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A Methodological Approach for Researching National Classroom Practices

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Abstract: *Little continues to be known about what actually happens in classrooms, particularly from a national perspective. Descriptions of classroom practices from a national vantage point can provide a bird's eye view of salient patterns and variations within an education system, especially one as centralised as that of Malaysia. With these descriptions, especially if the primary data consists of video recordings, one can also begin to compare movements in classroom practices across time and space; theorise about the nature of practice within the system as well as inform policy deliberations. This paper examines key methodological decisions of conducting a national study to research classroom educational practice within Malaysia's public school system. The case is made for the use of such studies to gain a bird's eye perspective of classroom practices in a national system as well as to lay the foundations for inter-system comparisons. Potential implications and opportunities of these types of studies are also discussed.*

Keywords: *educational process, classroom practice, pedagogical practice, assessment practice, curriculum implementation practice, national study*

Introduction

The purpose of this paper is to discuss the methodological decisions in conducting a broad-based, national- or state-level study to research classroom practices. While there is a body of research of such nature (e.g. Alexander, 2000; Brückmann et al, 2007; Clarke et al, 2006; 2008; Janik & Seidel, 2009; Klette, 2009b; Lingard et al, 2001; Luke et al, 2005; Simola, 2005; Stigler et al, 1999), every broad-based study has to address the unique characteristics of the local system and context. It is against the backdrop of this existing body of research that we will describe key methodological decisions that went into shaping a study of classroom practice in Malaysia.

What plays out in classrooms within a national education system can and usually remains a mystery to the many education stakeholders, but this is particularly true with policy-makers and to a certain extent, educational researchers. We know, for example, that one of the single most important formal education determinants is effectiveness of teachers. This consensus has grown over the last three decades as research-based evidence continues to emerge (e.g., Hanushek, 1992; Hanushek, Kain, O'Brien, & Rivkin, 2005; Hill, Rowan, & Ball, 2005; Rivkin, Hanushek, & Kain, 2005; Rockoff, 2004; Rothstein, 2009; Rowan, Correnti, & Miller, 2002; Sanders & Rivers, 1996; Singh & Sarkar, 2015; Wright, Horn, & Sanders, 1997).

While teacher effectiveness is a critical factor, most countries do not have a finger on the pulse of what actually goes on in their classrooms. In Malaysia for example, most of the research on classroom educational practice investigates practices of individual teachers, classrooms, or schools.

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Important as this research is, it does not give us a much needed broad-based understanding of the schooling system as a whole. Broad-based studies serve to describe the predominant practices used in the classroom. With this description, one can also begin to compare movements in classroom practices across time and space; establish watermarks of current practices versus good practices; and, theorise the dynamics and underlying assumptions that drive practice within the system. Ultimately, findings from broad-based national studies can inform policy deliberations.

Broad-based national-level and state-level studies have informed national educational policy reforms in countries such as Finland (Simola, 2005; Sahlberg, 2011), Singapore (Luke, Freebody, Lau & Gopinathan, 2005; Luke & Hogan, 2006) as well as Australia (Lingard et al, 2001). Finland's renowned education system, for example, was a late starter in developing their education system amongst the Nordic and European nations. The system found its way through evidence-based studies to drive its educational reform and development plan (Simola, 2005; Salhberg, 2011). As recently as the 1990s, classroom practices were found to be quite traditional. Simola (2005, p.462), for example, concluded from a major study (Norris et al., 1996) that classroom practices of schools in Finland involved mainly "frontal teaching of the whole group of students" and little "individualized and student-centred forms of instruction." The study Simola cited provided important evidence of how Finland needed to continue to reform and develop its teacher education and professional development.

In Singapore, educational reform efforts after the *Thinking Schools, Learning Nation* reforms in the late 1990s, led policy makers to formulate the next wave of reforms focusing on the 'black box' of classroom practices, specifically on pedagogy, curriculum and holistic assessment. This reform effort was preceded by a large scale empirical investigation (Luke, Freebody, Lau and Gopinathan, 2005) involving "a rich description of pedagogy and pedagogical change as the central dynamic of the educational experience" (p.15). The research base for educational reform included cross-sectional and longitudinal studies of pedagogy and student pathways across the educational system, as well as analysis of measures of educational achievement and student produced artifact (i.e., work produced in school and at home), and their impact on student pathways and destinations. The Finland and Singapore experiences serve as significant examples of policy processes that were driven by empirical broad-based research on the national level.

This much needed broad-based research on educational practices is critical but often missing in educational systems in the process of transition. Malaysia, for example, has for the most part dealt with education access issues, but now struggles with a system that has had limited success in helping students cultivate higher-order thinking. What is needed is a broad-based study on educational practices in its classrooms. In making the case for the methodological decisions, this paper adds to the existing literature by foregrounding the conceptual basis for describing classroom practice from a national perspective. In the next section, we describe the conceptual basis for the IMCEP (Inquiry into Malaysian Classroom Educational Practices) research project, an on-going large-scale national project on classroom educational practices.

Theoretical Foregrounding

When conceptualising the IMCEP research project, we asked an overarching question: Why and how do we study national classroom practices? We broke down this question into two parts. First, why is a bird's eye view description of national classroom practices necessary? Secondly, how can these practices seen from a bird's eye view be described in a meaningful way?

The first question is premised on the argument that there's a need to step back from the specifics of the micro level case studies *per se* to capture the national manifestations of educational practice. Although micro level studies provide in-depth and rich descriptions, they are by themselves inadequate to describe the broader landscape of practice. However, by analysing these micro cases specifically to form a bird's eye view of practice, we can be better equipped to meaningfully describe and theorise practice at a systems level.

Systems level studies may include broad-based research at two major levels. One is delineated along the lines of administrative units at a country, state, provincial or district level. The other major level is delineated along clusters of schools with common resemblances such as religious schools, vernacular schools, prep schools, private schools and trust schools. In this study, the focus is on the former, specifically at the country level. Educational policy making—especially in developing countries and nations with a centralised education system—are almost always made at a national level. For example, in Malaysia, policy is driven by a federal ministry with a centralised portfolio. The driving forces of national policy combined with cultural adaptations to the schooling process can form salient and distinct national patterns of practice (Givvin et al, 2005). Thus, a systems level national description can begin to identify these saliences to provide a view of discernible patterns and variations across a centralised system.

This leads us to the second question: how can these practices be described and theorised meaningfully at the systems level or specifically in the context of this study, at a country level? In order to derive a systems level view of patterns of practice, one first has to identify a way of analysing salient and meaningful patterns of practice. We argue that this can be achieved by (1) anchoring the analysis against specific theoretical lenses; and, (2) analyzing broad patterns of practice across specific timeframes and within specific contexts that have a common resemblance. The anchoring of the analysis against specific theoretical lenses—across specific timeframes and within particular contexts—provides a framework for meaningful interpretation while serving as a vehicle for achieving analytical objectives (Klette, 2009a). In this study, we adopted a constructivist lens which was in line with the aspirational goals in Malaysia's public education system (Ministry of Education Malaysia Malaysia, 2012). This lens was then used as the basis for selecting the coding frameworks for this study. This will be discussed with greater detail in the methods section.

Recognition of systems level patterns can be used by policy makers and other stakeholders to make better decisions that impact the whole system. For example, the design and implementation of teacher education as well as professional development programmes can be made based on specific data of practice patterns that are prevalent within the system. So, if it can be established, for instance, that across the system teachers are struggling to ask questions that can drive higher order thinking, then the design of teacher education and professional development programmes need to specifically address this issue.

Systems Level Research of Educational Practices: Learnings from the Research Literature

The purpose of this section is to review the existing literature on systems level studies, and to position this study against that backdrop. The emphasis is on key learnings from the literature to design the Malaysian study.

Givvin et al (2005) argue that national patterns of practice do exist, especially in more centralised systems such as that of Japan. They argued that there are elements within a school system – including the policy, curriculum, physical environment and social dynamics of classrooms– that shape teaching practice. This argument resonates particularly well with Malaysia's centralised public school system where teacher training, curriculum planning, national examinations, key performance indicators (for students and teachers), to school administrative structure, among others, are largely decided at a central or national level. These structural elements alone can significantly shape and give rise to distinctive national patterns of practice. In addition, Givvin et al (2005) also argue that countries have shaped distinctive teaching practices by adapting to national cultural beliefs, expectations, and values, including assumptions about the nature of a subject and how students learn, expectations about the level of students' performance, and the values held for school processes and outcomes.

Over the last two decades, there have been numerous systems level investigations of educational practices. Table 1 below provides a summary listing of system level studies of classroom teaching practices.

