I can, what I can do is if I can show you some of it and there is kind of a public version of Unit 1

Appendix 6

Full interview transcript 2

Venue: Singapore-based American university, board room, Singapore.

Private Office of Assistant Professors' A and B,

Time and Date: July 29th 2014, 2pm

In attendance: Professor A (PA), Professor B (PB) & Jack Patel (JP)

JP: I am delighted to be here in the presence of two assistant professors A and B who have chosen to remain anonymous for this interview and throughout my study. I will ask a few questions both about the Economics Curriculum at the Singapore-based American university and a bit about the university in general. I would like to promote an air of discussion during this interview so feel free to interject with your comments and views as and when they arise. So let's begin.

1) JP: Would you please explain to me a bit about the general structure of your courses here?

PA: The courses here are designed to fit the needs of our students here in Singapore as much as possible. Although this is an American university based in Daytona, our degrees are all internationally accredited and we do tailor things to meet the needs of our Singaporean students at this, our Asia campus. Our students are enrolled in either the Aviation Business Administration or Aeronautics subjects at bachelors or masters level which are both available to students for full-time and part-time study and so can take around 3 to 5 years to complete. However, we are now offering our degrees as an online degree, which with the rise of the MOOCs in general, is gaining in popularity. It is compulsory for our students to study what we call 'general education core' courses, and that is where subjects such as Maths, Economics and English communication courses fit in for all students.

2) JP: Thanks for summing that up. So, Economics fits into your curriculum as a 'general education core' course. How is it organised in particular?

PA: So, we offer Economics education as separate Microeconomics and Macroeconomics courses. Students typically study each Microeconomics and Macroeconomics over 8 week terms which is followed by an assessment week in Week 9. The two economics courses are weighted to provide students with 6 credits towards their 36 credits required to complete their general education core course units required for their degrees.

3) JP: OK, thank you. So what are your main areas of focus in each of your economics courses?

PA: You (PB) can take this one.

PB: OK, in Microeconomics we start off with decision making at the individual level with constrained maximisation problems using indifference curves and budget constraints. We then move onto the theory of the firm, with reference to practical settings, commonly citing examples from the aviation industry.

Macroeconomics, starts off with a look at common macroeconomic objectives and indicators in particular, using national accounting and measures such as GDP. We then move onto looking at how the aviation industry contributes to this through tourism, job creation and capital expansion and so on. Across the two courses, we always try to change things from what our American counterpart is doing, by providing up to date localised examples to make the subject as relevant and engaging to Singaporean students as possible. We incorporate local names, brands and regional case studies into our materials. A recent one we did was a study of Malaysian Airlines in the aftermath of the two disasters.

JP: OK, thanks for that. That seems quite interesting and motivating for the students to do it in that way.

PB: Yes, some students find it very interesting to study the economics behind current events in class as they get the chance to relate economic concepts and theories to what they are seeing in the news. We imagine that they can have interesting discussions at home with their families and friends!

4) JP: Ha ha, I can imagine them at the dinner table with their families. A bit more on student feedback, what are the kind of things you typically hear about the Economics course?

PA: We have a real spectrum of responses. Some students are very engaged in the course since they first come in. Others have the attitude that they would honestly rather be somewhere else. However, we do notice that some students grow at ease with the course and therefore enjoy the subject and others may simply lose interest as the course progresses. I have noticed that the mathematical students seem to find unique ways of taking shortcuts in their quest for high grades and end up taking the more mathematical route where possible. The case studies type questions do seem to prove popular with our students as it tends to engage them more than the theoretical topics such as indifference curves, for instance. One thing though, that I think is important to add is that our students are largely second or third language speakers of English and may therefore need extra guidance when it comes to the use and understanding of the English language. One area of feedback we had is that one of our American lecturers had a difficult accent to understand and spoke too fast! So pace and language used in written and oral communication is of primary importance to our students and therefore should not be underestimated.

PB: Interesting responses overall from my students. Most students have said that they enjoy their sessions and that they value our face to face sessions as they have a chance to discuss ideas with their colleagues. We also offer blended learning, which we haven't mentioned yet. Lessons are sometimes conducted online and this allows us to be very flexible to offer lessons outside the usual timetable. Students have commented that they value the use of online learning alongside their classroom lessons.

5) JP: Thank you, that does paint an interesting picture of student needs and concerns indeed. Let's touch on assessment briefly. What forms of assessment are used on your Economics courses?

PA: Well firstly, we make use of classroom measures of assessment such as questions and answer sessions, group work and also my personal favourite: quizzes at the beginning of the each lesson. Quizzes allow us to briefly recap on the previous lesson in order to inform us on individual students and their extent of reading at home, or lack of reading in some cases, and overall understanding of our lecture materials so that any potential problems can be identified and addressed at an early stage. Also, Regular essays, based on our lecture topics, are set for students to be completed every week but the marks in these essays do not contribute to the individual students' final score for their course. Our main form of assessment is the end of course exam. We try to stay clear of questions from the textbook publisher as most of the answers are available online and as you know, students are quite smart about 'googling' for answers online. We formulate our own localised case studies, essays and multiple choice type questions to check students' understanding of Micro and Macro in exam conditions on campus. This exam lasts for a couple of hours and takes place in week 9.

6) Ok thanks for that. Sticking with student capabilities briefly, have you had any feedback from industry?

PA: This Asia campus was set up in 2011. We therefore have not yet had graduates out in industry on mass. However, we have had some students take up industrial placements with local companies and that has largely gone well to my understanding. All of our students have been heavily involved in working with the organisers of the Singapore Air-show and some have had work placements with Singapore International Airlines too with many projected to go on and begin their careers with both the Singapore national carrier and Changi Airport.

7) And what are the main challenges you have come across and may face in the future?

PB: Our main pressure stems from our rapid expansion. We are projected to double our student numbers by July 2015 and will therefore need more faculty and physical resources as we move to a larger premises near Dhoby Ghaut. This comes with many associated challenges as you can probably imagine. We are also expanding our online learning, and new staff are being trained up in Blackboard and Eagle Vision, which forms the basis of our remote lessons. Expansion is clearly necessary but we cannot allow our brand to be diluted in this process.

PA: I agree with you (PB) one hundred percent. Our ambition must not compromise our core values of teaching and learning. This is what I see as our main challenge for the future.

8) JP: Thank you. A bit about the wider aspects of Economics curriculum now. You are probably aware of the changes in the UK, and indeed the world, at the moment with regards to the changes in the Economics curriculum as orchestrated firstly by the students and then put into action by some faculties. What, if anything at all, has been the effect of this movement on your Economics curriculum?

PB: We have been following with some interest. We read about the student protests at Manchester University, if I remember correctly. I think it is positive that it is the students that have enacted this progress and successfully lobbied for change in what and how they are taught at university. As economists in the 21st century, it is important for us a subject to remain relevant to our times but also keep true to our founding theories and concepts. It is a balance that must be struck. Thus far, we have not actually adapted or changed our curriculum per se.

PA: Yes, I read about it in the Economist many months back. It is something we have discussed here and I am all for it as it has great potential to improve things like engagement and relevance while exposing students to a variety of schools of economic thought and therefore encouraging a pluralist outlook to their studies. We are actually looking at updating materials in the future, but talks about substantial change to our curriculum is quite embryonic at this stage, as pointed out (by PB) and must be put through and passed through our head office in America. However, we have to remember that we do have limits on the timescales of our Microeconomics and Macroeconomics courses here. We may be restricted somewhat in getting students to discuss various heterodox approaches in great detail in this case, although it would be beneficial and interesting to do so, for both us and the students. So yes, it is an exciting time to be teaching and learning Economics but we must exercise a degree of caution at our university and look at making perhaps smaller and subtle changes over a period of time. I feel this may be the approach that works better for our staff and students.

JP: Thank you both for your time today. This was an interesting discussion and I look forward to speaking with you both further about this topic.

Appendix 7

Full interview transcript 1 with preliminary and final codes

1) JP: So Wendy, describe the main rationale behind the CORE project?

Raw Data	Preliminary Codes	Final Codes
WC: Well, the rationale is to change the way that students learn Economics and the way we teach economics. We are really trying to close three gaps, which is now turning out to be four. So the idea is that there is a big gap between what we as research active Economists do in our practice of doing research in Economics and how we teach the students. So there is a lot that has happened in the last three decades. Economics has made a lot of progress, it has made mistakes, but there is also a lot of progress we should be putting into the classroom, the things we have learnt. The second thing is the gap between what students come to learn, the questions they often come to Economics with and what they get, especially at the beginning of their degree course at present, which is often quite dry and abstract. The ones that stick it out, by the end, hoorah, they kind of see the light and they get to do the stuff that is kind of closer to the research frontier and they find that much closer to policy and they find that very exciting. Whereas, meanwhile a lot them have given up because it wasn't meeting their expectations. The third thing is that we now have access to much better technology for teaching, yet our methods for instruction has not changed. In particular in Economics, where we have to spend a lot of time building models, there really is a huge benefit in having interactive methods, electronic materials that allows you to click through the construction of the diagrams for example in a given model. The final one is sort of a public good problem which is that it is a huge amount of work to create new teaching materials and for any individual teacher, it is prohibitive if they are engaged in research so the idea was to get together a group of academics who are very keen on research but who also care about teaching and put together their efforts and have a collective approach and then we would provide what we did at marginal cost which is zero, so we will supply this online free. So not just students, as there is a lot interest from people who are aren't students, who are interested in having a better understanding of the economy.	Pedagogy Mismatch: research & teaching and the need to improve Moving from theory to practice Modern teaching tools and methods Collective & collaborative Open & freely available online	Improving pedagogy Deep learning Contextualised learning Using ICT Student engagement Collaboration Open access

2) Where are you at the implementation stage at the moment of the CORE project?

Raw data	Preliminary Codes	Final Codes
WC: So we began and we got funding last October so the project is a very new one and where we are is we have initial versions. We are planning to produce material for an 'Introduction to Economics' course which would comprise 21, we had 20 and it's now 21, units, which we call them and we are preparing them in an e-book format and so the stage of actually dividing these units and then writing them, getting all the materials and having it rendered in e-book format which is happening in Bangalore. So we have materials that are in all stages of the production process and we have 1 through 9 and 12 in e-book format and we have another 3 sort of being copied and edited and ready to go there and then another 4 in kind of first draft format and the rest will come along. So, we have produced a lot in the last few months and we have now got it out for review in a very short time-frame and we have done that through the Economics Network which is organised through Bristol University and, that's their business, they recruited reviewers and there's also a set of international reviewers who have been leading the process and that will be analysed by Economics Network for which we have a presentation of the project next week. And there is a group of students, as well, involved in the review process and some employers. So we will have a certain amount of feedback next week and then we will decide what we need to do and then we will do it. And the first versions will be publically released in September, so 1 to 10 will be the first of the rank.	Initial e-book to be made available Chapters at various production stages Review & feedback process September 2014 launch	Using ICT Collaboration Review and Feedback

3) In what ways is the CORE project unique or different in comparison to some of the other projects that had gone before it to reform the curriculum in other ways?

Raw data	Preliminary Codes	Final Codes
WC: We are trying to teach Economics. That Economics has to be seen as embedded in a social system and in a kind of natural environment. So we are sort of trying to teach students to think when they are learning Economics that it doesn't kind of exist by itself and we have to incorporate these other tiers as well. So that is one dimension and the second is that we think that it is good to start students off in Economics by helping them to understand why the world looks like it does now. In other words, to take historical views and say if you go back more than 250 years and if you were wandering around the world then you wouldn't actually find there's much difference in living standards between India, England, Italy and so on. So how does it come today that there are really big differences? That's how we begin, we start with a lot of time series on different aspects of economic development and living standards. So we kind of develop a visual image of an ice hockey stick which is very flat for a long time and then sort of goes up and that's the living standards. For measures of technological development, we have the amount of light emitted through one hours work, one hours labour, how much light. Another one is the speed with which news travels, so we collected data on how long it takes for information to get from A to B within a country or across countries and it goes from about 1 mile an hour and then gradually goes up to about 3 and half miles per hour in the 19th century and then as soon as you get the trans-Atlantic cable it very crowded. So again, you get the same shape if we look at carbon emission into the atmosphere. So that is where we start and that is very different to where many students start Economics and it highlights the fact that we don't draw the distinction between micro and macro. We don't say that you will begin with micro for 10 weeks and then you will do macro for 10 weeks. We start with the kind of giant macro picture but we are always asking the question about why particular decisions are being taken by the different actors. JP: OK, thanks for that. That sounds very visual, interesting and very helpful for the students to put it in that way. Yes, I think it will be very challenging for students who select themselves into economics because they think that they can get very high marks for solving equations and they would really have to think a lot harder. But I think some other students who select into Economics because they want to understand the world will find it more satisfying than the current way things are taught.	Economics situated in a real world context Questioning observed phenomenon Visual depictions targeted to the audience Ideas first, labels later Challenging students: Towards understanding, away from maths.	Contextualised learning Student engagement Deep learning Student engagement Challenging students appropriately Deep learning Reducing mathematical focus

4) What has been the initial reaction from students and teachers when hearing about the CORE project, you know both within UCL and even outside?

Raw data	Preliminary Codes	Final Codes
WC: We have been very surprised by the enthusiasm. We thought it was worth doing but we didn't expect it to be greeted with the kind of enthusiasm that it has and especially when people haven't seen what we are doing, which I will show you in a minute. So, students will feel that they will have much more context for what they are learning so they will be rewarded for their ability to talk about Economics with their friends and families in a much more confident way. I think that feeling of being slightly embarrassed was one of the motivations for what we are doing. Especially in the crisis, people would say, 'well you're studying Economics, why can't you explain what is going on?' and they would say 'well, that's not what we are really learning'.	Enthusiastic response Students feel greater pride and confidence in Economics	Collaboration Contextualised learning Student engagement Sense of pride in Economics

5) What are the main challenges you have come across and may face in the future?

Raw data	Preliminary Codes	Final Codes
WC: Well, it's really interesting being in designing any research project I have done, trying to figure out how to teach Economics on an introductory level. Taking a blank piece of paper, so taking no preconceptions, just how you think is a good way to do it and then working with a big group of people from very diverse parts of the world. So we have people in Chile, Turkey, Colombia, Russia, India, US, France, people here, so people with very different backgrounds to contribute. A big challenge has been to knit together their contribution and to marshal their enthusiasm, but at the same time trying to create something entirely coherent with a common language. So we have some principals of model building and it is there throughout but a smaller group of us has had to kind of impose discipline in that sense. JP: So you must speak a lot languages now! WC: Ah! Fortunately the domination of English is on our side. But then the Chileans are intending to translate it into Spanish for teaching it in their academic year in 2015, so that will be very hard and I don't know if they will manage it.	Unprecedented project Globally diverse team with different backgrounds Teamwork English as a common language Translations into other languages	Exploratory Diversity Collaboration English medium Open access

6) Is the pilot being held in UCL and also other places?