Table 1. System studies of classroom teaching practice (partially adapted from Janik & Seidel, 2009)

Study	Objective of study	System (country, state)	Sample size	Types of data	Focus of analysis
CPV Video Study (Janik, Seidel & Najvar, 2009)	To document and describe everyday teaching, curricular comparisons in teaching and learning	Czech Republic	Voluntary sampling; 249 lessons in Physics, Geography, English, Physical Education	Video recordings	Opportunities to learn, modes of classroom organisation, phases of the lesson, didactic tools and media opportunities to talk
Culture and Pedagogy (Alexander, 2000)	To compare primary education policies and classroom practices in England, France, India, Russia and the United States	England, France, Russia, USA, and India	30 schools from 5 countries; 36 lessons analysed	Video recordings, photographs, lesson transcripts, pre- and post-lesson interviews with teachers, lesson artifact (teachers' lesson plans, lesson texts/ worksheets, students' written work)	Basic disposition of the framing and regulatory elements of curriculum, space, pupil organisation, time and routine/ rule/ritual, and works through each of the others before finishing with a sustained analysis of patterns of classroom interaction and the dynamics and content of teacher-pupil discourse
DESI (Klieme et al., 2006 in Janík & Seidel, 2009)	To describe everyday lessons, to analyse verbal communication within classrooms	Germany	105 classes in English as a second language	Video recordings	Aspects of instructional quality, dealing with mistakes, efficiency of classroom management, mediating cultural studies topics
IPN Video study (Seidel & Prenzel, 2006; Bruckmann et al, 2007)	To describe patterns of teaching and learning in physics instruction to investigate effects of teaching on students' learning processes and outcomes	Germany and Switzerland	50 and 32 teachers from randomly selected German and Swiss schools respectively; video recorded 2 physics lessons per teacher	Video recordings, interviews and questionnaires	Organisation of classroom activities, goal clarity and coherence, learning-orientation, dealing with mistakes and conceptual change, scientific inquiry and the role of experiment
IMCEP	To describe classroom educational practices at a national level	Malaysia	Random sampling of public secondary schools in Malaysia. 410 Science, Mathematics, English and Malay lessons (from 141 teachers) were video recorded	Primarily video recordings. Surveys were also collected.	Instructional practices, in-class assessment for learning practices, and curriculum implementation practices.

Continues (Table 1).

Study	Objective of study	System (country, state)	Sample size	Types of data	Focus of analysis
LPS (Clarke, Keitel & Shimizu, 2006)	To analyse teaching and learning	Australia, China, Czech Republic, Philippines, Hong Kong, Israel, Japan, South Africa, South Korea, Germany, Singapore, Sweden	Purposive sampling of "good teachers." At least 30 lessons in every country; i.e. more than 390 lessons in Mathematics.	Video recordings of classroom proceedings and interviews, questionnaires, students' written work, test scores	Verbal interaction, Mathematical norms, repetition, role of seatwork, motivational strategies, learning tasks
MET (Cantrell and Kane, 2013)	To demystify effective teaching practices in the classroom and in turn provide insights into teacher evaluation and professional development	USA	Randomisation block sampling: 2,700 teachers, over 100,000 students, grade 4-9, 2 school years (2009-2010 & 2010-2011), 23,000 hours videotaped Science, English and Maths lessons	Observation, audio and video recordings, survey, assessments	Across a wide spectrum of observable data
Norway PISA+ (Ødegaard, 2006; Klette, 2009a)	To analyze the processes of teaching and learning in lower secondary Maths, Science and Reading classrooms in Norway	Norway	Purposive sampling for maximum variation: 152 lessons. Level Grade 9 Mathematics, Science & Language Arts classes. 6 classes at 6 different schools. Each class observed for 3 weeks	Video recording, student and teacher interviews, students' work	Analysis primarily focussed on the teacher, namely: whole class instruction; teachers' activities during individual seatwork; teachers' activities during group work
Pythagoras (Hugener et al.,2009; Janík & Seidel,2009)	To investigate the impact of mathematics instruction on students' cognitive and motivational outcomes	Germany and Switzerland	Voluntary sampling; 19 Swiss and 20 German classes in Mathematics	Video recordings, questionnaires, test scores	Teaching patterns, student-perceived learning quality, cognitive activation, mathematical achievement

Continues (Table 1).

Study	Objective of study	System (country, state)	Sample size	Types of data	Focus of analysis
Queensland School Reform Longitudinal Study (Lingard et al, 2001)	To study the impact of school-based management on student outcomes	Queensland, Australia	Purposive sampling: 24 schools, 975 lessons mapped – Maths, Science, English, Social Studies, Across years 6, 8, 11 plus observed "outstanding teachers"	Teacher questionnaires, student work, lessons coded based on 20 elements (of Productive Pedagogies)	Looked at elements of productive pedagogy (intellectual quality, connectedness, supportive classroom environment, working with and valuing differences)
Singapore Study (Luke et al, 2005; Luke & Hogan, 2006)	To measure, map and model classroom pedagogy and student outcomes in a large, representative sample	Singapore	Representative sampling: 1000 lessons in 56 schools in Primary 5 and Secondary 3 (Mathematics, Science, English, Tamil, Chinese, Malay, and Social Studies)	Observation, audio and video recording, survey, sample artefacts and achievement scores	Multiple areas, with classroom data emphasising content, pedagogical and assessment practices, as well as lesson structure
TIMSS 1995 (Stigler et al, 1999)	To provide a rich account of 8th grade Maths classes in three countries	USA, Germany, Japan	Various forms of probabilistic sampling: 231 Maths lessons	Video recordings	Content, organisation of lesson and instructional practices
TIMSS 1999 (Hiebert et al, 2003)	To investigate and describe teaching practices in 8th grade Maths and Science classrooms in seven countries	Australia, Czech Republic, Hong Kong, Netherlands, Switzerland, USA, Japan	Various forms of probabilistic sampling: 638 Maths lessons and 439 Science lessons	Video recordings	Structure of lesson, content and instructional practices

One way to investigate teaching practices within a system is to do a large-scale survey (Rowan, Correnti & Miller, 2002). Examples of large-scale surveys include the Teaching and Learning International Survey (TALIS) (OECD, 2014) and a number of survey studies carried out in several countries using the "What Is Happening In Class? (WIHIC)" questionnaire (Fraser & Goh, 2003). The TALIS survey was able to provide valuable data on such dimensions as teacher's self-efficacy, beliefs and attitudes towards teaching and learning, as well as their perception of their own teaching practice. The 2013 TALIS survey, for instance, found that Malaysian teachers predominantly see their role as facilitators and leaned towards constructivist beliefs. However, it is not clear from the self-reports if

their practice is consistent with their beliefs. Likewise, the teachers' practices as facilitators in terms of helping students learn is not apparent. We therefore argue that these practice related issues can only be investigated by in-situ classroom observations.

Large scale video studies have broken new ground in helping us study classroom practice at a system level. One of the earliest and most well-known is the Trends in International Mathematics and Science Study (TIMSS) 1995 study (Stigler et at, 1999). This international comparative research project used various forms of probabilistic sampling to obtain nationally representative samples of teachers in the USA, Germany and Japan. They video recorded one lesson each from 231 eighth-grade mathematics classrooms. In the 1999 study, they recorded 638 mathematic lessons and 439 science lessons from seven different countries (Hiebert et al, 2003). Both these studies focused on lessons structures and instructional practices anchored against learning goals and specific content parameters. The IMCEP study, instead, focused on a combination of dimensions including assessment for learning, curriculum implementation as well as pedagogical practices as they form the core dimensions of classroom practice.

Several other systems studies where then conducted after the TIMSS studies. We specifically focus on the broader purpose of these research initiatives; the way data was collected; and, the way data was analysed.

Purpose and Focus of Systems Level Studies

Systems level studies have been initiated at different junctures in the education reform process. Singapore and Finland utilised systems level studies as a precursor to reform, using the findings as a basis for identifying key aspects for structural reforms (refer to Table 1). The results of these studies set the stage for both systems to initiate moves towards curriculum and pedagogical structures that emphasised thinking skills as opposed to rote learning.

On the other hand, the Queensland School Reform Longitudinal Study (2001) was more focused on assessing the impact of ongoing reforms at that time. Among other things, this study looked at aspects of productive pedagogies—including depth of understanding, knowledge connectedness, harnessing the richness of diversity and, conducive learning environments—and its impact on student outcomes. The findings from this study helped identify more clearly directions for continuing reform. Similarly, the Norway PISA+ study was used to better define issues arising from the international Programme for International Student Assessment (PISA) study.

With the IMCEP study, there was a distinct need to conduct a systems study in order to identify and describe the watermark of classroom educational practice in Malaysian public schools. Since Malaysia's independence in 1957, there have been numerous education reform efforts. In the midst of these reforms, systems level studies focusing on practice patterns have been scarce. The most recent government-initiated study cited in the Malaysian Education blueprint (Ministry of Education Malaysia, 2012) broadly identifies issues of practice in Malaysian classrooms but does not adequately describe and conceptualise specific aspects of teacher practice for development. A study such as IMCEP is needed to describe with a greater specificity practice patterns that are deemed most pertinent to the system today, such as dealing with the question "at the systemic level, what instructional and assessment for learning opportunities are made available to help students develop thinking skills?"

In the long run, the IMCEP study also provides a platform to do comparisons with other national systems and existing educational practice benchmarks. International comparative studies such as the TIMSS video studies can help national educational systems such as that of Malaysia to benchmark, explore and identify potential educational policy and practices for more deliberate discussions and initiatives. With the durability of video data, these comparisons can be made over time and with other systems that have common features but different success profiles.

Methodological and Theoretical Framing of Systems Level Studies

Klette (2009b) warned that the methodological and theoretical framing assumed by educational researchers can blind us to significant changes to practice. Thus the framing of such systems level studies needs to be done deliberately for the context and purpose in which they exist. Klette (2009b) as well as Artigue and Winslow (2010), for example, argue that a study's framing must have space for modes of data collection and analyses that allows for multiple perspectives, or at the very least, the perspective of local needs. The framing must account for the specifics of the context in which the system resides; the aspirations of the education system; the theoretical premises of conceptualising and analysing practice; levels of analysis; and time scales of investigations. How this backdrop plays out methodologically in IMCEP is discussed in the next section.

Methodological Framing of IMCEP: Background and Design

Malaysia, or Malaya as it was formerly known, achieved independence from Britain in 1957. At this point, schooling was very much limited to the elite. Only 6 percent of the children had secondary-level education and a mere 1 percent had any post-secondary education (OECD, 2013). However, the decades thereafter, access to schooling increased dramatically. By 2011, the enrolment rates at primary-level, lower secondary-level and upper secondary-level education had reached 94 percent, 87 percent and 78 percent respectively (Ministry of Education Malaysia, 2012). The emphases on the 3 Rs (reading, writing and arithmetic)—helped Malaysian youth reach near-universal literacy (Ministry of Education Malaysia, 2012).

While the country has made significant improvement in increasing access to formal schooling, the quality of the education system has come under greater scrutiny. The prevailing challenge today is improving the quality of education, particularly in terms of helping students develop higher-order thinking capabilities (Ministry of Education Malaysia, 2012). OECD (2013, p. 207) reported that "learning standards have declined over the last decade" in Malaysia. As an indicator of this decline, the same report stated that Malaysia had the largest decline in test scores within the decade among all the countries that participated in TIMSS. Similarly, the PISA study found that Malaysian students struggle with questions that required higher-order thinking (Ministry of Education Malaysia, 2012). In addition, potential employers have expressed serious concerns that significant numbers of Malaysian graduates do not have essential skills related to critical thinking, reasoning, problem-solving, communication, and being able to think and work independently (Ministry of Higher Education Malaysia, 2012).

It is worth noting that these issues are not likely due to a lack of resources. For instance, it was reported in 2008 that Malaysia ranked 16th in terms of government spending on education out of 102 countries surveyed (Ministry of Education Malaysia, 2012).

One of the key areas of concern is what happens in Malaysian public school classrooms. The Malaysian Education Blueprint (Ministry of Education Malaysia, 2012, p. 5-2) reported, based on observations of 125 lessons in 41 schools, that typically lessons in Malaysian classrooms "did not sufficiently engage students, relying on a more passive lecture format of content delivery by the teacher." The same study also concluded that classroom experiences were more focused on "surface-level content understanding for summative assessment purposes, rather than on cultivating higher-order thinking skills."

While this study is useful for providing a broad understanding of what happens in Malaysian classrooms, a more theoretically-grounded and granular analysis of practice is needed. Such an analysis would have to account for major dimensions of classroom practices including instruction, assessment and curriculum implementation. The analyses of these dimensions have to be underpinned by a conceptual foundation that is robust and still keep in focus Malaysia's education needs and aspirations. Malaysia's needs, as discussed earlier, are aimed at increasing the quality of education through practices that are more conducive to the development of higher order thinking. Furthermore, the demands of the knowledge economy, globalisation and the need for a well-informed

citizenry requires that students have ample opportunities to learn to think critically and creatively as well as collaborate, problem solve and communicate effectively in rapidly changing environments. Existing evidence suggests that constructivist approaches would help the development of such skills (Bransford et al, 1999; Hmelo-Silver, 2004; Swartz, Fischer & Parks, 1998). For these reasons, IMCEP selected a constructivist lens to underpin the analyses. However, taking into consideration Klette's (2009b) warning of how a pre-selected research lens can possibly blind us as educational researchers, the IMCEP research team decided that it is crucial that the data be collected in video format so that other lenses can be subsequently used to allow other perspectives to enrich the analytical base.

Having established the initial framing, other key research design decisions involving sampling, data collection and data analysis were made.

Sampling Strategy

The key driver in designing the sampling strategy was the need to obtain a description of national classroom practices. Previous small-scale, situated studies had found little voice among policy makers as well as other stakeholders in the country. A telling instance is the most recent national education development blueprint (Ministry of Education Malaysia, 2012) that rarely cited smaller-scale, situated studies to buttress the case for policy reforms.

In order to capture descriptions of national classroom practices, a random sampling plan was used which would allow us to obtain a representative view of national patterns of practice, and consequently be more likely to contribute to policy deliberations within the country.

The study focused on Year 7 teachers as Year 7 in Malaysian public education system is the transition year from primary to secondary school. While the initial goal was to sample teachers across the country, a lack of comprehensive list of Year 7 teachers made this unachievable. Because of this practical challenge, we opted instead to randomly sample schools rather than individual teachers.

Eventually, the IMCEP sampling plan involved randomly selecting from the list of almost 2000 public secondary schools in Malaysia which accounts for 88 percent of the secondary school student population in Malaysia (Ministry of Education Malaysia, 2012). The Mathematics, Science, English Language and Malay Language teachers in the selected schools were approached for consent to be participants in the study. These four subjects were selected as they constitute the core subjects in the secondary school curriculum. In total, 24 schools and 140 teachers consented to be part of the study. Our goal was to obtain data from at least 30 teachers per school subject to enable various inferential statistical analyses, such as comparing practices between school subjects and correlating observed practices with espoused practices.

Data Collection Strategy

A major challenge one has to anticipate in system level studies is the complexity of data collection. In the context of IMCEP, two primary data sources were collected, namely, video data and survey data.

Video recordings were used as a form of observation, with a number of added advantages over live observations (Erickson, 2011). Video recordings provide lasting records that makes it possible to pause, re-scrutinize, and re-interpret teaching and learning processes by multiple researchers (Erickson, 2011; Klette, 2009a). Video also provides a visual representation of aspects of classroom processes that may escape the observer's gaze. In addition, Janik, Seidel and Najvar (2009) also point out that video studies allow researchers to code and re-code as required in order to capture the rich complexity of classroom practices. As pointed out earlier, this was a key requirement for this study to allow the possibility of different analyses from multiple perspectives.

The decision was also made to record three lessons per teacher over a period of a week. Praetorius et al (2014) found that one lesson was enough to identify teaching patterns related to classroom management and teacher-student interaction structures, but more lessons were needed to identify stable teaching patterns related to cognitive activation (which includes dimensions such

as students' ways of thinking and challenging high-cognitive activities). Since the focus of the IMCEP study was on general patterns of practice, recording one lesson per teacher may have been adequate but we wanted to minimize the possibility that the lesson chosen for observation was an outlier. In this regard, other researchers have recorded three lessons per teacher (Seidel and Prenzel, 2006; Hugener et al., 2009). A recording of three lessons per teacher thus allowed us at least three data sets to establish patterns of practice. This was done over the course of a week as the research team spent a work week at the school before moving on to the next site.

For each lesson recorded, two video cameras and one audio recorder was used. The first camera was stationed at the back of the class focusing on the teacher, and the second more compact camera was stationed at the front of the class to capture a whole-class perspective. This arrangement allowed for two observational vantage points. The audio recorder was attached to the teacher to ensure clear audio quality.

In selecting lessons for recording, the teachers were given the option to choose lessons of their choice in the given week. This was done usually a week before the actual recording to ensure the teacher was available for recording, as well as to put teachers at ease. While we requested for teachers to 'do what they usually do,' it is quite likely that this arrangement would lead teachers to put their best foot forward. Still, for the purposes of this study, we argue that their broad patterns of practice would not differ too much from their usual approach to teaching. For example, if the teacher was accustomed to chalk-and-talk, it would be unlikely that the teacher would adopt, for instance, a problem-based learning approach.

The IMCEP project also used a survey to collect demographic and teachers' background data as well as teachers' thoughts on their practice. These data will be analysed separately and also in relation to the classroom video data.

In all situations, consent and permission were obtained from the teachers, the school principal as well as relevant state and national agencies. The teachers were briefed in face-to-face settings, and were given opportunities to ask any questions. They also knew that they reserved the right to withdraw their consent at any time. While withdrawal occurred several times, an open communication stance to address any emerging concerns significantly helped teachers be more at ease with being video recorded.

Data Analysis Strategy

Malaysia's education planning blueprint (Ministry of Education Malaysia, 2012) explicitly cites the importance of engaging students in types of learning experiences that foreground higher order thinking. Teachers in Malaysian public schools are already familiar with thinking and approaches often associated with constructivism (OECD, 2014). For instance, most teachers see themselves as facilitators. However, as discussed earlier, it is still unclear whether teachers' practice in the classroom reflects constructivist pedagogies often associated with the development of higher order thinking.

For these reasons, the initial analysis is underpinned by a constructivist lens keeping open the possibility of using other theoretical lenses in subsequent analyses. This underpinning helped frame the study in terms of three major, inter-connected classroom practice areas, namely instructional practice, assessment practice and curriculum implementation practices.