Raw data	Preliminary Codes	Final Codes
WC: Yes, so we will be teaching using the materials in autumn. It is going to be used in UMASS Boston, with a very different kind of student, a lot of the mature students for example, students much less prepared in an academic sense than the sort of high fliers that we see. But our student body here, has a very substantial proportion of Asian students. They will find it very challenging because they will have to read and they will have to write, and there will be less learning, mimicking how we solve a certain equation which they are very good at, but they are less good at the other skills. And then maybe in some other places, we are not trying to recruit people, put it that way. And then a very interesting case is going to be in Sydney in their academic year which starts in March, because they won't have the project, they kind of heard about it and then decided to do it. Including they have got approved by their university bodies and they will teach it to, this is kind of an elite university in the Australian context, their arts and social science students and they will teach it for a semester and UCL will teach it over 2 terms. They are going to teach a shorter version of it and they will then allow those students who pass to join in their Economics stream. So that is also very interesting and we are hoping that the head of department there, who is very over-stretched, he wants to conduct an evaluation of this so we are trying to design that into it as well. The problem is that we are trying to do everything at top speed so some things may have to wait a bit. Then there is a university in Bangalore doing it in June and Syon Po in Paris in January and then the University of Chile in, I think March. And then there is other people in Italy and so on. So at the moment the priority is to get stuff ready and also it is very decentralised. We work on material, we will produce the material but the decision about whether to do it is obviously the decision of any particular university, that's not down to us.	Diverse student body: age, ethnicity and ability in mathematics/ literacy Local variations in course delivery: duration, commencement and evaluation Challenge: Tight deadline Decentralised and flexible implementation	Diversity Deep learning Surface learning Reducing mathematical focus Challenging students appropriately Flexibility Challenging time-frame Flexibility Open access

7) How do you think that students will benefit from the CORE curriculum as opposed to the traditional one and also do you think that some students will be disadvantaged by that?

Raw data	Preliminary Codes	Final Codes
WC: Yes, I think that students will have the benefit of a much richer set of materials which will provide context. So our principal is that we don't introduce any concept without a curricula. So I will show you, even when we introduce a demand curve, it is a real estimated demand curve so I think that will be a benefit. Instead of it seeming a very abstract subject, you can sort of promise that at the end of the day we will be able to apply it. From the beginning they won't be asked to kind of accept anything that there hasn't been a kind of justification for. So that's a benefit. I think another benefit I had mentioned was in model building using the electronic thing that they can have on their tablet or phone. (WC showing her tablet to JP and JB) So these are all the different topics and all the different units. So they get to kind of have it with them wherever they are and the intention is that they will actually find it engaging enough to want to use it. We will see if that's true! The disadvantages are that the students who are very oriented towards taking Economics because it's possible to get high marks because there is essentially the mathematical problem solving will find it that it is going to be much harder to get high marks because we are trying to develop a broader range of skills and the push for that is in part the employers who have been quite disappointed with the lack of skills Economics students have. They are very good at solving maths problems but when they get into the workplace that is not what they are being asked to do and therefore it is coming back to us as instructors and teachers and educators that we should be teaching them to present an argument to explain in words what the economics of a particular problem is and not simply be able to rely on reproducing some you know 'solve this equation or constrained optimisation problem and if you do that you will get x equals blah' and they are asked to explain what we should do about or what they think about high-speed rail.	Engaging and contextualised learning: text and learning tools justify observed phenomena Reduced mathematical focus: May disadvantage some students. Focus on application and workplace skills. Deep learning vs surface learning	Contextualised learning Using ICT Student engagement Challenging students appropriately Transferable skills Critical realism Reducing mathematical focus Deep Learning Surface learning

8) About the academic rigour, do you think it is more rigorous than the existing system or would you say it's on par?

Raw data	Preliminary Codes	Final Codes
WC: I thinks it's definitely rigorous, and so are many textbooks. I think we are using slightly different principals. It is evidence based in the way that many textbooks are not. They present a bit of evidence in boxes and things but they do not have this view that you have to have evidence or some serious context to introduce concepts. So that's a more vigorous test. I think the modelling is a bit in this initial version, we are not providing calculus. We have endless first-order conditions but we don't actually provide calculus but I think we will. In fact we had a volunteer here in the department to write some of the, what we call 'liebnitz' buttons. So if you could press a button or 'liebnitz' then that will go to there to capture the life behind the modelling. But we don't want a kind if slippery slope back to just teaching calculus. That should be a tool, that's quite useful to answer but is not an excuse for not learning Economics.	Rigorous and evidence based Shifting emphasis: Calculus as an explanatory tool not as an end in itself	Using ICT Reducing mathematical focus

9) About the assessment of students, will it be done predominantly online or would it be done in a traditional exam setting?

Raw data	Preliminary Codes	Final Codes
WC: That's going to be entirely up to the local context. Some people have resources, we at UCL are particularly challenged when it comes to resources. For example it is very hard for us to use an online exam because we just don't have the physical facilities to do it. Other universities, I'm sure in Singapore they do, but we don't have enough rooms with enough machines that are working to confidently do an online exam. So I think that one in Japan is not a local setting and isn't integral.	Resource limitations regarding ICT: flexibility in nature of assessment	Resource constraints

10) About the emphasis on formative and summative assessment, would there be a bias either way?

Raw data	Preliminary Codes	Final Codes
WC: Well, again, that is entirely up to the institution. So UCL for example, there is a lot of formative assessment where students go to classes, do problem sets and so on. All of what counts for the final classification is the end of year exam. There is no coursework component. That is very unusual in universities and even unusual in UCL, so there is enormous heterogeneity and nothing that we are doing in some sense speaks to that. We are offering every opportunity for teachers to do what they can do within their local environment. I think one thing we are definitely doing is stimulating teachers to think much more about things like peer-assisted learning and group work. So for example at UCL we are going to have a little project for the students which will begin the week before their lectures begin so they will get access to this and they will have the first unit which is called 'The Capitalist Revolution'. In their personal tutor groups, which will be their groups for their first year course, they will be sent to some location in London and given a question, somehow related to this first unit. Then they will have to develop a three minute video that will be submitted after the reading week that term. Then there will be a judging, so that will be a competitive thing and the best ones will get shown at a student conference in the second term. So that's not going to count for their mark in the course but it will certainly count for their CV and their portfolio of skills and things that will help them to be better prepared for the workforce and it will be fun as well!	Flexibility in nature of assessment: Summative vs formative Scope for group work, investigations, video production: Deep learning Workplace skills and enjoyment too	Flexibility Surface learning Challenging students appropriately Student Engagement Deep learning Transferable skills

11) In terms of the bigger picture, do you see the CORE idea being rolled out in other subject areas or specialisms?

Raw data	Preliminary Codes	Final Codes
WC: I don't know. I'm sure other subjects are way ahead of Economics and probably are doing brilliant things in this dimension and we have kind of got up a head steam and done it without conducting a massive exercise to find out everything else there was, just because we didn't have time. The idea was that if you have a moment where you have enough people who are enthusiastic, you should just seize the moment and not do feasibility studies and just do it. JP: You wrote a great quote on that about this being an auspicious time to make a change happen WC: Yes, it's a bit like 'Just-in Time' production techniques, that you set very kind of ridiculous deadline. Any commercial publisher would think what we are doing is insane. And in fact Kahn, if you have a look at his book 'Thinking slow and thinking fast' gave an example about writing textbooks. If this thing works, we have totally falsified his presumption. I think the project he refers to was a group of people who were due to write a textbook and they found that it would take 2 years and it took 8! So we will see whether it confounds.	Exploratory and organic project Auspicious time for curriculum change Pace of project unprecedented	Exploratory Resource constraints Sense of pride Collaboration Challenging time-frame

12) Also regarding the level of education, we are at the bachelor or undergraduate level at the moment with the CORE project, could you envisage it to work at the secondary level or at maybe at masters' level?

Raw data	Preliminary Codes	Final Codes
WC: A number of people have approached us about high school, actually people from very different countries as well, and there is a brilliant project on the web called the 'History Project', which started off as a school project in Australia and is funded by the Gates Foundation, it's a really big thing and they have got fantastic graphics and it's the most amazing resource, so that's quite inspiring about how it could be possible to have an effect in schools. But just using the material we have got, I think a very interesting course at the high school level would just take the first unit what we have produced, just that unit and that would be an extremely rich resource to teach students a huge amount about how the world got to look like this and hopefully wetting their appetites to do Economics. So yeah, I think those resources could be used widely. We have also had responses, I gave a talk at Oxford on Tuesday, I think it was, and a student came up to me afterwards and they were medical students and they just heard about this and they also wanted to understand Economics, and he was interested and said that I can imagine and can use these resources myself and not go to a class or anything but just read them. Then some other students said yes, we would have an online community of people who are not even in a formal education setting but were willing to start and then they could talk to each other and that sounds good, as long as they organise it.	Applicability to secondary education Wider audience: across disciplines and non-academics Open source collaboration	Flexibility Using ICT Sense of pride in Economics Open access Collaboration

Looking forward into the future, would there be a sort of review process or evaluation?

Raw data	Preliminary Codes	Final Codes
WC: Yes, we are trying to design evaluation into it. So we are trying to see the affect in the long run, who does Economics, whether it changes their attitude and whether they learn anything differently, whether they retain anything. So there is an idea of having an evaluation.	Trends: attitudes, demographic, impact on learning and retention	Review and feedback

13) I am in the Singapore context, teaching at Embry-Riddle University, if I was to try and implement CORE, would it be quite easy just to implement it at my current university?

Raw data	Preliminary Codes	Final Codes
WC: Yeah, well that depends on how persuasive you are. JP: I'm quite persuasive! WC: So all the resources, so the e-book will be online and what we are going to do is have a registration process for instructors and we have got to work out whether we should have a nominal fee for instructors, who pay for something like you pay for a library. Then they get access to the animated power-points and the excel files with all the data, and also the files with the fact checking. So we have done that systematically, there could be a hundred facts that have all been checked that gives you references and resources so that you can get students to do projects based on facts, for example. So there is extra materials that we will make available to teachers. Then it is just up to you, whether you can persuade your department and again there will be a great variety in the method of instruction. Some people will flip the classroom, not every week but a lot, the second unit is called 'Escape from the poverty trap' I think it is called, 'Innovation and the Escape from the poverty trap' and it is set in the industrial revolution and also introduces the modelling. Some people are going to say well it is really interesting but I don't know the fanciest thing about the industrial revolution, so I'm going to tell the students to read that in bed, whatever, answer these questions, before they come to class, I am going to look at their answers, and then there is the 'face time' in our lecture where I am going to do the modelling, which I am more comfortable about, and I am also going to do some work with them on measurement for example, how we measure living standards and how are we going to think about measuring production technologies, where do we get these relative price data, so we show them the relative price data. So you can imagine that is a better use of the teachers time with the students, because the student is not going to bother on their own to worry much about the measurement issues, this and that, but they will be swung along by the narrative in the e-book to pick up the economic history. That's the idea.	Open access, free to use (currently) and extra resources for teachers Practical teaching ideas	Open access Using ICT Deep learning Student engagement

Raw data	Preliminary Codes	Final Codes
JB: So, in four years as a head of department, basically what happened back in November, I bid for twenty Economics PGCE numbers, got them from the National College, I was going to employ someone as I thought I really want to do this. So, I have made it happen so it my job from September.	Identifying the growing need for Economics education	Sense of pride in Economics
WC: OK		
JB: I am very interested in your work, I don't know very much about your particular work, but in the approach to heterodox economics. At the end of August, I am presenting a keynote in France and the title is something like 'what is wrong with secondary school economics and how can teachers make it right?' I think that approach to Unit 1 sounds absolutely fascinating in terms of developing a connective empathy and understanding…	Building a common understanding on improving teaching and learning	Improving pedagogy
WC: Yeah, yeah, yeah	Identifying a Bhaskarian approach to critical realism in economics pedagogy	Critical realism
JB: and using Economics as an explanatory tool and using something like Roy Bhaskar would call a 'retroductive' approach		
WC: Right, yes, I think you could definitely. I think a rather interesting project, if someone were to do a sort of ethnography of this project, then they would kind of uncover all of these things, which we haven't really kind of conceptualised, we have just done it. There is a kind of meta-logic to what we are doing, although we are not following any recipe book.	Questioning the foundation of the framework in economics	Critiquing Economics Epistemology
JB: Yes I understand that, so as a researcher what I want to do in the next two years is a critique of positive economics, a critique of the methodology, looking at the ontology, the epistemology and putting forward different frameworks. As my work as a teacher educator, I simply want school teachers not to start with theory, but to start with the real world and use models to explain.	Ideas first, labels later: Using models as an explanatory tool	Deep learning Improving pedagogy
WC: Yes, that's exactly right and what is so interesting is that the harshest critiques of what we are doing are so called 'heterodox economists' which I think is bizarre. Totally bizarre because it strikes me as a very non-pluralist attitude to us. So they are kind of saying we are doing nothing new, just same old neo-classical economics, which is just completely crazy.		Improving pedagogy
JB: Which is not, it's different.	Unfair criticism from 'heterodox economists'	
WC: Yes, we are certainly not doing the same old neo-classical economics. We are making use of whatever tools there are so we are genuinely open and pluralist. We don't care who had the idea.		Pluralism
JB: Of which neo-classical economics is one of the range of tools.	Using a flexible and wider range of pluralist tools, including historical ideas, to solve current	Pluralism Deep learning
WC: Yes, exactly, we use stuff from Hayek, from Minsky, from Hecsher-Ohlin, you know whoever had a good idea. It doesn't matter and of course another interesting question is how those ideas rose to the cream and whether they didn't and whether they were rather overlooked like Minsky for example, but that is a different issue. What we are trying to do is to say let's start from the evidence, let's think of how we build a coherent framework and		Student engagement

then we should be very flexible. Also we should bring this to the attention to the students, not sort of here is the methodology, because I don't think many students have really read it, they want to understand the world, but as we go along, it is quite interesting to think that this idea actually emerged in the 18th century, this idea actually emerged in Germany or Austria at that particular time, why was he thinking like that, this came out of someone sitting in England. That should be a kind of like osmosis really, that you absorb the idea, you absorb the economic history and you absorb the history of thought as you go along as you are building up your competence and your confidence with the basic framework. Some students would indeed, I'm sure relish a later course that really focuses for example on these different schools of thought and they would have a firm foundation for that. But they wouldn't be done with their study of Economics thinking that it was about a warring, some sort of warring factions. I don't believe that's a useful way of equipping students to understand important questions. So that is the philosophy. It is very interesting to think about going down to school level, there was actually an inquiry about A Level Economics and they asked me to be on it or do something, but I was just too busy.	economic problems	Sense of pride in Economics Challenging students appropriately Collaboration
JB: I met one of your colleagues at the Department of Education, six or nine months ago.		
WC: Was it Ian Preston?	Government education ministers: regressing towards outdated ideas: Surface learning	
JB: It was Ian Preston.		
WC: He told me he was going to go, which was very good.		Government Education Policy
JB: we are both under the school people as well.		
WC: He said he thought they were going in the wrong direction and that they kind of needed to be pulled.	Arguments proposed for project or problem based education: Deep learning	
JB: Yeah, that's right.		Surface learning
WC: They were kind of going in the direction that universities were actually teaching thirty years ago.		Contextualised learning
JB: We both had a similar argument, we both actually argued for a project where the school children could actually investigate and do something real, and why that wouldn't be assessed because it doesn't meet the Government criteria. They are thinking about the project being assessed.	Critical reasoning and a realist approach required from people of various backgrounds	Deep learning Deep learning
WC: Yes, absolutely I think we can get much more imaginative about it as well.		Critical realism
JB: Where the Government is going, it is going back thirty or forty years.		
WC: They kind of want the rote stuff.		Surface learning
JB: They want the rote stuff. If it is evident, it is valid. They don't sort of care about it being reliable.	Open access	Diversity

WC: What is interesting about this project is the kind of international dimension. People coming from different national systems have different experiences and different battles that they are fighting as well. JB: I would love, it is very cheeky of me, access to that chapter 1. Is it on the web? WC: Yes I can, what I can do is if I can show you some of it and there is kind of a public version of Unit 1		Open access

Appendix 8

Full interview transcript 2 with preliminary and final codes

1) Would you please explain to me a bit about the general structure of your courses here?

Raw data	Preliminary Codes	Final Codes
PA: The courses here are designed to fit the needs of our students here in Singapore as much as possible. Although this is an American university based in Daytona, our degrees are all internationally accredited and we do tailor things to meet the needs of our Singaporean students at this, our Asia campus. Our students are enrolled in either the Aviation Business Administration or Aeronautics subjects at bachelors or masters level which are both available to students for full-time and part-time study and so can take around 3 to 5 years to complete. However, we are now offering our degrees as an online degree, which with the rise of the MOOCs in general, is gaining in popularity. It is compulsory for our students to study what we call 'general education core' courses, and that is where subjects such as Maths, Economics and English communication courses fit in for all students.	American based curriculum in Singapore Aviation related degrees: Economics embedded as core units of study Online learning offered	Contextualised learning Economics embedded as core units Using ICT

2) So, Economics fits into your curriculum as a 'general education core' course. How is it organised in particular?

Raw data	Preliminary Codes	Final Codes
PA: So, we offer Economics education as separate Microeconomics and Macroeconomics courses. Students typically study each Microeconomics and Macroeconomics over 8 week terms which is followed by an assessment week in Week 9. The two economics courses are weighted to provide students with 6 credits towards their 36 credits required to complete their general education core course units required for their degrees.	Economics is compulsory: Divided into Macro and Micro topics. Duration of 8 weeks each	Economics embedded as core units

3) So what are your main areas of focus in each of your economics courses?

Raw data	Preliminary Codes	Final Codes
PA: You (PB) can take this one.		
PB: OK, in Microeconomics we start off with decision making at the individual level with constrained maximisation problems using indifference curves and budget constraints. We then move onto the theory of the firm, with reference to practical settings, commonly citing examples from the aviation industry.	Theory first, followed by practice	Surface learning
Macroeconomics, starts off with a look at common macroeconomic objectives and indicators in particular, using national accounting and measures such as GDP. We then move onto looking at how the aviation industry contributes to this through tourism, job creation and capital expansion and so on. Across the two courses, we always try to change things from what our American counterpart is doing, by providing up to date localised examples to make the subject as relevant and engaging to Singaporean students as possible. We incorporate local names, brands and regional case studies into our materials. A recent one we did was a study of Malaysian Airlines in the aftermath of the two disasters.	Specific applications to the aviation industry and current events	Contextualised learning Student engagement Deep learning
JP: OK, thanks for that. That seems quite interesting and motivating for the students to do it in that way.	Wider discussions, applications	Student engagement
PB: Yes, some students find it very interesting to study the economics behind current events in class as they get the chance to relate economic concepts and theories to what they are seeing in the news. We imagine that they can have interesting discussions at home with their families and friends!	of theory to current events	Sense of pride in Economics

4) A bit more on student feedback, what are the kind of things you typically hear about the Economics course?

Raw data	Preliminary Codes	Final Codes
PA: We have a real spectrum of responses. Some students are very engaged in the course since they first come in. Others have the attitude that they would honestly rather be somewhere else. However, we do notice that some students grow at ease with the course and therefore enjoy the subject and others may simply lose interest as the course progresses. I have noticed that the mathematical students seem to find unique ways of taking shortcuts in their quest for high grades and end up taking the more mathematical route where possible. The case studies type questions do seem to prove popular with our students as it tends to engage them more than the theoretical topics such as indifference curves, for instance. One thing though, that I think is important to add is that our students are largely second or third language speakers of English and may therefore need extra guidance when it comes to the use and understanding of the English language. One area of feedback we had is that one of our American lecturers had a difficult accent to understand and spoke too fast! So pace and language used in written and oral communication is of primary importance to our students and therefore should not be underestimated. PB: Interesting responses overall from my students. Most students have said that they enjoy their sessions and that they value our face to face sessions as they have a chance to discuss ideas with their colleagues. We also offer blended learning, which we haven't mentioned yet. Lessons are sometimes conducted online and this allows us to be very flexible to offer lessons outside the usual timetable. Students have commented that they value the use of online learning alongside their classroom lessons.	Ranging students: Engagement, mathematical inclination, English competency Blended learning: online sessions alongside traditional sessions	Review and feedback Student engagement Increasing mathematical focus Surface learning Diversity English medium Using ICT Flexibility Student engagement

5) What forms of assessment are used on your Economics courses?

Raw data	Preliminary Codes	Final Codes
PA: Well firstly, we make use of classroom measures of assessment such as questions and answer sessions, group work and also my personal favourite: quizzes at the beginning of the each lesson. Quizzes allow us to briefly recap on the previous lesson in order to inform us on individual students and their extent of reading at home, or lack of reading in some cases, and overall understanding of our lecture materials so that any potential problems can be identified and addressed at an early stage. Also, Regular essays, based on our lecture topics, are set for students to be completed every week but the marks in these essays do not contribute to the individual students' final score for their course. Our main form of assessment is the end of course exam. We try to stay clear of questions from the textbook publisher as most of the answers are available online and as you know, students are quite smart about 'googling' for answers online. We formulate our own localised case studies, essays and multiple choice type questions to check students' understanding of Micro and Macro in exam conditions on campus. This exam lasts for a couple of hours and takes place in week 9.	Formative and summative assessment in combination Local context used as a basis for questioning. Plagiarism is of concern	Review and feedback Surface learning Contextualised learning

6) Have you had any feedback from industry?

Raw data	Preliminary Codes	Final Codes
PA: This Asia campus was set up in 2011. We therefore have not yet had graduates out in industry on mass. However, we have had some students take up industrial placements with local companies and that has largely gone well to my understanding. All of our students have been heavily involved in working with the organisers of the Singapore Air-show and some have had work placements with Singapore International Airlines too with many projected to go on and begin their careers with both the Singapore national carrier and Changi Airport.	Young university. Establishing local industrial links.	Transferable skills Collaboration Challenging students appropriately

7) What are the main challenges you have come across and may face in the future?

Raw data	Preliminary Codes	Final Codes
PB: Our main pressure stems from our rapid expansion. We are projected to double our student numbers by July 2015 and will therefore need more faculty and physical resources as we move to a larger premises near Dhoby Ghaut. This comes with many associated challenges as you can probably imagine. We are also expanding our online learning, and new staff are being trained up in Blackboard and Eagle Vision, which forms the basis of our remote lessons. Expansion is clearly necessary but we cannot allow our brand to be diluted in this process. PA: I agree with you (PB) one hundred percent. Our ambition must not compromise our core values of teaching and learning. This is what I see as our main challenge for the future.	Expansion in student and staff numbers Training needs identified Quality of teaching and learning is paramount	Resource constraints Challenging time-frame Improving pedagogy

8) A bit about the wider aspects of Economics curriculum now. You are probably aware of the changes in the UK, and indeed the world, at the moment with regards to the changes in the Economics curriculum as orchestrated firstly by the students and then put into action by some faculties. What, if anything at all, has been the effect of this movement on your Economics curriculum?

Raw data	Preliminary Codes	Final Codes
PB: We have been following with some interest. We read about the student protests at Manchester University, if I remember correctly. I think it is positive that it is the students that have enacted this progress and successfully lobbied for change in what and how they are taught at university. As economists in the 21st century, it is important for us a subject to remain relevant to our times but also keep true to our founding theories and concepts. It is a balance that must be struck. Thus far, we have not actually adapted or changed our curriculum per se. PA: Yes, I read about it in the Economist many months back. It is something we have discussed here and I am all for it as it has great potential to improve things like engagement and relevance while exposing students to a variety of schools of economic thought and therefore encouraging a pluralist outlook to their studies. We are actually looking at updating materials in the future, but talks about substantial change to our curriculum is quite embryonic at this stage, as pointed out (by PB) and must be put through and passed through our head office in America. However, we have to remember that we do have limits on the timescales of our Microeconomics and Macroeconomics courses here. We may be restricted somewhat in getting students to discuss various heterodox approaches in great detail in this case, although it would be beneficial and interesting to do so, for both us and the students. So yes, it is an exciting time to be teaching and learning Economics but we must exercise a degree of caution at our university and look at making perhaps smaller and subtle changes over a period of time. I feel this may be the approach that works better for our staff and students.	Careful evolution in Economics is important to its relevance and student engagement Existing theories and concepts should remain intact Challenges: length of course, need for smaller/ subtle changes, permission needed	Improving pedagogy Student engagement Sense of pride in Economics Pluralism Exploratory Challenging time-frame Review and feedback

Appendix 9

Full transcript of email survey 1

Time and Date: 9th October 2014, 3.54pm

Survey emailed from Jack Patel (JP) to Professor Edmund Cannon (EC), Economics Lecturer at University of Bristol, UK

> 1) Given your experience of teaching undergraduate economics, what is your general view on the current state of undergraduate Economics and how does it compare to when you first started to teach the subject?

I think that it is more model based, less applied and less discursive. In the past one would discuss the plausibility of a model's assumptions and the robustness of its results to get some idea whether it was applicable to a given situation. There was a greater understanding that models were imperfect. On the plus side, there is much more discussion about empirical testing - is there evidence for this theory and can we identify causation separately from correlation?

> 2) The CORE project, which is being piloted at UCL for Year 1 undergraduate Economics students from September 2014, aims to improve the teaching and learning of Economics. In what ways do you see the CORE project impacting on students' learning?

At the moment: not much. It is still in development and it is possible that it will take a few rounds of revision before it converges on a new paradigm. My personal preference is for gradual change rather than revolution.

> 3) What are the main things you would like to see incorporated into a new Economics curriculum and why?

Economic history is important and students know too few facts. Outside Bristol students know too little econometrics: doing just a little econometrics is no good - a little knowledge may be less than none at all.

> 4) Some academics argue that Economics needs to move away from its focus on empirical tools and methods, make greater connections with its humanist or moral philosophical roots and re-engage with its social science cousins through greater pluralism. What are your views on each of these?

The most promising social science links are with psychology which is one of the "hard" social sciences. I have already said that I think we should link to economic history. In both cases we are interested in facts. Facts need not be quantitative, but I disagree that we should be less empirical. What is the claim here - that we will make economics "more relevant" by looking at what is going on in the world *less*? There is something seriously confused with this line of thought.

I do not know what we gain by doing philosophy. Formal logic is a good tool to have for life, but I think you mean more when going back to philosophical roots. Politics is important because it affects whether or not economic suggestions are implementable. Very little new has come out of the financial crisis and the LSE produced a report criticising Basel II back in 2001. The problem was political will, driven by the fact that the crooks have more lobbying power than the people.

When looking at "pluralism" - schools such as the Austrian school or the post-Keynesian school purport to have a better explanation of how the world works but studiously avoid testing their theories. What do they have to hide? If there theories are "better" in some sense then how do we measure that without going to data. Of course, Austrians think that it is impossible to evaluate theory using data - but then it is not clear how to evaluate theory without data. A lot of these types are just failed economists who cannot cut it in the mainstream (nb not all - some are very clever). I cannot see the gain from teaching lots of different theories if some of them are wrong.

Appendix 10

Full transcript of email survey 2

Time and Date: 9th October 2014, 4.57pm

Survey emailed from Jack Patel (JP) to Professor Jon Temple (JT), Economics Lecturer at University of Bristol, UK

> 1) Given your experience of teaching undergraduate economics, what is your general view on the current state of undergraduate Economics and how does it compare to when you first started to teach the subject?

The basic dilemma in teaching undergraduate economics is whether to emphasise the foundations of the subject (in which case students may not understand the relevance of what they are being taught) or to teach the course in a more applied way (in which case, without enough foundations, the treatment might be superficial or leave common ideas unchallenged). I think the dilemma has been much the same for decades, and faces everyone who teaches a course in this area.

> 2) The CORE project, which is being piloted at UCL for Year 1 undergraduate Economics students from September 2014, aims to improve the teaching and learning of Economics. In what ways do you see the CORE project impacting on students' learning?

The aim of the CORE approach, to the extent that I am familiar with it, seems to be to update the curriculum and to build an understanding of foundations and applied issues simultaneously. I'm not yet familiar with the detailed content of their courses, but it looks like a positive development.

> 3) What are the main things you would like to see incorporated into a new Economics curriculum and why?

I would like to see students given a greater awareness of the limitations of over-simplified economic analyses, of the kind they might hear from politicians or see in the media. I also think the notion of market failure needs to be replaced with a broader notion of the way things can go wrong: organisations sometimes fail, institutions sometimes fail, governments sometimes fail - all this has played a role in the development of the financial crisis.

> 4) Some academics argue that Economics needs to move away from its focus on empirical tools and methods, make greater connections with its humanist or moral philosophical roots and re-engage with its social science cousins through greater pluralism. What are your views on each of these?

I think there are some areas where it makes sense for economists to engage with other disciplines - a good example would be interdisciplinary work on development, like some of Amartya Sen's. At the same time, I think this works better if students have a good grounding in economics, so it is a question of building on a good disciplinary training rather than trying to straddle, from the start, multiple ways of thinking and of seeing the world. I think it would be a mistake to introduce the interdisciplinary approaches too early in a degree course.

Appendix 11

Full transcript of email survey 3

Time and Date: 9th October 2014, 10.41pm

Survey emailed from Jack Patel (JP) to Professor Engelbert Stockhammer (ES), Economics Lecturer at Kingston University, UK

> 1) Given your experience of teaching undergraduate economics, what is your general view on the current state of undergraduate Economics and how does it compare to when you first started to teach the subject?

UG teaching has changed from when I took my UG degree. At the time (in Vienna) there were more social science classes required, there was a mandatory economic history and there were more (institutionally oriented) economic policy classes. Economics became streamlined and history and social sciences have been cut off. It is absurd that economics students don't have to take economic history or history of thought classes (which were required classes not too long ago). Students can finish a first class economics degree without having learned about the Great Depression or without knowing Marx, Schumpeter or Minsky.

> 2) The CORE project, which is being piloted at UCL for Year 1 undergraduate Economics students from September 2014, aims to improve the teaching and learning of Economics. In what ways do you see the CORE project impacting on students' learning?

CORE seems to be a mild improvement, but not going far enough. It's essentially updating mainstream research to incorporate more behavioural econ, but it does not represent the paradigmatic shift that economics needs

> 3) What are the main things you would like to see incorporated into a new Economics curriculum and why?

Systematic treatment of different paradigms in economic theory (like in other social sciences); more historical and (interdisciplinary) problem-oriented classes

> 4) Some academics argue that Economics needs to move away from its focus on empirical tools and methods, make greater connections with its humanist or moral philosophical roots and re-engage with its social science cousins through greater pluralism. What are your views on each of these?

I certainly endorse the need for more pluralism. I don't object to an emphasis on empirical analysis, however the empirical methods currently employed are rather narrow, but overall it's the theoretical narrowness that I regard as the main problem.

Appendix 12

Full transcript of email survey 4

Time and Date: 28th November 2014, 6.11pm

Survey emailed from Jack Patel (JP) to Professor Ian Preston (IP), Economics Lecturer at UCL, UK

> 1) Given your experience of teaching undergraduate economics, what is your general view on the current state of undergraduate Economics and how does it compare to when you first started to teach the subject?