If the richness and complexity of practice is to be described for the purposes of a bird's eye view, salient units of analyses, scale and foci will have to be identified to make sense of the data. Klette (2009b) argues that the use of *a priori* coding frameworks helps with reducing complexity in large-scale video studies. In addition, using an *a priori* coding framework as a template for analysis enables us to explore resemblances of practice against established good practices. The notion of resemblance builds on the idea that similar categories exhibit a gradient structure wherein some practices are better exemplars of good practices than others (Rosch, 1978; Sternberg & Horvath,

1995; Smith & Strahan, 2004). In other words, the greater the similarity of exhibited practice with the coding framework, the greater the probability that it belongs to the category. This posits the need for using coding frameworks in instructional, assessment and curriculum implementation practices that provide a basis for comparisons against existing good practices. Thus, these practical as well as conceptual considerations support and add to the existing literature on how to make sense of video data to gain a national perspective on classroom practices.

After a review of existing coding frameworks for studying classroom educational practices (e.g. Lingard, Hayes, & Mills, 2003; Luke, Freebody, Cazden, & Lin, 2004; Tedlie et al, 2006; Danielson, 2007, 2011, 2013; Pianta, La Paro, & Hamre, 2008; Hill et al., 2008; Klette, 2009b; Grossman et al., 2010; Kane & Staiger, 2012; Kane et al., 2013), the decision was made to adopt Framework For Teaching or FFT (Danielson, 2011). It was then adapted to analyse instructional practice because of its constructivist underpinnings which is consistent with the project and national goals, as well as its established track record. The FFT has been widely used in different research projects and have been found to be robust (Kane & Staiger, 2012).

As for analysing assessment practices, the IMCEP research team had to develop its own coding framework based on the Assessment for Learning conceptions (Black et al, 2004; Black et al, 2006). A key reason for this decision was that Malaysia had just began implementing school-based assessment (from 2012) on a nationwide scale which emphasised assessment for learning. This was a strategic time to study classroom assessment practices three years into the implementation of this school-based assessment policy.

The coding framework for analysing curriculum implementation was adapted from two sources, namely Brown's (2009) and Lingard, Hayes and Mills' (2003) characterisation of how teachers use curriculum. Brown's work provided the foundation to answer a key question in relation to how teachers in Malaysia implemented the national curriculum i.e. did they offload, adapt or improvise the curriculum as they carried out the lessons? Lingard et al.'s productive pedagogies framework, on the other hand, provided the lens for the project to study if teachers in Malaysia connected the formal curriculum to other disciplines as well as students' real world experiences. Both frameworks were essential in helping us understand how teachers were adjusting their practices in the midst of a centralised national curriculum.

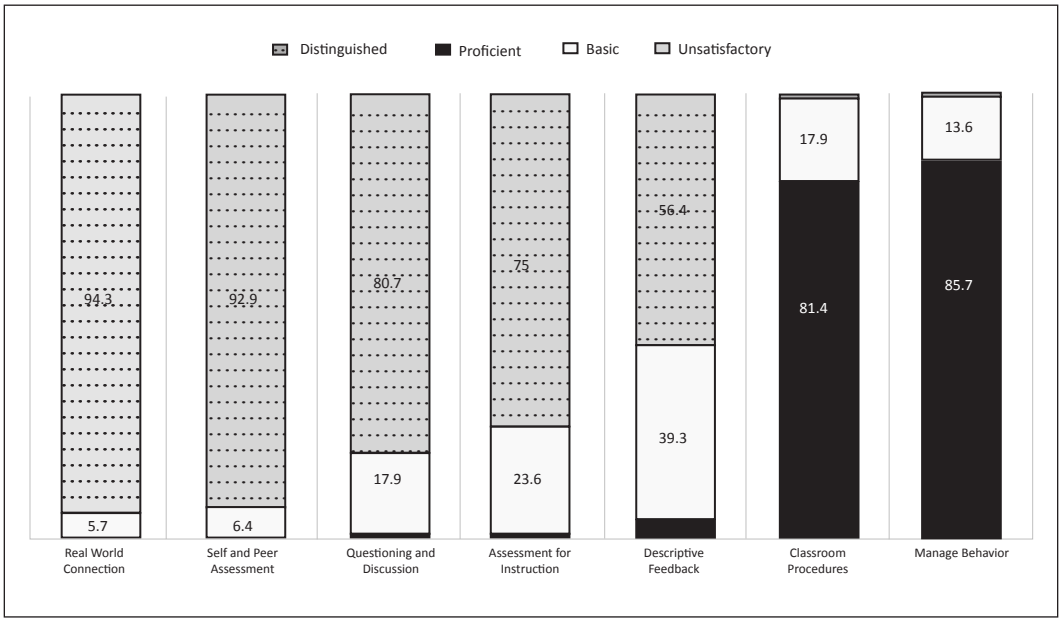
Fundamentally, the coding frameworks were decided based on what was deemed essential to Malaysia's current context, including its aspirations and on-going challenges. The national aspiration to help students develop higher level thinking abilities keyed the constructivist underpinning for all our initial coding framework. This underpinning formed a cohesive lens for studying Malaysian teachers' classroom pedagogical practices, including their instructional, assessment and curriculum implementation practices.

It is important to note that the methodological details we have outlined here can be used by other independent research projects to not only gain a birds'-eye view of their respective education system, but also lay the foundations for comparing with the Malaysian data – as long as the sampling, video recording and coding scheme are similar. In other words, it is possible for similar studies to be done in different systems quite autonomously, and eventually for the data to be compared to reveal a more nuanced understanding of each system.

Initial Findings

This section is to provide some initial data as an example of findings that can emerge from such a study. The aim is not to provide a full report of the findings but to illuminate the kinds of findings that this study yields.

Figure 1. Example of findings from the IMCEP study



The IMCEP study found that most Malaysian teachers were quite proficient in managing classroom procedures as well as student behavior. The teachers established procedures and routines for classroom management that limited time wastage as well as to disruptions from negative student behavior.

However, a majority of Malaysian teachers struggled with: making real world connections, conducting self- and peer-assessments, asking high-quality questions and facilitating discussions, assessing for instruction as well as providing descriptive feedback. In all these categories, a majority of 140 teachers video-recorded were coded as having "unsatisfactory" practices.

Most of the teachers did not make any real-world connections (94, 3 percent) during lessons, and thus was coded as "unsatisfactory." The remaining 5.7 percent was coded as "basic" i.e. attempts were made to make real-world connections. None were "proficient" or "distinguished" in successfully connecting students' own experiences and contemporary external situations to the topic being studied in class.

The findings from the next four practice areas were particularly surprising during a time when formative and a more holistic assessment system were being emphasised. The school-based-assessment policy began its secondary school implementation phase in 2012, beginning with Year 7. By the time the IMCEP data was being collected in Year 7 classrooms, the policy was already in the third year of implementation. It was to be more holistic and more focused on assessing the "learning process" rather than just the learning output (Ministry of Education Malaysia, 2011).

A majority of the teachers' practice in areas very much related to the school-based assessment policy were coded as "unsatisfactory." Nearly 93 percent did not create any opportunities for students to assess their own or each other's work. More than 80 percent asked questions that were of low cognitive challenge, and spoke to students predominantly in recitation style rather than facilitating discussions. Most of the teachers (75 percent) also showed little or virtually no assessment or monitoring of student learning. And more than 56 percent demonstrated little evidence of giving feedback, and when they did it was of substandard quality.

These initial findings provide some explanation for the slide in Malaysia's education achievement scores based on international assessments. In the last decade, for example, Malaysia witnessed the largest decline in test scores of all countries participating in TIMSS (UNESCO, 2014, p.221). International assessments such as TIMSS are designed increasingly to measure higher order thinking capacities such as problem-solving. In this regard, IMCEP has found that Malaysia's classrooms provide very limited opportunities for students to practice and develop their higher thinking order capacities. The overwhelming uniformity of the findings across the system suggests that it is a systemic issue at the national level. While international comparisons such as TIMSS and PISA show us where a country stands in relation to others, national-level studies provide a birds-eye view that can pinpoint systemic issues that are country specific.

In this example, it is clear that teachers need support and development opportunities to enhance their classroom practice. While the teachers are qualified with teacher education degrees, it cannot be assumed that they will necessarily transition into these practice areas with ease. Thus, a policy formulation for such reform must take into account the bridging process between preservice and in-service teacher education, through which teachers can progressively develop the necessary knowledge and competencies.

Perhaps as importantly, these data also reveal that teachers' practice may be rooted in a different epistemic position than what the education system aspires. The teachers' practice suggest that they are still entrenched in a more didactic, teacher-centered stance. Constructivist practices that strive for co-construction of knowledge requires a paradigm shift. In this regard, training alone may not suffice. Transforming mental models will require a cultural shift enabled by a more comprehensive, sustained change process.

Conclusion

The purpose of this paper was to discuss the design of a study focused on describing a birds' eye view of classroom educational practices in Malaysia. This perspective can be particularly meaningful in describing common and distinctive practices enacted within a centralised system, and consequently provide empirical data for contributing to policy discussions in one of the most important areas in education – what happens in the classroom in relation to national aspirations, policies and practices.