As a general comment on the status of economics, I don't think progress is going to come from any movement away from mathematical understanding. It may be that the particular maths we focus on at present is tied to particular ways of modelling that will be superseded in time but I can only think of economies as complex highly interactive systems that necessitate advanced quantitative techniques for their understanding. Reliance on maths only becomes a problem if it obscures the underlying economic issues.

> 2) The CORE project, which is being piloted at UCL for Year 1 undergraduate Economics students from September 2014, aims to improve the teaching and learning of Economics. In what ways do you see the CORE project impacting on students' learning?

I am not directly involved in the CORE project but, obviously, I am looking at the way it is being used in teaching with interest. I think it aims to improve student's perspective by changing the way they are introduced to the subject, enhancing awareness of the breadth of perspectives within the discipline and embedding a better understanding of its past intellectual development.

> 3) What are the main things you would like to see incorporated into a new Economics curriculum and why?

Speaking very broadly, I would like to see the focus of teaching of economics shift somewhat away from theory towards evidence. I think we lead a bit too heavily with economic theory, teaching it as if it were self-evidently the same as teaching about the economy, and understress questions about the nature of economic evidence and the empirical applicability of the theory. That is how it was taught when I was an undergraduate, it is how textbooks are written and it is predominantly how it is still taught.

> 4) Some academics argue that Economics needs to move away from its focus on empirical tools and methods, make greater connections with its humanist or moral philosophical roots and re-engage with its social science cousins through greater pluralism. What are your views on each of these?

I don't personally see a conflict between focus on empirical tools and methods and what you call the humanist roots of the subject. To me these are complementary and the subject can only be treated incompletely if either is missing. Conceptualising of economic relations and human welfare has to be rooted in a philosophical perspective embedded within a broad social scientific understanding but claims about how the economy works have also to be brought up against empirical evidence using statistical tools. This means the subject is a broad one and perhaps one difficult to cover fully in a single degree so perhaps there is space for differing degree programmes leaning more or less one way or the other but I would not want to see either neglected.

Appendix 13

Full transcript of email survey 1 with preliminary and final codes

1) Given your experience of teaching undergraduate economics, what is your general view on the current state of undergraduate Economics and how does it compare to when you first started to teach the subject?

Raw Data	Preliminary Codes	Final Codes
EC: I think that it is more model based, less applied and less discursive. In the past one would discuss the plausibility of a model's assumptions and the robustness of its results to get some idea whether it was applicable to a given situation. There was a greater understanding that models were imperfect. On the plus side, there is much more discussion about empirical testing - is there evidence for this theory and can we identify causation separately from correlation?	Currently economics relies on models and empirical testing. Although there is less application, discursion and discussions around plausibility or limitations of models.	Deep learning Challenging students appropriately Increasing Mathematical focus Critical realism Critiquing Economics Epistemology

2) The CORE project, which is being piloted at UCL for Year 1 undergraduate Economics students from September 2014, aims to improve the teaching and learning of Economics. In what ways do you see the CORE project impacting on students' learning?

Raw Data	Preliminary Codes	Final Codes
EC: At the moment: not much. It is still in development and it is possible that it will take a few rounds of revision before it converges on a new paradigm. My personal preference is for gradual change rather than revolution.	CORE thus far has limited impacts on student learning and requires revisions to create a new paradigm. Gradual change to curriculum preferred over revolutionary change.	Evolutionary Change Towards a new paradigm

3) What are the main things you would like to see incorporated into a new Economics curriculum and why?

Raw Data	Preliminary Codes	Final Codes
EC: Economic history is important and students know too few facts. Outside Bristol students know too little econometrics: doing just a little econometrics is no good - a little knowledge may be less than none at all.	New curriculum requires: Facts, economic history and econometrics.	Surface learning Facts and logic Increasing mathematical focus Greater links to history

4) Some academics argue that Economics needs to move away from its focus on empirical tools and methods, make greater connections with its humanist or moral philosophical roots and re-engage with its social science cousins through greater pluralism. What are your views on each of these?

Raw Data	Preliminary Codes	Final Codes
EC: The most promising social science links are with psychology which is one of the "hard" social sciences. I have already said that I think we should link to economic history. In both cases we are interested in facts. Facts need not be quantitative, but I disagree that we should be less empirical. What is the claim here - that we will make economics "more relevant" by looking at what is going on in the world *less*? There is something seriously confused with this line of thought. I do not know what we gain by doing philosophy. Formal logic is a good tool to have for life, but I think you mean more when going back to philosophical roots. Politics is important because it affects whether or not economic suggestions are implementable. Very little new has come out of the financial crisis and the LSE produced a report criticising Basel II back in 2001. The problem was political will, driven by the fact that the crooks have more lobbying power than the people. When looking at "pluralism" - schools such as the Austrian school or the post-Keynesian school purport to have a better explanation of how the world works but studiously avoid testing their theories. What do they have to hide? If there theories are "better" in some sense then how do we measure that without going to data. Of course, Austrians think that it is impossible to evaluate theory using data - but then it is not clear how to evaluate theory without data. A lot of these types are just failed economists who cannot cut it in the mainstream (nb not all - some are very clever). I cannot see the gain from teaching lots of different theories if some of them are wrong.	New curriculum requires: greater links with facts, psychology, economic history, empirical tools, formal logic, politics, tested pluralist theories	Surface learning Facts and logic Increasing mathematical focus Increasing links to politics Increasing links to history Increasing links to Psychology Increasing links to philosophical roots Increasing links to pluralist schools of economics Critiquing economics epistemology

Appendix 14

Full transcript of email survey 2 with preliminary and final codes

1) Given your experience of teaching undergraduate economics, what is your general view on the current state of undergraduate Economics and how does it compare to when you first started to teach the subject?

Raw Data	Preliminary Codes	Final Codes
JT: The basic dilemma in teaching undergraduate economics is whether to emphasise the foundations of the subject (in which case students may not understand the relevance of what they are being taught) or to teach the course in a more applied way (in which case, without enough foundations, the treatment might be superficial or leave common ideas unchallenged). I think the dilemma has been much the same for decades, and faces everyone who teaches a course in this area.	Tensions in lecturers' minds: To emphasise foundations or applications	Deep learning Challenging students appropriately Critical realism Critiquing Economics Epistemology Contextualised learning

2) The CORE project, which is being piloted at UCL for Year 1 undergraduate Economics students from September 2014, aims to improve the teaching and learning of Economics. In what ways do you see the CORE project impacting on students' learning?

Raw Data	Preliminary Codes	Final Codes
JT: The aim of the CORE approach, to the extent that I am familiar with it, seems to be to update the curriculum and to build an understanding of foundations and applied issues simultaneously. I'm not yet familiar with the detailed content of their courses, but it looks like a positive development.	CORE focuses on understanding foundations and applied issues simultaneously. Positive development.	Evolutionary Change Towards a new paradigm Theory and application together

3) What are the main things you would like to see incorporated into a new Economics curriculum and why?

Raw Data	Preliminary Codes	Final Codes
JT: I would like to see students given a greater awareness of the limitations of over-simplified economic analyses, of the kind they might hear from politicians or see in the media. I also think the notion of market failure needs to be replaced with a broader notion of the way things can go wrong: organisations sometimes fail, institutions sometimes fail, governments sometimes fail - all this has played a role in the development of the financial crisis.	New curriculum requires: awareness of limitations of models, concepts, news (media and politics) and emphasis on systematic failure over and above market failure	Critiquing Economics Epistemology Critical realism Challenging students appropriately

4) Some academics argue that Economics needs to move away from its focus on empirical tools and methods, make greater connections with its humanist or moral philosophical roots and re-engage with its social science cousins through greater pluralism. What are your views on each of these?

Raw Data	Preliminary Codes	Final Codes
JT: I think there are some areas where it makes sense for economists to engage with other disciplines - a good example would be interdisciplinary work on development, like some of Amartya Sen's. At the same time, I think this works better if students have a good grounding in economics, so it is a question of building on a good disciplinary training rather than trying to straddle, from the start, multiple ways of thinking and of seeing the world. I think it would be a mistake to introduce the interdisciplinary approaches too early in a degree course.	New curriculum requires: interdisciplinary approaches but only after introducing the more disciplinary economic theory and concepts.	Increasing links to politics Increasing links to history Increasing links to philosophical roots Increasing links to pluralist schools of economics

Appendix 15

Full transcript of email survey 3 with preliminary and final codes

1) Given your experience of teaching undergraduate economics, what is your general view on the current state of undergraduate Economics and how does it compare to when you first started to teach the subject?

Raw Data	Preliminary Codes	Final Codes
ES: UG teaching has changed from when I took my UG degree. At the time (in Vienna) there were more social science classes required, there was a mandatory economic history and there were more (institutionally oriented) economic policy classes. Economics became streamlined and history and social sciences have been cut off. It is absurd that economics students don't have to take economic history or history of thought classes (which were required classes not too long ago). Students can finish a first class economics degree without having learned about the Great Depression or without knowing Marx, Schumpeter or Minsky.	New curriculum requires: greater links with history and historical thinkers (Marx, Minsky, Schumpeter) and social sciences,	Increasing links to philosophical roots Increasing links to history Increasing links to pluralist schools of economics

2) The CORE project, which is being piloted at UCL for Year 1 undergraduate Economics students from September 2014, aims to improve the teaching and learning of Economics. In what ways do you see the CORE project impacting on students' learning?

Raw Data	Preliminary Codes	Final Codes
ES: CORE seems to be a mild improvement, but not going far enough. It's essentially updating mainstream research to incorporate more behavioural econ, but it does not represent the paradigmatic shift that economics needs.	CORE is a mild improvement, incorporates behavioural economics but a greater change is required to create a paradigm shift.	Evolutionary change Towards a new paradigm Theory and application together

3) What are the main things you would like to see incorporated into a new Economics curriculum and why?

Raw Data	Preliminary Codes	Final Codes
ES: Systematic treatment of different paradigms in economic theory (like in other social sciences); more historical and (interdisciplinary) problem-oriented classes.	New curriculum requires: interdisciplinary problem orientated classes, more history and exposure to different paradigms in economic theory.	Deep learning Contextualised learning Increasing links to history Increasing links to pluralist schools of economics

4) Some academics argue that Economics needs to move away from its focus on empirical tools and methods, make greater connections with its humanist or moral philosophical roots and re-engage with its social science cousins through greater pluralism. What are your views on each of these?

Raw Data	Preliminary Codes	Final Codes
ES: I certainly endorse the need for more pluralism. I don't object to an emphasis on empirical analysis, however the empirical methods currently employed are rather narrow, but overall it's the theoretical narrowness that I regard as the main problem.	New curriculum requires: greater pluralism, exposure to wider empirical and theoretical methods than currently taught	Increasing links to pluralist schools of economics Increasing Mathematical focus Critiquing Economics Epistemology

Appendix 16

Full transcript of email survey 4 with preliminary and final codes

1) Given your experience of teaching undergraduate economics, what is your general view on the current state of undergraduate Economics and how does it compare to when you first started to teach the subject?

Raw Data	Preliminary Codes	Final Codes
IP: As a general comment on the status of economics, I don't think progress is going to come from any movement away from mathematical understanding. It may be that the particular maths we focus on at present is tied to particular ways of modelling that will be superseded in time but I can only think of economies as complex highly interactive systems that necessitate advanced quantitative techniques for their understanding. Reliance on maths only becomes a problem if it obscures the underlying economic issues.	Mathematical understanding is necessary for understanding economics although particular types modelling may evolve over time. Over-reliance on maths is problematic if it obscures economic understanding	Deep learning Challenging students appropriately Increasing mathematical focus Critical realism

2) The CORE project, which is being piloted at UCL for Year 1 undergraduate Economics students from September 2014, aims to improve the teaching and learning of Economics. In what ways do you see the CORE project impacting on students' learning?

Raw Data	Preliminary Codes	Final Codes
IP: I am not directly involved in the CORE project but, obviously, I am looking at the way it is being used in teaching with interest. I think it aims to improve student's perspective by changing the way they are introduced to the subject, enhancing awareness of the breadth of perspectives within the discipline and embedding a better understanding of its past intellectual development.	CORE aims to improve and enhance the breadth of student's perspective through embedding the understanding of economics with its past intellectual development.	Deep learning Challenging students appropriately Increasing links to history

3) What are the main things you would like to see incorporated into a new Economics curriculum and why?

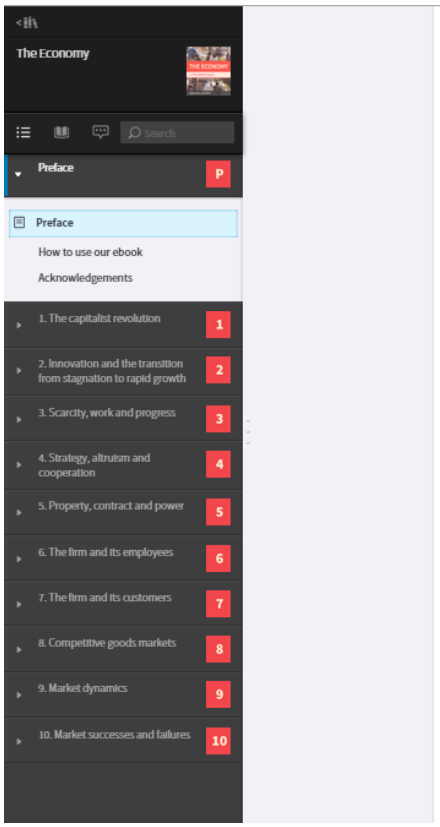
Raw Data	Preliminary Codes	Final Codes
IP: Speaking very broadly, I would like to see the focus of teaching of economics shift somewhat away from theory towards evidence. I think we lead a bit too heavily with economic theory, teaching it as if it were self-evidently the same as teaching about the economy, and understress questions about the nature of economic evidence and the empirical applicability of the theory. That is how it was taught when I was an undergraduate, it is how textbooks are written and it is predominantly how it is still taught	New curriculum should move away from theory to focus on evidence and the empirical applicability of the theory.	Deep learning Theory and application together Increasing mathematical focus

4) Some academics argue that Economics needs to move away from its focus on empirical tools and methods, make greater connections with its humanist or moral philosophical roots and re-engage with its social science cousins through greater pluralism. What are your views on each of these?

Raw Data	Preliminary Codes	Final Codes
IP: I don't personally see a conflict between focus on empirical tools and methods and what you call the humanist roots of the subject. To me these are complementary and the subject can only be treated incompletely if either is missing. Conceptualising of economic relations and human welfare has to be rooted in a philosophical perspective embedded within a broad social scientific understanding but claims about how the economy works have also to be brought up against empirical evidence using statistical tools. This means the subject is a broad one and perhaps one difficult to cover fully in a single degree so perhaps there is space for differing degree programmes leaning more or less one way or the other but I would not want to see either neglected.	Empirical tools and methods are complementary and both elements are needed together for completeness although it may be difficult to properly achieve within a single degree course. Conceptualising human relations and welfare must be rooted in philosophy but claims regarding the economy must be judged against empirical evidence, using statistical tools.	Deep Learning Increasing mathematical focus Increasing links to politics Increasing links to philosophical roots

Appendix 17: Screenshots of the CORE curriculum: Unit 1 'The Economy' e-book online

1) Overview of the e-book



Unit	Title	Author(s)
1	The capitalist revolution	Sam Bowles (Santa Fe Institute), Wendy Carlin (University College London), Arjun Jayadev (University of Massachusetts, Boston)
2	Innovation and the transition from stagnation to rapid growth	Kevin O'Rourke (University of Oxford)
3	Scarcity, work and progress	Robin Naylor (University of Warwick), David Hope
4	Strategy, altruism and cooperation	Daniel Hojman (Kennedy School, Harvard University), Antonio Cabrales (University College London), Sam Bowles
5	Property, contract and power	Sam Bowles, Wendy Carlin
6	The firm and its employees	Sam Bowles, Louis Putterman (Brown University), Wendy Carlin
7	The firm and its customers	Margaret Stevens (University of Oxford)
8	Competitive goods markets	Margaret Stevens
9	Market dynamics	Rajiv Sethi (Barnard College, Columbia University), Margaret Stevens, Sam Bowles
10	Market successes and failures	Margaret Stevens, Rajiv Sethi, Sam Bowles

2) Chapter 1 overview and 'spotlight' definitions

1

THE CAPITALIST REVOLUTION

THE CAPITALIST REVOLUTION AND HOW IT CHANGED THE WORLD.