In explicitly articulating the methodological design of IMCEP, we hope to stimulate further dialogue and initiatives for comparative analyses of systems around the world. These comparative analyses can take several forms: it can involve one umbrella study involving multiple countries (such as the TIMMS video study), or it can involve independent national studies done by different research groups in different countries. With the latter option, these independent studies can be analysed together if enough methodological congruence is present. Such methodological congruence can arise from following these three key methodological moves implemented in this study: first, random sampling to allow for analysis of representative patterns of practice; second, a data collection approach that uses a 2-video camera and 1-audio recorder format; and, thirdly, the use of a similar coding framework. These similarities will allow for independent projects to be tied together for comparative analyses.

Apart from inter-national comparisons, the above framework can also be used to compare practices within a system over a period of time (e.g. every 5 years) or at critical junctures of an education system (e.g. before and after a major reform effort). At the very least, this birds' eye view perspective can provide a valuable snapshot of practice within a system.

Notes

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Frontiers of Teaching and Learning Innovation in Engineering Education in China – A Case of Tsinghua University

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Abstract: *This investigation concerns the latest teaching and learning innovations in Chinese engineering higher education with special reference to Tsinghua University in Beijing, a leading university of China. Set in the context of rapid enrolment expansion in Chinese higher education since entering the 21st century, the study addresses how university engineering education innovated their contents and modes of teaching and learning to foster top-level talent, enhance relevance and responsiveness of education against rising number of students, scale of knowledge, and labour market demand, through content analysis of 163 award-winning programmes. The study also presents five case studies from Tsinghua University that have won recent regional and national awards under China's Higher Education Teaching and Learning Award scheme in 2012-2013 and in 2014 respectively. The data for the present investigation comes from a rich set of first-hand data of those wining institutions' award applications and collected from field visits by the present authors. The study further proposes a framework for designing and implementing engineering education programme. It is hoped that such a Chinese perspective could contribute to the global dialogue on teaching and learning in engineering education.*

Keywords: *engineering education, China, teaching and learning, innovation*

Introduction

The latest four-yearly Beijing Higher Education Teaching and Learning Awards of 2012-2013 presented over 160 out of 663 awards to engineering programmes in about 40 higher education institutions (HEIs). Some of the successful applicants also won national awards of this kind in 2014. Those awards represent the frontline of teaching and learning innovation in engineering education of both global to national competitiveness and regional to local embeddedness.

This paper represents a comparative study of the award-winning programmes with case studies to analyze the following research question: What are the teaching and learning innovations in engineering education in China, with special reference to national leading universities located in Beijing?

Engineering has become the biggest sector in Chinese higher education and Beijing has the largest cluster of engineering institutions in China, encompassing many national leading research universities as well as community colleges. For this reason, Beijing is selected as the area providing main data for this study's analysis.

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Through a thematic review of engineering education's teaching and learning innovation engaged in universities in Beijing, the study attends two key themes: (1) students' holistic competence, achieved mainly through engaging problem-based learning (PBL), establishing a triple helix of teaching-research-industry and enhancing internationalisation; and (2) institutional capacity building, which are mainly reflected through curriculum and faculty development. The study then turns to Tsinghua University with reference to its five innovative engineering education projects that have won regional/national awards. Tsinghua is chosen for two reasons. First, Tsinghua is one of the best universities in China with indisputable strengths in its engineering education. In the latest QS World University Ranking (2015), it ranked 17th in terms of engineering education, 25th in overall score around the world, and 1st in China in both categories. The second has to do with data availability.

Part 2 of the paper provides the context of engineering education in China and some challenges encountered in the process. It is followed, in part 3, by an introduction of the CDIO (Conceive— Design— Implement— Operate) initiatives to provide reference to analysis of this study. In part 4, the study presents a comparative analysis of 163 award-winning engineering education programmes undertaken by universities in Beijing. It focuses on two themes, that is, students' holistic competence, and institution's capacity building, with incorporation of PBL, teaching-research-industry triple helix, internationalisation, as well as curriculum and faculty development. Those themes serve as a framework for further analysis of five cases in Tsinghua, as presented in part 5. The paper concludes with a framework for designing engineering undergraduate education with consideration of the above analysis and the CDIO initiative.

The paper seeks to provide a better understanding of the latest teaching and learning innovations in Chinese engineering higher education, explore patterns for their successes and implications for engineering education in the world. It is also hoped to abstract a conceptual framework for designing engineering students' education for further guidance.

Engineering Education in China: Teaching and Learning Innovations

Challenges to Engineering Education

As a rapidly industrialising nation, engineering talents are crucial to China's development from agriculture to aerospace. Engineering education is the biggest sector in the Chinese higher education system. Over 1,000 universities and colleges (accounting for 90% of four-year HEIs) in China provide engineering education. In 2010, China has 3.7 million undergraduates and 470,000 postgraduates studying engineering (National Bureau of Statistics of China, 2014).

Engineering education in China is facing growing challenges. Some of the most important issues are: (1) how to raise its education quality to cultivate a diverse range of innovative talents and maintain the total system's grow towards a 40% gross-enrolment-rate target by 2020; (2) how to balance teaching and research when universities are placing more emphasis on research performance and administrative efficiency, but less on fostering teaching skills; and (3) how to train students with a core set of knowledge, skills and competence for future engineers through closer education-industry alignment in the context of rapid knowledge explosion and skills upgrading. With regards to research universities, there is also a key challenge of how to translate institutional research leadership into teaching capacity.

China's Excellent Engineers Plan

Confronting these challenges, China has in recent years put forward a series of national initiatives to strengthen engineering higher education in recent years. The latest one is the "China's Excellent Engineers Plan 2010-2020" ("The CEE Plan"), co-funded by the Ministry of Education, Chinese Academy of Engineering and over a score of national ministries and professional engineering associations. The Plan aims to innovate engineering education in order to better align engineering education with national development strategy, make closer links between education and industry,

enhance the student's holistic development and social responsibility, and strengthen international competitiveness of China's engineering talents. The CEE Plan has adopted five main measures: (1) closer education-industry partnerships in planning, teaching and learning; (2) raising engineering and innovation skills through setting up a network of national engineering training centers for student internships in industrial enterprises; (3) reforming university faculty employment and promotion policies to support industrial fellowships for engineering faculties; (4) increasing funding in national studying abroad schemes for engineering students and scholars; (5) joint education and industry effort to establish national standard for engineering talent, including a framework for engineering higher education qualifications (Zhang, 2010). Currently, the CEE Plan encompasses over 400 universities' undergraduate programmes and over 120 postgraduate programmes involving several million students. It is envisioned that the CEE Plan will have strong impacts on developing the Chinese engineering education system.

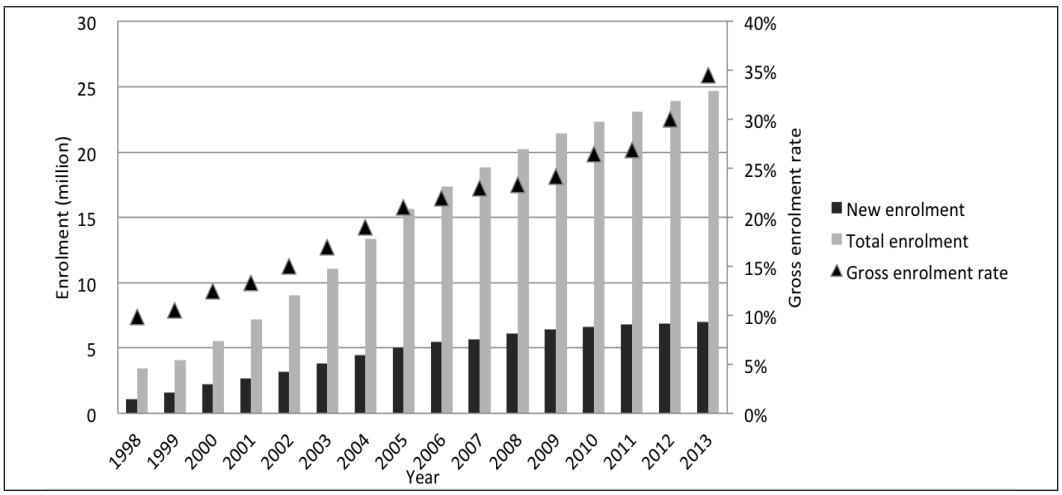
China's Landmark Initiatives to Promote Teaching and Learning in Higher Education

Teaching and learning innovations has long been a focus of education reforms and innovations in China. The higher education sector, presents dual development paths comprising an elite route (for research universities) and a general route (for all or majority of HEIs). Most of the time, they progress in parallel with different strategic plans, focuses and resources; sometimes, they will adopt a merged route before new strategies (such as non-targeted nationwide education policies) for sustained specialisation are created.

The CEE Plan is a typical case in question. It builds on early institutional to national quality initiatives and works to mutually reinforce a series of other ongoing initiatives aiming at promoting quality across the higher education system.

For the general route, China launched in 1994 a project entitled "Towards the 21st century Plan of Teaching, Learning and Curricular Reform in Higher Education", aiming at examining and upgrading all major aspects of teaching and learning concerning ideas, structure, contents, methods, etc. in higher education. On this basis, in 1997-1998 China rationalised the national inventory of academic subjects and consolidated 504 subjects into 249 ones in 71 categories in 11 disciplines, including creating a new primary category of management studies and adding 74 new subjects. Then in 1999 China began an unprecedented enrolment expansion, especially in undergraduate education (Figure 1). As a result, engineering education, as the largest sub-sector, was significantly affected both in terms of quantity and quality. The rapid growth caused serious quality concerns.