You will learn:

- *That capitalism is an economic system in which goods are produced by employees and are sold on markets for a profit.*
- *That capitalism has changed living standards, the ways in which people interact, and the natural environment.*
- *The conditions that enabled capitalist economies to take off.*
- *How the Industrial Revolution also transformed the economy.*
- *That there are different ways to organise a capitalist economy.*
- *That economics is the study of how people interact with each other, and with the natural environment, in producing their livelihoods.*

Spotlight

Gross Domestic Product (GDP)

Gross Domestic Product is a measure of the market value of the output of the economy in a given period.

Constant prices

Prices corrected for increases in prices (inflation) or decreases in prices (deflation) so that a unit of currency...

3) Start with a historical context

p. 1

IN THE 14TH CENTURY the Moroccan scholar Ib'n Battuta (see box) described Bengal in India as "a country of great extent, and one in which rice is extremely abundant. Indeed, I have seen no region of the earth in which provisions are so plentiful." And he had seen much of the world, having travelled to China, west Africa, the Middle East and Europe. Three centuries later, the same sentiment was expressed by the 17th century French diamond merchant Jean Baptiste Tavernier who, in his *Travels in India*, first published in 1676, wrote of the country:

"Even in the smallest villages, rice, flour, butter, milk, beans and other vegetables, sugar and sweetmeats, dry and liquid, can be procured in abundance..."

IB'N BATTUTA

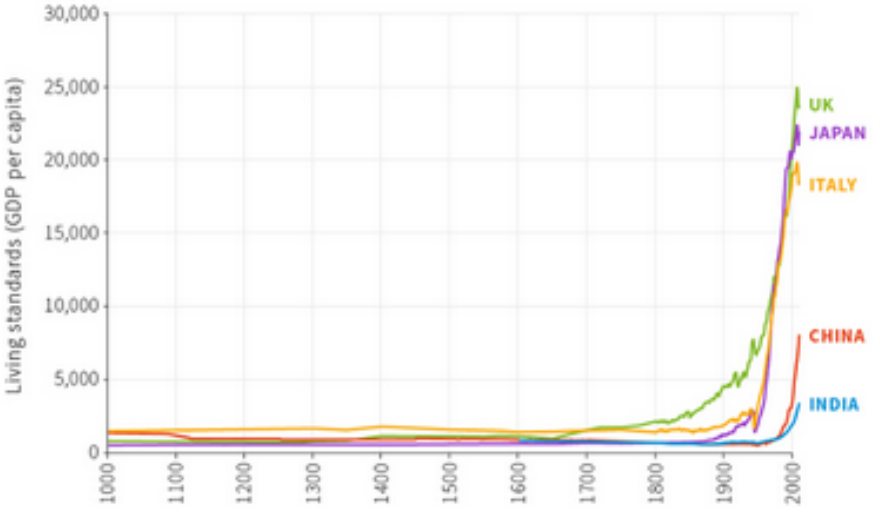
Ib'n Battuta (1304-1368) was a Moroccan traveller and merchant whose travels were published in his book *Rihla* (The Journey). His travels, lasting 30 years, took him across north and west Africa, eastern Europe, the Middle East, south and central Asia and China. He travelled more than 70,000 miles (113,000km); much further than the distance covered by his better-known contemporary, Marco Polo (1254-1324).

At the time of Ib'n Battuta's travels India was not richer than the other parts of the world. But India was not much poorer, either. An observer at the time would have noticed that people, on average, were better off in Italy, China and England than in Japan or India. But the vast differences between the rich and the poor, which the traveller would have noted wherever he went, were much more striking than these differences across regions. Rich and poor would often have different titles: in some places they would be feudal lords and serfs, in others royalty and their subjects, slave owners and slaves, or merchants and the sailors who transported their goods. Then—as now—the prospects of a daughter or a son depended on where their parents were on the economic ladder. The difference in the 14th century, compared with today, was that then it mattered much less in which part of the world the son or daughter was born.

Fast forward to today. The people of India are far better off than they were seven

4) Graph contextualised for students with a 'hockey stick' analogy

A thousand years ago the world was flat, economically speaking. There were differences in income between the regions of the world; but as you can see from Figure 1, the differences were small compared to what was to follow. There were cultural changes and scientific advances in many parts of the world over the entire period shown in the figure, but living standards began to rise in a sustained way only from the 18th century.



...

INTERACT

History's hockey stick

The figure looks like a hockey stick, and our eyes are drawn to the kink. As can be seen from the figure, the kink is less abrupt in Britain, where slow growth began around 1650. In Japan the kink is around 1870, in China around 1980, and in India even more recently. What happened to make the long flat section of the hockey stick suddenly turn upwards? The answer is what we call the *capitalist revolution*, which combines changes in technology with the emergence of a new economic system.

This combination of new ways of producing things with new ways of organising production, and the distribution of its benefits, transformed the way of life of people across the globe. We can see from Figure 1 that this transformation did not happen everywhere at the same time. Where it did happen there was an explosion in what Adam Smith called *The Wealth of Nations*, in the title of his great book.

5) Historical context: Past economists

PAST ECONOMISTS

ADAM SMITH

Adam Smith (1723-1790), considered by many to be the father of economics, was raised by his widowed mother in Scotland . He studied philosophy at the University of Glasgow and later at Oxford where, he wrote: "the greater part of the… professors have… given up altogether even the pretence of teaching."

He travelled widely throughout Europe, visiting Toulouse, France where because he had "very little to do", he said, he had "begun to write a book in order to pass away the time." It became the most famous book in economics.

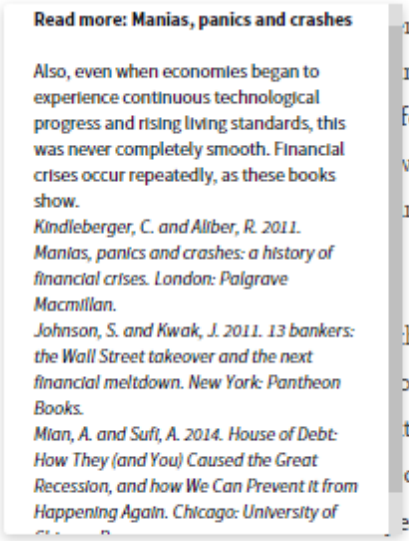
In *An Inquiry into the Nature and Causes of the Wealth of Nations*, published in 1776, Smith (1723–1790) asked: how can society coordinate the independent activities of large numbers of economic actors—producers, transporters, sellers, consumers—often unknown to each other and widely scattered across the world? His radical claim was that coordination among all of these actors might spontaneously arise, without any person or institution consciously attempting to create or maintain it. This challenged previous notions of political and economic organisation, in which rulers imposed order on their subjects.

Even more radical was his idea that this could take place as a result of individuals pursuing their self interest: "It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest," he wrote, adding that each would be "led by an invisible hand to promote an end which was no part of his intention."

Since then this "invisible hand" has been a metaphor for how markets can coordinate the self-interested pursuits of people to produce a socially desirable outcome.

Smith did not think that people were guided entirely by self-interest, and he wrote a book about ethical behaviour called *The Theory of Moral Sentiments*, published in 1759.

6) Links to further reading: 'Read more' buttons



Read more: Manias, panics and crashes

Also, even when economies began to experience continuous technological progress and rising living standards, this was never completely smooth. Financial crises occur repeatedly, as these books show.

Kindleberger, C. and Aliber, R. 2011. Manias, panics and crashes: a history of financial crises. London: Palgrave Macmillan.

Johnson, S. and Kwak, J. 2011. 13 bankers: the Wall Street takeover and the next financial meltdown. New York: Pantheon Books.

Mian, A. and Sufi, A. 2014. House of Debt: How They (and You) Caused the Great Recession, and how We Can Prevent it from Happening Again. Chicago: University of

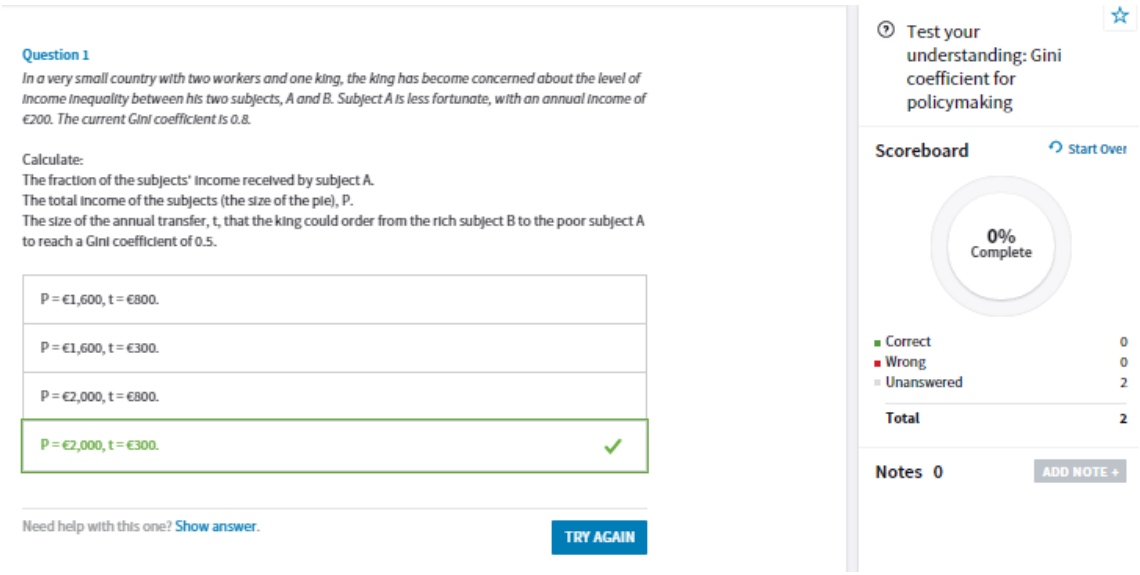
ryone in those countries benefitted equally. In the
ny people remained (and remain) poor and economically
fortunes from the manual labour of other people—for
who had neither a vote nor the right to join a trade union, and
ng power to improve their own standard of living through

he capitalist revolution did not happen, or until it happened,
mparatively poor. For the first time the world came to be
tions, as well as rich and poor people. The outcome was that
quality among families across the world was much greater in
ears earlier when Adam Smith was writing *The Wealth of Nations* .

For a large number of peoples, it took independence from colonial rule before substantial improvements in people's living standards could be seen. When three centuries of British rule of India ended in 1947, according to the economist Angus Deaton "[I]t is possible that the deprivation in childhood of Indians... was as severe as that of any large group in history". In the closing years of British rule, a child born in India could expect to live for 27 years. Half a century later, life expectancy at birth in India has risen to 65 years .

7) Quick review questions and instant answers via liebnitz buttons

Example 1: Gini coefficient calculation



Question 1

In a very small country with two workers and one king, the king has become concerned about the level of income inequality between his two subjects, A and B. Subject A is less fortunate, with an annual income of €200. The current Gini coefficient is 0.8.

Calculate:
The fraction of the subjects' income received by subject A.
The total income of the subjects (the size of the pie), P.
The size of the annual transfer, t, that the king could order from the rich subject B to the poor subject A to reach a Gini coefficient of 0.5.

- P = €1,600, t = €800.
- P = €1,600, t = €300.
- P = €2,000, t = €800.
- P = €2,000, t = €300. ✓

Need help with this one? Show answer.

TRY AGAIN

Test your understanding: Gini coefficient for policymaking

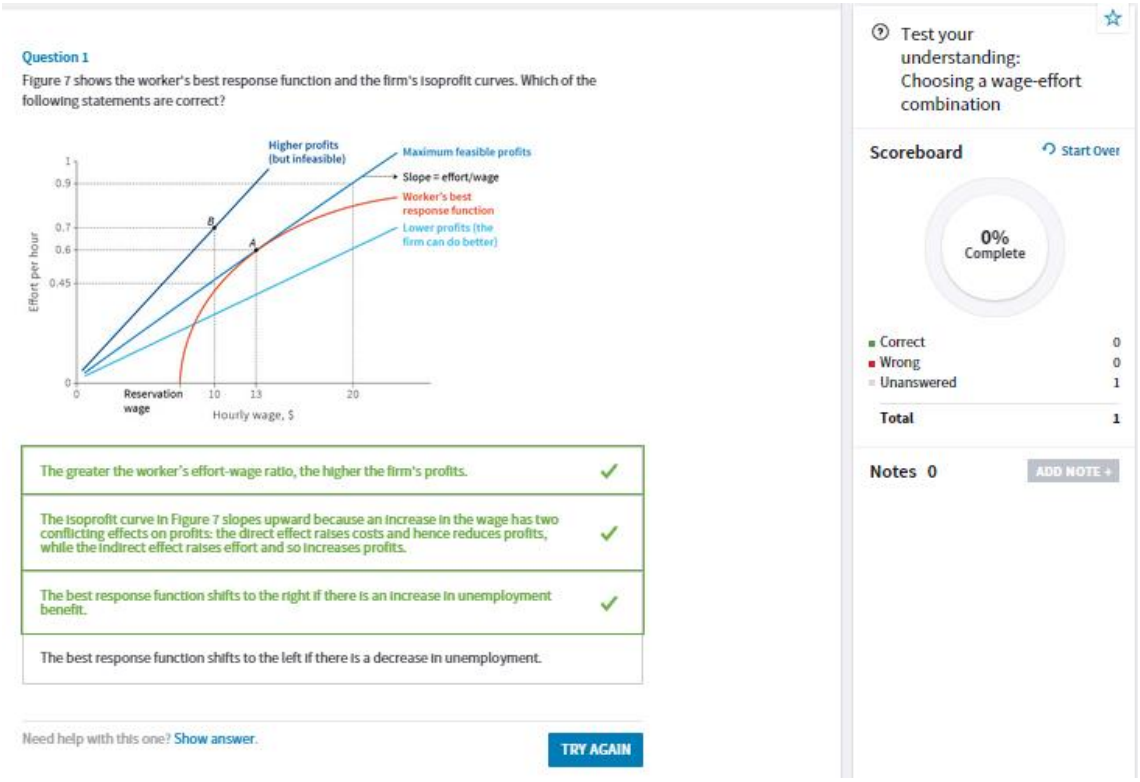
Scoreboard — Start Over

0% Complete

Correct	0
Wrong	0
Unanswered	2
Total	2

Notes 0 — ADD NOTE +

Example 2: Isoprofit curves



Question 1

Figure 7 shows the worker's best response function and the firm's isoprofit curves. Which of the following statements are correct?

- The greater the worker's effort-wage ratio, the higher the firm's profits. ✓
- The isoprofit curve in Figure 7 slopes upward because an increase in the wage has two conflicting effects on profits: the direct effect raises costs and hence reduces profits, while the indirect effect raises effort and so increases profits. ✓
- The best response function shifts to the right if there is an increase in unemployment benefit. ✓
- The best response function shifts to the left if there is a decrease in unemployment.

Need help with this one? Show answer.

TRY AGAIN

Test your understanding: Choosing a wage-effort combination

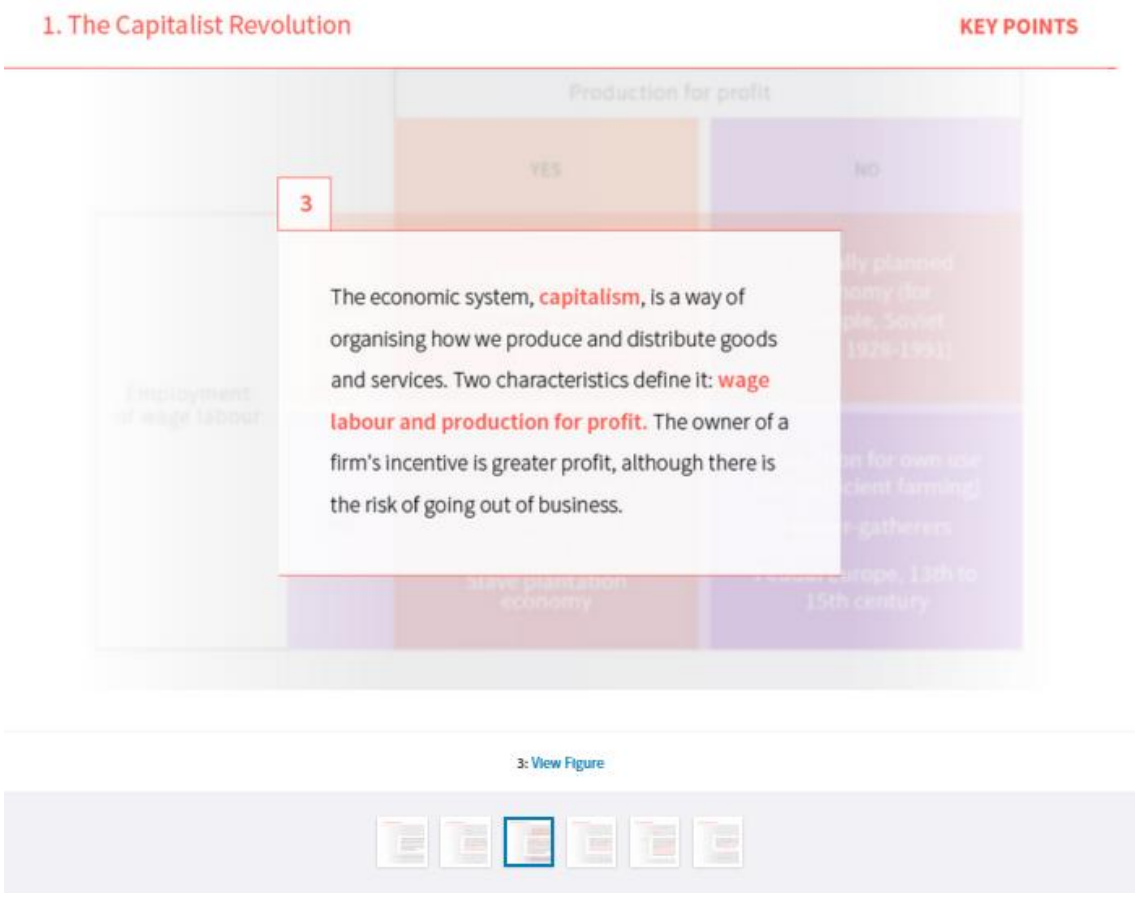
Scoreboard — Start Over

0% Complete

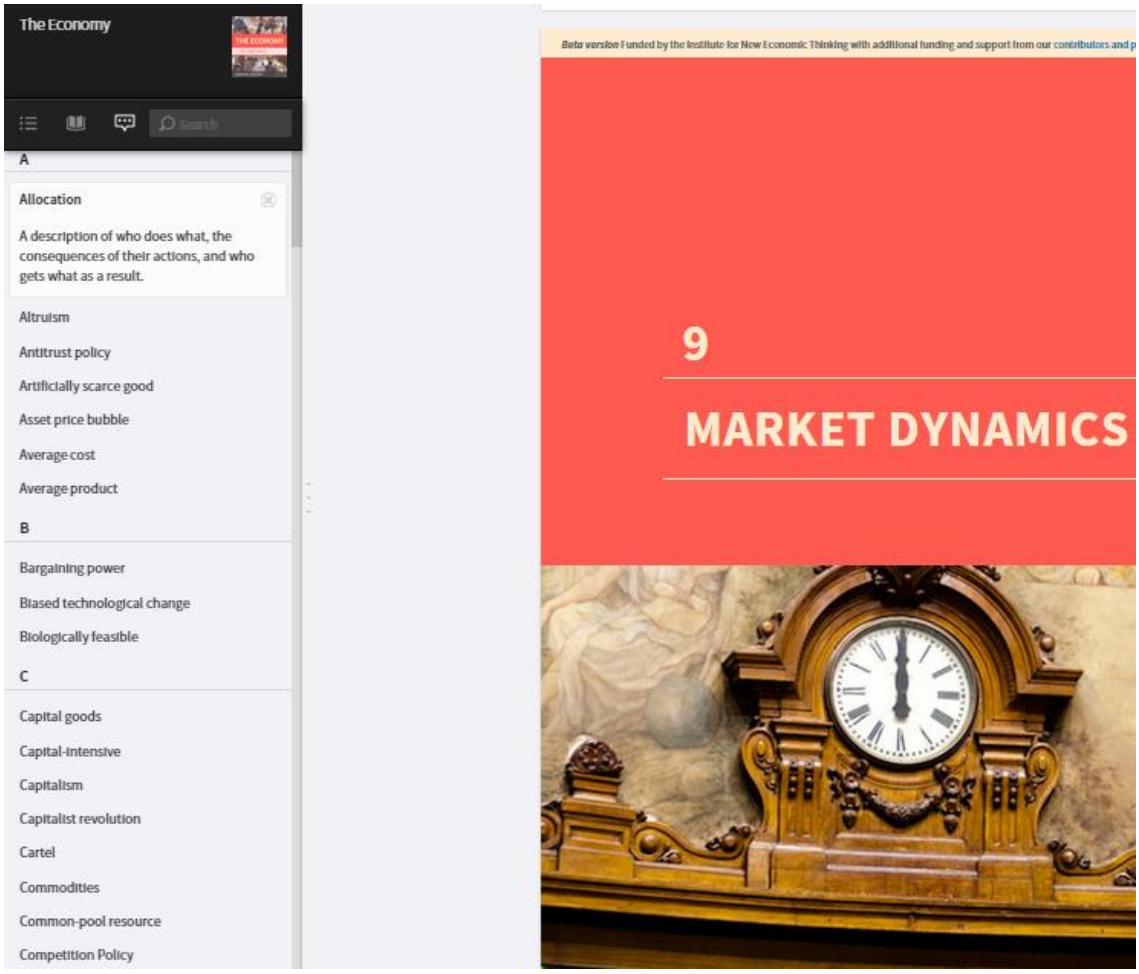
Correct	0
Wrong	0
Unanswered	1
Total	1

Notes 0 — ADD NOTE +

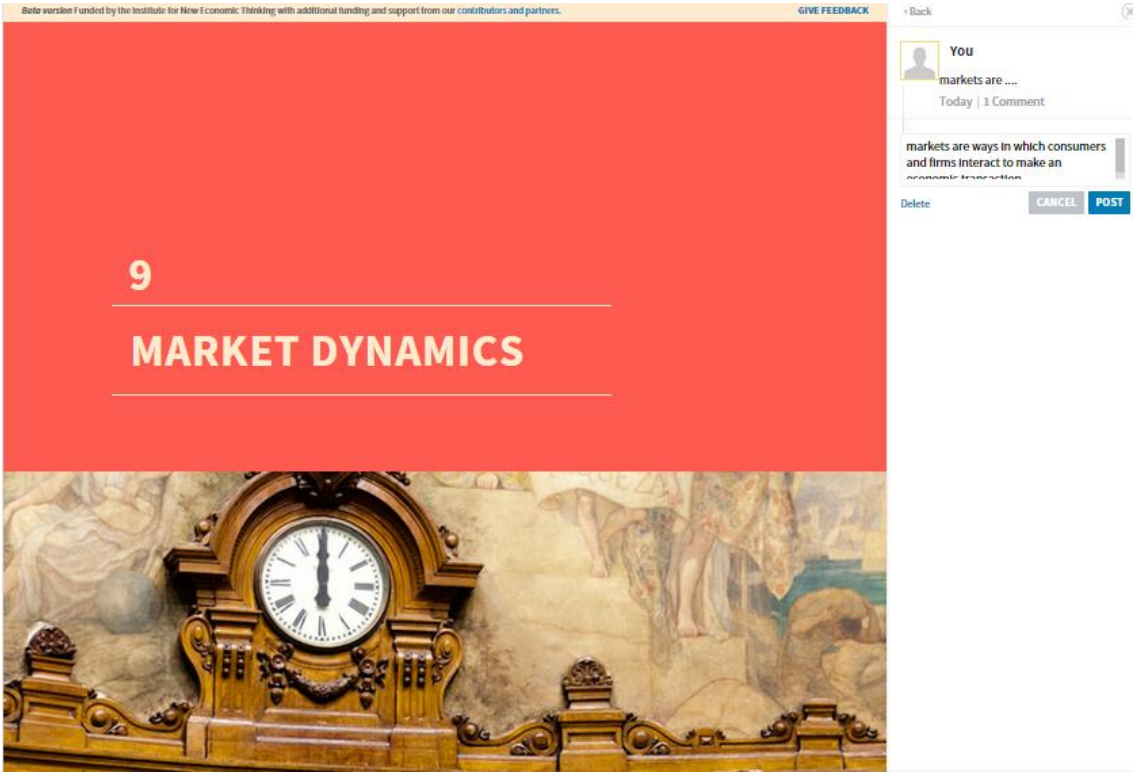
8) Key points and summary



9) Glossary of terms



10 Add notes and comment on other posted comments



Appendix 18: Singapore-based American university: Developer to instructor memo

DEVELOPER-TO-INSTRUCTOR MEMO

TO: ECON Multi-modality Template Instructors
FROM: Kelly Whealan George, Course Developer
DATE: March 2014

Welcome!

Beginning with the May 2014 term, instructors who teach face-to-face or via EagleVision, in both blended and non-blended formats, will be required to use the new Multi-modality Template. I have adapted this template from the material used in the online course, and certain activities and assignments from the online course are now mandated in all delivery modalities. Part of the reason for this is to help us assess student achievement across all course delivery methods. Another part of the reason for this is to help all instructors deliver high quality content.

I know that all of you who teach this course are quite competent to devise your own assignments and exercises, and it is my goal to allow you the greatest possible creative freedom to do this, while still meeting the university's requirements. Therefore, of the nearly XX assignments and exercises in the online course, only the weekly Aplia problem sets and the research paper activities are required in the multi-modality template. I do suggest, however, that you take some time and look at all that is available to you in the template, in case you might like to use some of these resources as you build your syllabus. The online course is tightly scaffolded so that the early exercises and assignments build skills that are needed to do well in the later ones. I used the same philosophy when building the multi-modality template.

By the same token, this course is not perfect. I am very interested in your ideas for improving the course, and I encourage you to contact me with ideas, suggestions, and questions.

What's Required in the Multi-modality Template

The Multi-modality template contains the assignments required for assessment of Program, College and University goals. However, the required assignments alone are not sufficient to teach the entire course. You will need to add content in order to teach the course and address all the learning outcomes. You do not need to add this content as online work; it can certainly be covered in face-to-face lectures and/or EagleVision sessions.

I know changing anything may be difficult for any of you who have taught online, but I assure you that your customization of the optional parts of the course is not only desired but necessary! In addition, although the required assignments show up in certain weeks in the template, you are free to move them around if that better suits your instructional plan. The bottom line is that I want you to feel as free as possible to teach the course in your own way, while still meeting your university obligations as an instructor. Please feel free to contact me if you have any questions as you proceed. Please also let me know what you moved around – not in an approval capacity – I want to know how to improve the course for everyone.

Here are the required assignments:

- Aplia problems sets – weekly (these replace any tests, midterm and/or final)
- Research paper activities
    - Topic Idea (week 3)
    - Draft (week 6)
    - Final Paper (week 9)

All the materials you need for these have been embedded in the template. Non-required activities (discussions mainly) are contained in a folder in each week, titled ***Optional Content***. This folder, as well as the ***Activities*** information that explains whether the week's work contains any required assignments, is visible only to instructors. Be sure that you have the Edit Mode (top right of the page) ON. Instructions for making any of the optional content available to students are included in the ***Optional Content*** folder each week.

When you have students complete the assignments, you must have them submit the work via the course link (with the exception of Aplia problem sets). This will send it to the Grade Center, where you will be able to download the work, grade it, enter the grade in the Grade Center, and upload the corrected work. This will also enable me to collect the work for assessment purposes.

Please note that the Grade Center will **not** calculate the course grade.

All Things Aplia

The weekly Aplia problem sets have been set up by myself.

eLearning Support will contact Cengage/ Aplia support to request Aplia course setup for future terms. This is done 5- 7 days ahead of term start. Faculty will receive an email from Aplia support containing student registration instructions that can be distributed to students. You must post the registration information as an announcement in the BB course for students.

Textbooks: students have the option of purchasing a paper textbook and the prepaid non-transferable Aplia Access Code for both Econ 210 and 211. The Aplia Access Code comes with an eText of the Arnold textbook. Students who do not wish to purchase a hard copy of the textbook do not have to. The Aplia is good for up to one year and covers both Econ 210 and Econ 211 courses.

These assignments will collectively count for 50 percent of the course grade.

All chapters covered come in pairs of practice and graded problem sets. The practice sets give students immediate feedback about whether an answer is right or wrong and an explanation of the correct answer. They are not counted as part of the problem set grade. Encourage students to use them to check their understanding of the material. If the student is confident, they can go directly to the graded problem set, and refer back to the practice set only if they want some additional help.

The graded problem sets have a firm due date at the end of each week. Students can change their answers up to three times before the due date has passed. Once the due date has passed, the grade will be recorded and it will not be possible to change their answers or complete the assignment at this point. ***In other words, graded problem sets from Aplia must be completed by the due date***. The software does not care about excuses. These assignments are posted weeks in advance. If a student has a date conflict, they can complete them early to avoid any problems preventing completion before the due date. After the due date, students will be able to the correct answers and the explanations for graded problems.

Students must complete the graded problem set during the week it is offered. If they do not, they will receive a zero for that problem set. If you plan to be away during a specific week, work ahead and complete the problem set early. You MAY NOT take a problem set later than the time specified. To accommodate any unforeseen circumstances, instructors should drop 3 of the lowest problem set scores during the class. These are the students' free passes to accommodate any computer glitches, schedule mishaps, illness, whatever.

Special note on Week One: Week one has additional problem sets that cover more than the chapters assigned. The first is to introduce you to how to complete the online problem sets on Aplia. The second is a Math skills test. Ideally, students should take the Math skills pre-test, use the Math and Graphs Tutorial to brush up on any concepts students missed in the pre-test, and finally take the graded post-test.