Figure 1 Total student enrollments, 1998-2013 (ten thousand)



Source: National Bureau of Statistics of China, 2014

For the elite route, through concentrated investment, in 1995 China launched the "Project 211" aiming at comprehensive capacity-building of 100 or so first-class universities and academic disciplines in service of national strategic development priorities for the 21st century. Then in 1998, China launched the world-class university building initiatives "Project 985", expanding from nine institutions to 39 research-intensive universities from the Project 211 Group. Both projects are in progress till today, respectively into the fourth and third five-year development phases.

A brief delineation of China's engineering education and higher education as a whole provides the context for analysis of teaching and learning innovations in Chinese engineering higher education.

The CDIO Initiative and its Application in China

The CDIO Initiative is an innovative framework for designing, operating and evaluating undergraduate engineering education. CDIO, referring to "Conceive— Design— Implement— Operate", stresses the fundamental elements of engineering education in real-world situations. The purpose of the initiative is to provide standards for design and assessment of engineering education programmes.

Engineering education is a central topic in higher education. Felder (1984) noted that engineering educators only "teach primarily mechanics" and use "memorization and routine application" rather than "reasoning methods" and "analysis, synthesis and evaluation". He believed that engineering education discourages creativity and independent thinking. Though some scholars have optimistically believed that undergraduate engineering education has been gradually changed from passive knowledge learning to a holistic approach that integrate knowledge and skills throughout the curriculum with a focus of human development (Lohmann, 1991; Bordogna et al., 1995), some explorative studies contradict the belief. For example, some studies found that engineering education sometimes fail to contribute to students' intellectual, creative and critical thinking development (such as in Felder and Brent, 2004; Goel and Sharda, 2004).

In this age of globalisation, engineering education, especially at undergraduate level, has gained increased significance. Various standards have been proposed in which the study finds three shared themes with what to expect to engineering students (such as in National Academy of Engineers, 2004; Goel, 2006; Criteria for Accrediting Engineering Programs, 2014). These are: (1) professional knowledge and skills, including technical competence, analytical skills, the ability to design and experiment; (2) the ability to identify real-world problems and apply knowledge and skills to their solving; and (3) holistic competences in which creativity, team-working in multidisciplinary environment, resilience, communication, work ethnic and global understanding have been constantly stressed.

Among various standards and frameworks, the CDIO Initiative is one of the most well-known and widely used one. It was initiated by the Massachusetts Institute of Technology (MIT) and further developed with collaboration among MIT and three other universities. The CDIO designs a framework that sets a series of goals for undergraduate engineering education and serves as indicators for outcome-based assessment. The 12 CDIO standards concern six parts (Table 1).

Table 1 CDIO Standard

Program Philosophy	CDIO serves as the context for engineering education
Curriculum Development	Concrete and detailed learning outcomes; integrated curriculum with introductory courses in engineering knowledge and essential personal and interpersonal skills; curriculum with design-build experiences
Workspaces	Workspace and laboratories for practical learning
Innovative teaching and learning	Integrated learning experiences and active experiential learning methods
Faculty development	Enhancing faculty CDIO skills
Evaluation	Outcome-based assessment

Source: Worldwide CDIO Initiatives, n.d.

The CDIO Syllabus is composed of four sections, setting a broad range of knowledge, skills and attitudes engineering students need to acquire.

The first is "technical knowledge and reasoning" ability, including understanding of "core" engineering fundamental knowledge and "advanced" engineering fundamental knowledge. The second is "personal and professional skills and attributes" that are fundamental for students' holistic development as successful engineers and as future leaders. This category includes skills in engineering reasoning and problem solving, experimentation and knowledge discovery, system thinking, personal skills such as perseverance and flexibility and critical thinking, as well as professional skills such as ethnics, integrity and proactive career planning. The third refers to "interpersonal skills", including team working and communication (written, multimedia, graphical, oral, interpersonal and foreign language). The last one describes the process of "Conceiving, Designing, Implementing and Operating Systems in the Enterprise and Societal Context". The CDIO Syllabus differs from previous standards in that it takes account of the unique traits of engineering education and engineering professions. "Conceiving" refers to the preparation work of viewing engineering education, determining its goals and requirements and making sure that the system can function properly with satisfactory outcome. "Designing" is the process policy makers utilize their knowledge of professional and external contexts to set the engineering system and curriculum. "Implementing" phase includes hardware manufacturing process, software implementing process and hardware and software integration; it also includes the verification and validation of the process and products, and implementation management. "Operating" tries to optimise the operations to support the system's sustainability, improvement and evolution. CDIO forms a cycle for designing an engineering education that caters to real-world problems and needs.

The CDIO standards and syllabus have been implemented in HEIs around the world. It was firstly introduced into China by Shantou University, and gradually been adopted by other universities in developing and reforming their undergraduate engineering education (Zha, 2008). Based on the framework, the study uses the award-wining cases in the China's Higher Education Teaching and Learning Awards in 2012-2013 to construct the frontiers of innovations in teaching and learning in engineering education in China.

A Comparative Analysis of the Award-winning Engineering Education Programmes

The study conducted a comparative analysis of 163 award-winning programmes that have won the Beijing Higher Education Teaching and Learning Awards of 2012. Based on content analysis, two themes emerged in explaining the uniqueness of those projects, that is, the focus on students' holistic competence and the incorporation of institutional capacity building into the designing and implementing process.

Students' Holistic Competence Development

In the CDIO frameworks, engineering students' holistic competence includes the acquirement of core and advanced engineering fundamental knowledge, professional skills, personal skills and interpersonal skills. In this sense, those successful programmes have put students' holistic development at the core of programme design and implementation, rather than merely focusing on quantitative-based outcome and acquirement of subject-related knowledge and skills. Two shared characteristics have stood out in those programmes.

(1) Clear goal-setting with strong emphasis on engineering disciplines

The goals of the majority of cases under analysis can be classified into three categories, that is, to train students with creativity, practical knowledge and skills, as well as research abilities. It largely reaches CDIO's goals in engineering education's curriculum and system designing.

The first set of goals is to train engineering undergraduates with "creativity" to identify and resolve problems. In the overall 163 programmes, 72 programmes set their aims at cultivating

creative talents, 37 of which clearly indicate "creativity" in their programme titles. For example, the programme initiated by Beijing University of Aeronautics and Astronautics highlights the importance in building undergraduates' creativity through analysing and absorbing experiences of world-class universities.

The second set of goals emphasises the training of undergraduates with practicability. Engineering disciplines, unlike humanities or natural sciences, focus on practical skills in solving real-world problems. Most universities combine their disciplinary advantages to train talents with skills of practical application. For example, Beijing Information Science and Technology University develops a special programme to train Communication Engineering students whereas China University of Mining and Technology (Beijing) initiates a programme for training Coal Geology undergraduates in line with current industrial needs.

The third set of goals focuses on the training of undergraduates with research abilities through teaching and learning innovations. For example, Tsinghua University collaborates with Nanjing Aeronautics and Astronautics University and Nanjing University of Technology to advocate research-based teaching in undergraduate engineering programmes.

(2) Approaches: Problem-based learning (PBL), teaching-research-industry helix and internationalisation

The three most common approaches used by the majority of universities are problem-based learning (PBL), building of a triple helix of teaching-research-industry and internationalisation.

As a student-centred pedagogy, PBL differs from traditional practices of teaching, such as cramming and memorisation, in most Chinese universities. Those award-winning programmes focus on students' holistic competence training through PBL, including opening labs specifically to undergraduates, designing educational practical courses, building practice teaching bases inside and outside campus, etc. For example, Beijing Institute of Technology initiates a programme to train students that satisfy the national strategic needs for new energy automotive industries. Its strategies include the founding of a new energy automotive undergraduate laboratory and building of a practical teaching platform to support students' technological innovations. It allows students to experience open-ended problems through which both their knowledge and thinking strategies were improved.

Another approach applied by those universities is to build a triple helix of teaching-research-industry. This sets in contrast to the traditional way of teaching and research in which students learn and practice what are perceived to be important merely by academics. It is one of the most convenient ways to understand the enterprise and societal contexts for engineering education, as well as to ensure universities' responsiveness and responsibility and students' employability. For example, Beijing University of Technology and Beijing Software Products Quality Inspection Center form a new undergraduate internship model—guided by universities, linked through the government and operated in enterprises.

In addition, global competence is key to engineering education in this age of globalisation. Many of the programmes analysed in the study pay special attention to internationalisation, ranging from internationalisation of curriculum to international communication and collaboration. For example, Beijing Institute of Civil Engineering and Architecture's programme for Water Supply and Drainage Engineering major builds a China-US "3+1" and "2+2" programmes that train students with international scope and abilities with global application.

The three approaches shared by present cases contribute to the making of universities a talent training base to produce high quality engineers in line with real-world needs. It caters to the CDIO's emphasis in training young engineers in enterprise and societal contexts with essential professional, personal and interpersonal skills such as team working and communication. Such approaches also align with the CDIO standards such as designing, such as building workspaces and employing experiential and hands-on learning methods.