Directions for setting the weeks in Aplia to match your class term dates:

The following is located in the Information for Instructor section of the Blackboard course.

If You Are Having Trouble With APLIA...

Aplia Set up Information: By default, Aplia weeks begin on Monday and end on Sunday. If your term begins on any day other than a Monday, you will need to extend Aplia's ending day of the week to match your course. This document will guide you through the process.

Aplia - Changing Module Due Dates

Directions for setting up grading selection options in Aplia:
To confirm the grading options, go to your Course Home tab in Aplia. In the Course Information box, click on the Edit button. The Grading Options section is about halfway down that page. Select your grading preference from the dropdown menu to "Keep the Highest" and click Save changes at the bottom of the page.

Directions for calculating the problem set grades for calculation of the final grade:

On Course Home tab in Aplia, choose manage grades. There is an option for drop assignments, hit the down arrow and choose 3 assignments. Then select the tab view grades. From there you will see each problem set's score and the overall average. After the course is done, this overall average is the grade for the Aplia problem sets that you have to enter into the Blackboard gradebook.

Optional Content in the MMT course

Although I think everything in the course is fabulous (freely admitting my bias!), I do strongly recommend that you consider the supplemental audios, videos, and articles in your course content. Each week has an optional folder with material that you may use. You may also feel free to send me any of your own activities or optional content. The benefit of the MMT is to combine the best from all [redacted] instructors.

You may choose to do a revision of more than one draft of the paper. Many students have commented that the most valuable part of the course was the opportunity to revise their papers after getting feedback from me. While I have chosen to require revision of only one draft paper in the Ground Template, you may choose to allow students to revise more than once or have a peer review activity.

Discussion Boards

I have left the discussion boards in the template. You might find these useful if you

are teaching blended courses. Alternatively, you could use the topics for in-class discussions. If you use the discussion boards for online work, you should refer students to the *Discussion Rubric* contained in Resources, Course Specific Resources, to help them understand how to make meaningful posts and replies.

Grading

The table below shows the graded assignments and course grade weights that are used in the online course. The required assignments in the multi-modality template retain their grade weights. I've highlighted these for you. These assignments comprise 70% of the course grade. As the instructor, you must create the remaining 30% of graded content for this class. The Grade Center will **not** calculate the course grade, however; you will need to do that.

Evaluation Criteria	Percentage of Course Grade
Aplia weekly problem sets	50%
Research Topic Idea	% (10 points)
Research paper draft	% (30 points)
Research paper final submission	20 % (60 points)
Discussions	30%
Total	100%

Course Evaluations

I have also retained the student survey link in Week 8. This is a comprehensive evaluation of both the course and Instructor and will be reported to the University's administration for continual quality assurance.

Special Instructions

There are no special instructions for teaching this course successfully. If it fits your teaching style, I recommend that you keep trying to make the course fun. Students often come to economics courses with a lot of tension about writing, math and a perceived un-interest of this weird social science. They will learn more and learn better if they can relax a bit and relate the course to the world around them. Since the ability to communicate well in writing is crucial to professional success in so many careers, it behooves us as teachers to do everything we can to help them become proficient writers. And besides, it's more enjoyable for us to have fun while we teach!

Some Notes About Other Parts of the Ground Template

How to Work in Blackboard
I have left all the content in this section, formerly called *Start Here*. Some of this may be useful for blended courses, particularly the online student responsibilities. The plagiarism tutorial may be useful as well. In the *Syllabus* item, I refer students to *How to Work in Blackboard* for additional information they might find useful to succeed in the course.

You can also copy items from this section into other parts of the course, if you like.

Grade Center
Remember that you must use the assigned weights for the required assignments in the course. The Grade Center will not calculate the course grade for you. You will have to do that yourself.

Post-Course Instructor Assessment

At the conclusion of the course, per your faculty contract, I ask you to complete the *Instructor Feedback Form*, accessed through the Course menu beneath the *Information for Instructors* link. A copy of your responses will automatically be sent to me. I appreciate your thoughtful feedback and hard work on behalf of Embry-Riddle's students.

Developer Contact

Kelly Whealan George, Associate Professor
College of Arts & Sciences
Department and Discipline Chair, Social Sciences and Economics, [redacted]
Email: [redacted]
Phone: [redacted]

Appendix 19: Singapore-based American university: Microeconomics curriculum

Microeconomics
ECON 210
Eagle Vision Home/Blended
Course Syllabus

Credit Hours: 3 Credits

Academic Term: Term: Dates of term [31 May 2014: 1 August 2014]

Meetings: 1100 – 1420 ET; Saturday; Eagle Vision Home

Location: Eagle Vision Home

Instructor: [redacted]

Office Hours: by appointment

Telephone: [redacted]

E-mail: [redacted]

Course Description:

This course is an introduction to the economic principles of free enterprise supply and demand, private and social implications of revenue maximization, cost minimization, profit maximization, market structure, and resource markets. Current microeconomic issues in aviation (such as elasticity, pricing, taxes, subsidies, market implications, liability reform, evolution of airline completion, etc.) are discussed. Lecture hours per week (4:45 hours) Blended lecture hours (3 :20 per week). **Prerequisites**: MATH 111 or equivalent and ENGL 123, 143 or equivalent.

Course Goals:

The purpose of this course is to present the theory of price and output determination. The student will learn how to apply elementary microeconomic principles to domestic and international policies. In order to maintain student interest and better perform our mission, professors will utilize current aviation examples to illustrate these economic principles as frequently as possible.

Learning Outcomes:

Upon completion of the course, students will be able to:

1. Understand introductory economic concepts.

2. Recognize basic supply and demand analysis.

3. Recognize the structure and the role of costs.

4. Describe, using graphs, the various market models: perfect competition, monopoly, monopolistic competition, and oligopoly.

5. Explain how equilibrium is achieved, in the various market models, in both the long and short run.

6. Recognize how resource markets relate to the product markets.

7. Identify problem areas in the economy, and possible solutions, using the analytical tools developed in the course.

8. Recognize how all the parts of the economy integrate into the whole.

9. Recognize the international economy, and describe how it works.

10. Recognize the crucial use of elasticity theory in pursuit of revenue maximization, output efficiency, inter-commodity relationships and the impact of income changes.

Required Course Materials:

Arnold, R. (2011). Economics Custom Bundle. Cengage Learning Custom Solutions. (This includes access to Aplia.com problem sets and an eText)

ISBN:
978-1285046853

Suggested Supplemental Materials:

a. Reference publications/supplemental readings: Wall Street Journal, major newspaper business sections, any handouts on topics presenter.
b. Audio visual materials: Movies: Tucker and Blood Diamond.
c. Special equipment: None.
d. McGraw Hill has a fantastic news gathering website available for FREE at http://www.widgetrealm.com/clientpages/mgh_econ/download . I highly recommend it's use.

Grading:

Weekly Aplia Problem Sets	50%
Research Paper: Research Topic: 10 points Research Paper Draft: 30 points Final submission: 60 points	20%
Discussion Questions/Blackboard Work	30%
Total	100%

UNDERGRADUATE

Grade Grade

90 - 100	A (Superior)
80 - 89	B (Above Average)
70 - 79	C (Average)
60 - 69	D (Below Average)
Below 60	F (Failure)

Grades should be checked and verified online through our course's website. Please make sure all your submissions are properly accounted for from time to time. I do not round final grades. An 89.9999 = B for the course.

Library:

Aplia Weekly Graded Problem Sets

These assignments will collectively count for 50 percent of your course grade. The graded problem sets have a firm due date at the end of each week. You are allowed to take each problem set up to three times before the due date passes. Your score will be an average of your attempts.
Once the due date has passed, the grade will be recorded and it will not be possible to change your answers or complete the assignment at this point. In other words, graded problem sets from Aplia must be completed by the due date. The software does not care whether you have an excuse or not. These assignments are posted weeks in advance. Do them early to avoid any problems preventing your completion before the due date. After the due date, you will be able to see your grade, the correct answers and the explanations for graded problems. You must complete the graded problem set during the week it is offered. If you do not, you will receive a zero for that problem set. If you plan to be away during a specific week, work ahead and complete the problem set early. You MAY NOT take a problem set later than the time specified. You may drop three of your lowest scores of the problem sets during the class. These are your free passes to accommodate any computer glitches, schedule mishaps, illness, whatever.

Special note on Week One: Week one has additional problem sets that cover more than the chapters assigned. The first is to introduce you to how to complete the online problem sets on Aplia. The second is a math and graphing assessment with tutorials.

Research Paper (20% of your course grade):
This course requires the student to prepare and submit during week nine a research paper. Student should remember that the nature of the class is Microeconomics and the focus of

the paper should revolve around this theme. Papers that do not address this topic, but focus instead on other important, but irrelevant issues will not grade well.

The formal term paper should highlighting published current economic events or issues as they relate to theories learned in this course. Each paper must include a graph used as an explanatory tool of the economic principle presented by the student. Each paper's intention is to be a short analysis on the most recent economic events or reports from the supplemental resources or references. The focus of these assignments is to relate and analyze *current* events to basic principles of Microeconomics covered in this course. It is not acceptable to just summarize statistics. The student's paper should indicate that he/she has a clear understanding of theory learned in class and its application/operation in the 'outside world'.

The paper should have 8-12 pages of content and prepared using APA 6th Edition standards. Writing should show college level work. Don't forget the basics; spelling, grammar, and format.

- Topics are due on the 3rd week (shown on the Course Schedule).
- Drafts are due on the 6th week (shown on the Course Schedule).
- Final submissions are due on the 9th week (shown on the Course Schedule).
- All papers/projects submitted for grading in this course will be submitted to safeassign.com - http://www.safeassign.com/.
- A paper/project that is turned in late will be downgraded one letter grade for each day the paper is late.
- This paper is worth 20% of your final grade. This is a large portion of your overall grade and you need to treat it as such.
- Submitted all or part of another paper written for a different class without proper citation will be considered plagiarism. Any plagiarism is an automatic F for this class.

Discussion Board Participation:
Each module, with the exception of Module 2, contains a discussion activity that will help sharpen your critical thinking and written communication skills as you study Microeconomic topics. From time to time, as current events unfold, additional discussion questions may be posted directly to the Discussion Board that relate to the course material. These questions should be answered as well. Participation is defined as your well thought out responses to classmates and other contributions you make to the weekly class discussions. We can learn much from each other, but only if we put forth effort and share our discoveries as we move through the semester. Be sure to read the initial responses posted by your classmates each week. The more each student interacts with others on the Discussion Board, the better. Substantive contributions are defined as those responses providing statements that enhance ongoing discussion of the module's topics, thus enabling the discussion to build throughout the class. Responses should include demonstration of the module's topical information as well as how to apply topics covered.

How can the student do this? A student can agree –providing additional substance to the conversation while building upon the previous students comments. A student can disagree (in a professional nature of course) stating why a different interpretation is better. Or, students can re-direct the discussion towards another vantage point presenting additional factors. Many times a discussion will be redirected or enhanced by someone bringing up a viewpoint that some had not considered before.

Thus, the conversation continues. Students must be interactive, not only with the Instructor, but with other students. Expand or redirect discussions as they relate to class. Offer some real world experience that supports theory or flies in the face of theory. Use critical thinking and possibly come up with new ideas. There is not a magic number on weekly post requirements for a few reasons. Students should not feel limited (as in "ok, I replied 5.86 times –I'm done for this module) and substance rather than quantity is primary. Additionally, the length of responses can vary.

A well thought out response can take a few sentences or a whole page. Mark Twain once apologized from writing a long letter because he didn't have time to write a short letter. Thirty percent of your course grade will come from your formal written responses to the discussion questions and responses to classmates, submitted on time and as directed in the appropriate Discussion Board forum. This portion of your grade is based on the quality, not quantity, of your participation. Only answering the posted discussion questions is not sufficient for full credit. You are expected to comment, debate, and further fellow students' discussions.

All assignments will be completed in a professional manner and on time, unless prior arrangements have been made with the professor. Blackboard assignments are graded with class participation. This course includes weekly activities, each of which may have grade points associated with them. Unless prior arrangements have been made with the instructor, students are expected to participate each week, according to the course schedule. This is especially important with regards to discussion activities. Weekly discussions typically include both an initial posting and one or more substantive replies.

Note: Proper etiquette has to do with keeping it simple by using proper English and proper spelling – spell check works well in Blackboard.

Course Policies:

[redacted] is committed to maintaining and upholding intellectual integrity. All students, faculty, and staff have obligations to prevent violations of academic integrity and take corrective action when they occur. The adjudication process will include the sanction imposed on students who commit the following academic violations, which may include a failing grade on the assignment, a failing grade for the course, suspension, or dismissal from the University:

1. **Plagiarism**: Presenting as one's own the ideas, words, or products of another. Plagiarism includes use of any source to complete academic assignments without proper acknowledgement of the source. All papers submitted for grading in this course will be submitted to safeassign.com - http://www.safeassign.com/ where the text of the paper is compared against information contained in the safeassign.com database. Papers submitted will be included in the safeassign.com database and become source documents for the purpose of detecting plagiarism.

2. **Cheating:** A broad term that includes the following:
   a. Giving or receiving help from unauthorized persons or materials during examinations.
   b. The unauthorized communication of examination questions prior to, during, or following administration of the examination.

c. Collaboration on examinations or assignments expected to be individual work.
d. Fraud and deceit, that include knowingly furnishing false or misleading information or failing to furnish appropriate information when requested, such as when applying for admission to the University.

3. **APA 6th edition** format is the [redacted] Worldwide standard for all research projects.