Institutional Capacity-Building

Another important theme emerged in the study is those programmes' incorporation of institutional capacity building in designing and implementing innovative engineering programmes. For one thing, it contributes to the overall development of institutions involved in all aspects and therefore is able to utilise more resources. For another thing, it directly addresses the sustainability of programmes—how to form a benign cycle to allow continuous development of innovations. In this respect, three things are deliberately incorporated into the programmes—curriculum building, faculty development, and assessment.

(1) Integrated curriculum building

Curriculum development forms a significant part in the CDIO standards and remains an important part in China's innovative teaching and learning in engineering education. An important aspect in those innovations is their focus on the building of a comprehensive and integrated curriculum, rather than the traditional 'tinkering' practices in which a new programme only targets at to improve certain specific areas concerning the curriculum.

The integrated curriculum building represents the following characteristics: a trend towards multi-disciplinary, a balance between foundation and advanced courses, and a focus on students' practical abilities. For example, Beijing Institute of Technology's training of new energy automotive talents creatively sets the curriculum in the majors that encompass multi-disciplinary knowledge, such as in Mechanical Engineering, Electrical Engineering and Electronic Engineering. It reforms its curriculum with introductory fundamental courses and advanced practical courses. In addition, as a 'whole package', it also reforms its teaching through compiling a new set of textbooks that integrates interdisciplinary knowledge to keep it more up-to-date with industrial needs.

(2) Faculty development

The significance of faculty development pertaining innovative engineering programmes is twofold. First, faculties are the most important actors in designing innovative programmes for engineering education. Second, they are the direct implementers and facilitators of those programmes. Therefore, making faculty development a part of those programmes has great impact on their actual delivery. Moreover, raising the abilities of faculties contributes to overall institutional development.

In the analysed cases, faculty development has been integrated in many of the programmes, but normally not as the major goal. An example can be seen from Beijing University of Chemical Technology, whose strategies include building high-quality "double qualified teachers". The term "double qualified teachers" refers to teachers with both theoretical knowledge (education background) and practical knowledge (practical experiences).

(3) Evaluation and assessment

The standards for undergraduate engineering education have also changed, as indicated in many programmes, to align with innovative teaching and learning strategies and practices. The changing characteristics of evaluation and assessment in the 163 universities include: emphasis from external assessment to self-motivation and self-assessment; from knowledge to skills and creativity; and from consideration of exam performance to students' holistic performance. For example, the Engineering Electromagnetic Field's teaching and learning innovation includes reforms on evaluation system. It expands to include students' performance in classes and in experiments, in-class quizzes, research participation and final exams. It also helps to indicate the outcome of teaching and learning innovations employed by the university.

Case Studies

This section moves from a holistic picture of universities in Beijing to a narrower focus on Tsinghua University, as a national leading university with special strength on engineering education. It presents

five case studies of innovative undergraduate engineering programmes in Tsinghua, all of which have won the latest regional or national awards for China's Higher Education Teaching and Learning Awards in 2012-2013. They largely represent China's frontiers of teaching and learning innovations in engineering education.

The Yao Class of Tsinghua Computer Science: A Model for Elite Engineering Education

A special designed programme, aiming at cultivating top engineering undergraduate students in computer science, was initiated by Professor Yao Qizhi (Andrew Chi-Chih Yao) in 2005 in Tsinghua University. The Xuetang Special Pilot Computer Science Class (Yao Class) sets up a model for teaching and learning innovations in the field of computer science. The programme has been recognised worldwide as one of the best undergraduate programmes.

The founder of the programme, Professor Yao, is a leading expert in computer science and a winner of the Turning Award. He believes that China's engineering undergraduates' lack of research foundation, field knowledge and creativity is mainly due to two reasons: over-emphasis on technical problem-solving rather than in-depth theoretical research; and narrow focus on pure knowledge transfer rather than students' creative and critical thinking abilities. To solve these problems, the programme designs and implements several strategies.

(1) Setting programme goals and benchmarking

The programme differs from traditional Chinese undergraduate programs, clearly setting its goals as training top undergraduates in computer science with standards aligning with MIT, Stanford and other prestigious universities around the globe. Through benchmarking with other top engineering education programmes, the Yao Class sets up a model taking into consideration of students' aptitudes and the industrial, national and global needs for innovative talents in computer science.

(2) Internationalisation

As an intensive international teaching programme, the most distinctive feature of the programme is its unique international talent cultivation model. Students in Yao Class are funded to participate in exchange programmes with universities such as MIT and Michigan; winter school with universities in Hong Kong; and other academic visits around the world. The multi-dimensional international platform enables students in the programme to acquire and experience the best engineering education in the world and to develop their transferable skills and global competence.

(3) Curriculum and faculty

The pilot programme designs and implements its own set of curriculum that consists of core classes and specialised classes. It restructures the knowledge system to focus on both basic and theoretical knowledge, and its application in real-world situation. Its goal is to train students with advanced knowledge in computer sciences that align with current industrial needs. The curriculum includes basic courses and research-oriented practice. The programme believes that it is of great significance to apply junior and senior undergraduates with real-world research opportunities. The thesis project is conducted by students with completion of one-semester research-based activities in world-class universities home and abroad.

The programme also invites world-renowned faculties around the globe for innovative instruction. All the core courses are instructed in English. In terms of pedagogy, it engages students in discussion, active learning, communicative skills and individualised programmes to their own interests.

Teaching and Learning innovations in Mechanical Engineering: Curriculum Design and Research-Oriented Teaching

Curriculum development is an integrated part in the CDIO initiatives, as indicated in the previous section. Curriculum and teaching is the key in knowledge transfer for students. The study analysed a

case that jointly initiated by Tsinghua University, Nanjing Aeronautics and Astronautics University and Nanjing University of Technology. It is an innovative reform in teaching and learning in Mechanical Engineering. The programme is designed to solve problems in current teaching in China: large-size and unattractive class, low-degree of teacher-student interaction and students' lack of creativity. The programme focuses on research-oriented teaching and has been implemented in seven universities around China for ten years, attracting wide attention as a breakthrough in engineering education teaching.

(1) Research-oriented teaching

"Research-oriented teaching" is the philosophy of the programme to improve in-class teaching and out-of-class instruction in mechanical engineering. The basic innovation is the restructuring of content and textbooks to focus on theoretical knowledge in the field and real-world engineering cases identified through research. The way for instruction has been changed from cramming education to teaching that engages, challenges and provokes students. The faculty employs participatory teaching methods and increases student-teacher interaction to make the classes more fun and thought provoking. It is also beneficial for faculty to balance teaching and research and develop their professional skills through teacher-student interaction.

(2) Active participatory learning

On the other hand, students are encouraged to "learn in research and learn from research". They become more actively participated in in-class discussions and out-of-class research. A special designed approach is "open-ended cases", in which students are encouraged and guided by their instructors to explore many possibilities for problem solving in mechanical engineering.

Through interviews with students participated in the programme, they generally believe that the research-oriented teaching content and heuristic teaching methods intrigue their interests in the class and provoke their active discussion and interaction with instructors and further exploration and research outside class. Students are also impressed by instructors' humorous and interesting content and ways of delivery of the content.

A Curriculum Reform in Electronic Engineering: A Theory-Driven Design

The Department of Electronic Engineering in Tsinghua University has implemented a curriculum reform in order to tackle the increasingly tension created by an expansion of knowledge and limited in-class time. Unlike the previous case, the reform takes a holistic approach, using 'paradigm' as the fundamental criterion to transform the curriculum. The reform has been implemented within the department and attracted attention from home and abroad. Since 2010, Chinese universities such as the University of Electronic Science and Technology at Xi'an and Tianjin University, as well as world-renowned universities such as Stanford, MIT and Berkeley have arranged visit studies to the department. There are two key aspects in the reform.

(1) A theory-driven orientation

The reform is based on 'learning theory' and Kuhn's theory of 'Scientific Revolutions'. Through tracing back the history of electronic engineering and placing it within the disciplinary structure, the reform has proposed a knowledge structure for electronic engineering discipline to ensure the curriculum encompasses both a broad-based knowledge and professional expertise for engineering undergraduates.

(2) Structured curriculum

The three-layered structure of the newly reformed curriculum includes an introductory course, 10 core courses and 24 selective courses. The introductory course provides freshmen with a clear picture of the knowledge structure of sciences in general and electronic engineering in particular, so they can develop a better understanding of where they stand and where to go. The 10 core courses are revised and re-adapted from the original 14 courses to offer students a more condensed learning experience. The 24 selective courses, encompassing a broad range of topics in the field, provide students a more liberal way in pursuing their academic interests.

Experiential Learning: National College Student Intelligent Car Competition

Tsinghua University, Beijing University of Aeronautics and Astronautics, Shanghai Jiao Tong University and other seven universities, in collaboration with the Freescale Semiconductor Company Limited (China), initiated a National College Student Intelligent Car Competition. The main goals are to improve undergraduate engineering students' practical knowledge and skills, creativity and team-working abilities, as well as their connection with real-world problems. The competition is designed for these purposes and serves as an important link for practical teaching. It is an innovative experiential learning practice designed for China's engineering students and has extensive influence on hundreds of universities and China's development for undergraduate engineering education. There are three main aspects that contribute to its success and students' holistic competence development.