Disability and Special Needs:

[redacted] is committed to the success of all students. It is a University policy to provide reasonable accommodations to students with disabilities who qualify for services. If you would like to request accommodations due to a physical, mental, or learning disability, please contact the Worldwide Campus Disability Support Service Office at [redacted] or via email [redacted]

Course Schedule:

Week	Topics	L/O	Activities
1 May 31	Introduction, Introduction to Economics	1	1 Introductions 2 Read Chapter 1, Appendix A, and Chapter 2 3 Singing about Opportunity Cost 4 Opportunity Cost Video: My Prom Dates 5 Article: Opportunity Cost of Economics Education 6 Discussion 7 Assignment: Aplia Week 1 Problem Sets 1.Introduction to Using Aplia Assignments 2.Math and Graphing Assessment with Tutorials 3.What Economics is About 4.Production Possibilities Frontier
2 June 7	Markets: Supply, Demand, and the Price System	2	1 Read Chapters 3 and 4 2 Videos: Demand vs. Quantity Demanded; Law of Supply 3 Assignment: Aplia Week 2 Problem Sets 1.Supply and Demand: Theory 2.Prices: Free, Controlled, and Relative 4 Preview: Research Paper
3 June 14	Elasticity and Production/Costs	3, 10	1 Read Chapters 20, 21 (pp. 437- 441), and 22

			2 Video: Principles of Economics, Translated 3 Audio: Using Elasticity to Promote Tourism 4 Discussion 5 Assignment: Aplia Week 3 Problem Sets 1.Elasticity 2.Consumer Choice: Maximizing Utility and Behavioral Economics 3. Production and Costs 6 Assignment: Submit Research Paper Topic
4 June 21	Perfect Competition	3,4,5	1 Read Chapter 23 2 Video: The Economics of Seinfeld 3 Discussion 4 Assignment: Aplia Week 4 Problem Set 1.Perfect Competition
5 June 28	Monopoly	3,4,5	1 Read Chapter 24 2 Article: To Regulate or Not 3 Video: The Colbert Report on Monopoly 4 Discussion 5 Assignment: Aplia Week 5 Problem Set 1.Monopoly
6 July 5	Monopolistic Competition and Oligopoly	3,4,5	1 Read Chapter 25 2 Web Research: Boeing's Market Structure 3 Video: Big Corporation vs. Small Business 4 Audio: Political Game of Chicken 5 Discussion 6 Assignment: Aplia Week 6 Problem Set 1.Monopolistic Competition: Oligopoly and Game Theory 7 Assignment: Submit Research Paper Draft
7 July 12	Factor Markets	6,7,8	1 Read Chapters 27 and 28 2 Audio: Labor Unions and the Auto Industry 3 Discussion

			4 Assignment: Aplia Week 7 Problem Sets 1.Factor Markets: With Emphasis on the Labor Market 2.Wages, Unions, and Labor
8 July 19	Government Intervention and Market Failure	6,7,8	1 Read Chapters 26 and 31 2 Video: Breach of Trust 3 Discussion 4 Assignment: Aplia Week 8 Problem Sets 1.Government and Product Markets: Antitrust and Regulation 2.Market Failure: Externalities, Public Goods, and Asymmetric Information End of Course Evaluation
9 July 26	International Markets	9	1 Read Chapters 34 and 35 2 Video: Free Trade vs. Protectionism 3 Video: The Economics of Seinfeld 4 Article: Plain Talk about the Dollar 5 Discussion 6 Assignment: Aplia Week 9 Problem Sets 1.International Trade 2.International Finance 7 Assignment: Submit Final Research Paper 8 Supplemental Food for Thought

Submitted by: _____

Approved by: _____

Appendix 20: Singapore-based American university: Macroeconomics curriculum

Macroeconomics
ECON 211
Lecture/Blended
Course Syllabus

Credit Hours: 3 Credits

Academic Term: Term: Dates of term [20 Oct 2014: 21 December 2014]

Meetings: 5:30 – 10:00 p.m. ET; Tuesday nights

Location: [redacted]

Instructor: [redacted]

Office Hours: by appointment

Telephone: [redacted]

E-mail: [redacted]

Course Description:

This course is an introductory analysis of employment, inflation, recession, GDP economic growth, national income/output and international trade with an emphasis on practical policy alternatives. Macroeconomic aviation applications such as the counter-cyclical growth of start-up airlines and consideration of ATC privatization are incorporated. Lecture hours per week (4: 45 hours). **Prerequisite(s)**: MATH 111 or equivalent and ENGL 123, 143 or equivalent

Course Goals:

This course is designed to give the student the necessary tools to understand the ideological framework of American capitalism, an understanding of the national banking system, as well as application of fiscal and monetary policies. In order to maintain student interest and better perform our mission, professors will utilize current aviation examples to illustrate these economic principles as frequently as possible.

Learning Outcomes:

Upon course completion, students will be able to:

1. Understand introductory economic concepts.(PO 10)
2. Identify and exemplify the difference among political systems, economic systems and economic policies.(PO 10)

3. Recognize the evolutionary characteristics of Capitalism or a Market Economic System; and demonstrate the ability to identify several of the alleged "virtues" and alleged "vices" of capitalism. (PO 10)
4. State the laws of demand and supply and define the terms: demand, quantity demanded, supply, and quantity supplied. (PO 1)
5. Explain the causes and predict the effects of changes in demand and supply on the equilibrium price/quantity. (PO1, PO10)
6. Understand the unique perculiarities of such concepts as inflation, deflation, stagflation, economic growth, economic development, expansion, recession, employment theory and types of employment.(PO 10)
7. Describe the two approaches to determining Gross National Product (GNP) and state the relationship between GNP, Net Domestic Product (NNP), National Income (NI), Personal Income (PI), and Disposable Income (DI). (PO1, PO7)
8. Define fiscal policy and demonstrate the mechanics of discretionary fiscal policy within the Keynesian framework. (PO7, PO12)
9. State the fundamental objective of monetary policy, identify the three tools of monetary policy, and explain how each may be used to expand or contract the money supply. (PO10, PO12, PO3)
10. State the reasons for a fractional reserve system of banking, describe the process by which the banking system creates and destroys money, and the assumptions that underlie the multiplier theory. (PO10, PO12)

Required Course Materials:

Arnold, R. (2011). Economics Custom Bundle. Cengage Learning Custom Solutions. (this includes access to the Aplia.com problem sets and access to the eText.)

ISBN:
978-1285046853

Suggested Supplemental Materials:

a. Reference publications/supplemental readings: Wall Street Journal, major newspaper business sections, any handouts on topics presenter.
b. Special equipment: None.
c. McGraw Hill has a fantastic news gathering website available for FREE at http://www.widgetrealm.com/clientpages/mgh_econ/download . I highly recommend it's use.

Grading:

Weekly Aplia Problem Sets	50%
Research Paper: Research Topic: 10 points Research Paper Draft: 30 points Final submission: 60 points	20%
Discussion Questions/Blackboard Work	30%
Total	100%

Grade	Grade
90 - 100	A (Superior)
80 - 89	B (Above Average)
70 - 79	C (Average)
60 - 69	D (Below Average)
Below 60	F (Failure)

Grades should be checked and verified online through our course's website. Please make sure all your submissions are properly accounted for from time to time. I do not round final grades. An 89.9999 = B for the course.

Library:

Aplia Weekly Graded Problem Sets

These assignments will collectively count for 50 percent of your course grade. The graded problem sets have a firm due date at the end of each week. You are allowed to take each problem set up to three times before the due date passes. Your score will be an average of your attempts.

Once the due date has passed, the grade will be recorded and it will not be possible to change your answers or complete the assignment at this point. In other words, graded problem sets from Aplia must be completed by the due date. The software does not care whether you have an excuse or not. These assignments are posted weeks in advance. Do them early to avoid any problems preventing your completion before the due date. After the due date, you will be able to see your grade, the correct answers and the explanations

for graded problems. You must complete the graded problem set during the week it is offered. If you do not, you will receive a zero for that problem set. If you plan to be away during a specific week, work ahead and complete the problem set early. You MAY NOT take a problem set later than the time specified. You may drop three of your lowest scores of the problem sets during the class. These are your free passes to accommodate any computer glitches, schedule mishaps, illness, whatever.

Special note on Week One: Week one has additional problem sets that cover more than the chapters assigned. The first is to introduce you to how to complete the online problem sets on Aplia. The second is a math and graphing assessment with tutorials.

Research Paper (20% of your course grade):
This course requires the student to prepare and submit during week nine a research paper. Student should remember that the nature of the class is Macroeconomics and the focus of the paper should revolve around this theme. Papers that do not address this topic, but focus instead on other important, but irrelevant issues will not grade well.

The formal term paper should highlighting published current economic events or issues as they relate to theories learned in this course. Each paper must include a graph used as an explanatory tool of the economic principle presented by the student. Each paper's intention is to be a short analysis on the most recent economic events or reports from the supplemental resources or references. The focus of these assignments is to relate and analyze *current* events to basic principles of Microeconomics covered in this course. It is not acceptable to just summarize statistics. The student's paper should indicate that he/she has a clear understanding of theory learned in class and its application/operation in the 'outside world'.

The paper should have 8-12 pages of content and prepared using APA 6th Edition standards. Writing should show college level work. Don't forget the basics; spelling, grammar, and format.

- Topics are due on the 3rd week (shown on the Course Schedule).
- Drafts are due on the 6th week (shown on the Course Schedule).
- Final submissions are due on the 9th week (shown on the Course Schedule).
- All papers/projects submitted for grading in this course will be submitted to safeassign.com - http://www.safeassign.com/.
- A paper/project that is turned in late will be downgraded one letter grade for each day the paper is late.
- This paper is worth 20% of your final grade. This is a large portion of your overall grade and you need to treat it as such.
- Submitted all or part of another paper written for a different class without proper citation will be considered plagiarism. Any plagiarism is an automatic F for this class.

Discussion Board Participation:
Each module, with the exception of Module 2, contains a discussion activity that will help sharpen your critical thinking and written communication skills as you study Macroeconomic topics. From time to time, as current events unfold, additional discussion questions may be posted directly to the Discussion Board that relate to the course material. These questions should be answered as well. Participation is defined as your well thought out responses to classmates and other contributions you make to the weekly class

discussions. We can learn much from each other, but only if we put forth effort and share our discoveries as we move through the semester. Be sure to read the initial responses posted by your classmates each week. The more each student interacts with others on the Discussion Board, the better. Substantive contributions are defined as those responses providing statements that enhance ongoing discussion of the module's topics, thus enabling the discussion to build throughout the class. Responses should include demonstration of the module's topical information as well as how to apply topics covered.

How can the student do this? A student can agree –providing additional substance to the conversation while building upon the previous students comments. A student can disagree (in a professional nature of course) stating why a different interpretation is better. Or, students can re-direct the discussion towards another vantage point presenting additional factors. Many times a discussion will be redirected or enhanced by someone bringing up a viewpoint that some had not considered before.
Thus, the conversation continues. Students must be interactive, not only with the Instructor, but with other students. Expand or redirect discussions as they relate to class. Offer some real world experience that supports theory or flies in the face of theory. Use critical thinking and possibly come up with new ideas. There is not a magic number on weekly post requirements for a few reasons. Students should not feel limited (as in "ok, I replied 5.86 times –I'm done for this module) and substance rather than quantity is primary. Additionally, the length of responses can vary.

A well thought out response can take a few sentences or a whole page. Mark Twain once apologized from writing a long letter because he didn't have time to write a short letter. Thirty percent of your course grade will come from your formal written responses to the discussion questions and responses to classmates, submitted on time and as directed in the appropriate Discussion Board forum. This portion of your grade is based on the quality, not quantity, of your participation. Only answering the posted discussion questions is not sufficient for full credit. You are expected to comment, debate, and further fellow students' discussions.

All assignments will be completed in a professional manner and on time, unless prior arrangements have been made with the professor. Blackboard assignments are graded with class participation. This course includes weekly activities, each of which may have grade points associated with them. Unless prior arrangements have been made with the instructor, students are expected to participate each week, according to the course schedule. This is especially important with regards to discussion activities. Weekly discussions typically include both an initial posting and one or more substantive replies.

Note: Proper etiquette has to do with keeping it simple by using proper English and proper spelling – spell check works well in Blackboard.

Course Policies:

[redacted] is committed to maintaining and upholding intellectual integrity. All students, faculty, and staff have obligations to prevent violations of academic integrity and take corrective action when they occur. The adjudication process will include the sanction imposed on students who commit the following academic violations, which may include a failing grade on the assignment, a failing grade for the course, suspension, or dismissal from the University:

2. **Plagiarism**: Presenting as one's own the ideas, words, or products of another. Plagiarism includes use of any source to complete academic assignments without proper acknowledgement of the source. All papers submitted for grading in this course will be submitted to safeassign.com - http://www.safeassign.com/ where the text of the paper is compared against information contained in the safeassign.com database. Papers submitted will be included in the safeassign.com database and become source documents for the purpose of detecting plagiarism.

2. **Cheating:** A broad term that includes the following:
   a. Giving or receiving help from unauthorized persons or materials during examinations.
   b. The unauthorized communication of examination questions prior to, during, or following administration of the examination.
   c. Collaboration on examinations or assignments expected to be individual work.
   d. Fraud and deceit, that include knowingly furnishing false or misleading information or failing to furnish appropriate information when requested, such as when applying for admission to the University.

3. **APA 6th edition** format is the [redacted] Worldwide standard for all research projects.

Disability and Special Needs:

[redacted] is committed to the success of all students. It is a University policy to provide reasonable accommodations to students with disabilities who qualify for services. If you would like to request accommodations due to a physical, mental, or learning disability, please contact the Worldwide Campus Disability Support Service Office at [redacted] or via email [redacted] or [redacted]

Course Schedule:

Week	Topics	L/O	Activities
1 October 21	Introduction, Introduction to Economics	1	1 Introductions 2 Read Chapter 1, Appendix A, and Chapter 2 3 Singing about Opportunity Cost 4 Opportunity Cost Video: My Prom Dates 5 Article: Opportunity Cost of Economics Education 6 Discussion 7 Assignment: Aplia Week 1 Problem Sets 1.Introduction to Using Aplia Assignments 2.Math and Graphing Assessment with Tutorials 3.What Economics is About

			4.Production Possibilities Frontier
2 October 28	Markets: Supply, Demand, and the Price System (Part 1)	2	1 Read Chapters 3 and 4 2 Videos: Demand vs. Quantity Demanded; Law of Supply 3 Assignment: Aplia Week 2 Problem Sets 1.Supply and Demand: Theory 2.Prices: Free, Controlled, and Relative 4 Preview: Research Paper
3 November 4	Markets: Supply, Demand and the Price System (Part 2)	3, 10	1 Read Chapters 5 2 Audio: Why Subsidies May you Far 3 Assignment: Aplia Week 3 Problem Sets 1.Supply, Demand and Price: Applications 2.Do You "Appreciate" Wendy's Super Value Menu? 4 Assignment: Submit Research Paper Topic
4 November 11	Macroeconomic Fundamentals Competition	3,4,5	1 Read Chapter 6 & 7 2 Video: The Importance of Stuff 3 Article: Determining the Jobless Rate 4 Assignment: Aplia Week 4 Problem Set 1.Macroeconomic Measurements, Part 1: Prices and Unemployment 2: Macroeconomic Measurements, Part 2: GDP and Real GDP 3: The Montly Employment Situation 5: Activity – Video Debt Fuels GDP
5 November 18	Macroeconomic Stability (part 1)	3,4,5	1 Read Chapter 8 2 Video: GDP – The Big Daddy 5 Assignment: Aplia Week 5 Problem Set 1.Aggregate Demand and Aggregate Supply
6 November 25 Online ▪▪▪▪▪▪▪	Macroeconomics Stability (part2)	3,4,5	1 Read Chapters 9 and 10 2 Videos: EconStories – Keynes vs. Hayek 3 Assignment: Aplia Week 6 Problem Set 1.Classical Macroeconomics and the Self-Regulating Economy 2. Keynesian Macroeconomics and Economic Instability: A critique of the Self Regulating Economy

			4 Assignment: Submit Research Paper Draft
7 December 2	Fiscal Policy and the Federal Budget	6,7,8	1 Read Chapter 11 2 Video: Space Program and Economic Growth 3: Article: Budget Deficits 4: Article: Tax Reform 5 Video: Politics and the Federal Budget 4 Assignment: Aplia Week 7 Problem Sets 1.Fiscal Policy and the Federal Budget Activity: Supplemental: More on Budget Balancing and Budget Crisis
8 December 9 ****** online	Money and the Federal Reserve System	6,7,8	1 Read Chapters 12 and 13 2 Video: The Fed 3 Audio: Banking System Collapse 3 Discussion 5 Assignment: Aplia Week 8 Problem Sets 1.Money, Banking, and the Financial System 2.The Federal Reserve System End of Course Evaluation
9 December 16	Monetary Policy	9	1 Read Chapters 14 and 15 2 Video: Monetary Policy Toils; Bond and Interest Rates 3 Assignment: Aplia Week 9 Problem Sets 1.Money and the Economy 2.Monetary Policy 7 Assignment: Submit Final Research Paper 8 Optional: Create your ePortfolio 9 Article: Bailing Out the Banks

Submitted by: _____

Approved by: _____