(1) Theoretical exploration and practical application

It is believed that engineering is designed to better understand and change the world. Therefore, engineering education should focus on students' development in knowledge and skills with both theoretical and practical significance. The competition's philosophy is "learning by doing". It requires three students from different majors to form a team to complete a CDIO project in 10 months. It gives students an invaluable opportunity to apply what they have learned in class to real-world contexts, and to become familiar with engineering product development through conceiving, designing, implementing and operating.

(2) Multi-disciplinary innovative teaching platform

The design of the competition helps to bring together students from multi-disciplinary background in engineering, such as Automotive Engineering, Computer Science, Electric Engineering, Electronic Engineering, Instrument Science and Mechanical Engineering. The infusion from multi-disciplines contributes to students' interdisciplinary learning and innovation. Students can learn from their peers from all kinds of engineering disciplines. It also enhances the enjoyment of the competition. Another important aspect in the competition is its contribution to students' team-working spirit and abilities. Through intensive working with peers and seniors, students are able to develop a better sense of team working that is essential for engineering projects.

(3) Teaching-research-industry

The competition, first started in 2005, has formed a cycle of teaching-research-industry to support engineering education development. The competition contributes to the building of 131 Freescale Semiconductor's laboratories in 113 universities. These laboratories provide workspace for engineering students' practical learning. Based on these laboratories, those universities have developed related curriculum, teaching content and textbooks, and competition-related training. It also contributes to faculty's professional development. Some of the products and outcomes of those development and competition are also employed by companies for industrial uses.

Engineering and Global Education: Cooperation between Tsinghua and the RWTH Aachen

The cooperation between Tsinghua University and the RWTH Aachen, a research university specialising in technology in Germany, in Production and Automotive Engineering, a national award-winning programme in innovative engineering education in 2014, started in 2000 under the initiatives by the two ministers of education in China and Germany. The 2-year master's programme aims to allow students in each institution an opportunity to experience different learning and research environments while further their global awareness. The goal of the programme is to 'learn together and research together', meaning the programme includes not only courses but also research projects and internships. Two key innovative aspects are reflected in the project.

(1) Cross-border cooperation and globalisation

In this age of globalisation, engineers are expected to acquire global competency, which includes not only the edge-cutting trends and skills in their chosen fields but also cross-cultural understanding and communication abilities. By being exposed to different learning and research

environments, the project enhances engineering students' mobility while enriching their research experiences. In addition, the project improves the internationalisation of institutions as a whole.

(2) Sustainability: faculty development and strategic cooperation

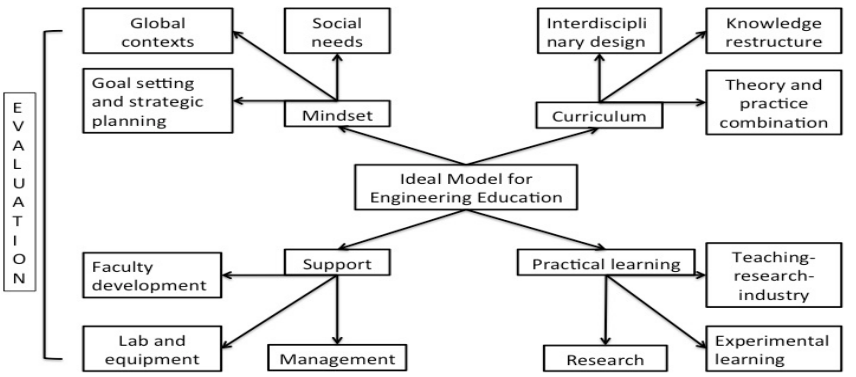
One of the key determinants of a project is its sustainability. The Tsinghua-RWTH Aachen Cooperation focuses not only on students but also on faculties. Each year the two universities will exchange three to five faculty members to further develop their abilities in engineering teaching and research. Such arrangement would enhance the research cooperation and exchange between the two universities in the long run. Through the project, the two universities are able to establish long-term strategic partnership that will lead to more cooperation and better engineering education for their students.

Concluding Remarks: A Framework for Engineering Talents Training

From the above analysis, the study attempts to find the common ground for these innovative engineering undergraduate programmes. Those innovative programmes resonate the problems identified in the paper in the beginning, that is, the balance between quality and quantity, research and teaching, technical knowledge and general skills, and the connection between institutional leadership and teaching capacity. Those programmes are not designed specifically based on the CDIO standards, but many of them represent its goals and strategies throughout the designing and implementing of programmes, such as a focus on curriculum development and pedagogical innovations. There are five shared elements that contribute to the successfully implementation of these programmes: (1) a focus on knowledge exchange and curriculum development; (2) balance between basic and advanced knowledge, as well as theoretical exploration and practical learning; (3) advocacy of students' active and experiential learning; (4) advocacy of students' innovative and critical thinking abilities; (5) emphasis on real-world contexts and industrial needs.

Based on the analysis and the CDIO standards, the study develops an ideal framework for engineering undergraduate education (Figure 2).

Figure 2. An Ideal Framework for Engineering Undergraduate Education



It is hoped that these experiences will provide enlightenment for development of global engineering undergraduate education. More specifically, it envisions an ideal model of developing engineering programmes in four aspects—mindset, curriculum, practical learning and support. Mindset means that actors involved in the designing and implementing phases should set their goals according to indigenous features of engineering education, global contexts and social needs, and make strategic planning. Curriculum is one of the most important aspects in innovative engineering

programmes, in which three elements stand out: interdisciplinary design, a clear knowledge structure and a balance between theoretical and practical knowledge and skills. Practical learning has been frequently stressed both in cases analyzed here and in the CDIO standards. It is beneficial to expose undergraduate engineering students to research environment and engage them in experiential learning. Building a teaching-research-industry triple helix not only contributes to students' practical skills, understanding of real-world contexts and employability, but also institutional sustainable development. A successful engineering programme requires continuous support, especially in terms of faculty (their abilities and willingness), infrastructure (such as labs and equipment) and management (such as streamlining administrative procedures). In addition, a clearly designed, performance-based evaluation is essential in assessing the programmes' outcome. Institutions should set *ex ante* criteria for evaluation rather than *ex post* standards to justify the outcome.

In addition, through analysis of the 163 award-winning programmes and their comparison with the CDIO standards and syllabus, this study also identified four problems in existing programmes.

First, evaluation and assessment is still a weak link in forming the life cycle of engineering education development. Only a few programmes have indicated how to evaluate and assess the teaching and learning innovation they had employed for students' development. A proper set of evaluation standards should be made and adopted in accordance with programmes' design to measure their effectiveness and efficiency, and serves as the foundation for the next cycle of development.

Second, faculty should become more engaged in the designing and implementing processes. Strategies to improve faculties' knowledge and skills in professional, personal and interpersonal skills are also beneficial to students' development. It will also help integrate faculty in designing, implementing and evaluating the innovative engineering education.

Third, the analysed programmes primarily focus on students' professional knowledge and skills development. According to the CDIO standards, personal and interpersonal skills, such as perseverance, time-management, leadership and communication, are all integrated elements in training young engineers. However, those programmes fail to recognise their importance or integrated them into those programmes. It is important to note that what we need is more than engineers with expertise, but also responsible citizens and leaders.

Last but not the least, referring back to the CDIO process of 'conceiving, designing, implementing and operating systems', one of the weaknesses of current engineering programmes is a lack of a vision of the whole programme: how it will be conducted and where it will go. Most programmes are more like freewheel experimentation without a clear perception of the expected outcome and a sustainable operation system. In another word, institutions develop relevant programmes with innovative elements in order to tackle existing problems or meet local needs, normally without previous references or experiences, nor a holistic idea of how to use them as a way to enhance the whole engineering education system in China.

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Needs Assessment for Exchange Students in Taiwan

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Abstract: *With the growing mobility of international students in Asia and the Pacific, Taiwan has become actively involved in promoting international academic exchange. This research investigates the experience of exchange students from the Philippines and mainland China and examines their needs while studying in Taiwan. Qualitative in-depth interviews were conducted with exchange students from the Philippines and mainland China. The findings suggest that while exchange students from the Philippines and mainland China both encountered difficulties during their study in Taiwan, exchange students from the Philippines were inclined to encounter more difficulties compared to those from mainland China due to language difficulties. Based on the findings of this study, suggested support services for future exchange students in Taiwan are outlined to match the needs of students from both Chinese and non-Chinese-speaking backgrounds.*

Keywords: *needs assessment, exchange programme, exchange students, student mobility, international education*

Introduction

The number of international students seeking educational mobility is forecast to increase from 1.8 million in 2000 to 7.2 million in 2025 (Bohm, Meares and Pearce, 2002). Over the past decade, Taiwan has become an attractive destination for study and the number of international students in Taiwan has been increasing steadily. Taiwan has been described as "one of the most highly educationally developed economies in the world" (Guo 2005, p.120), and expanding recruitment of international students is "a way of increasing Taiwan's visibility and its contacts with other countries, and promoting its regional and global influence" (Ma 2013, p.134).

The term 'soft power,' coined by Nye (1990), refers to the ability to attract others and shape their preferences. In 2009, President Ma Ying-Jeou pledged that his administration would send 10,000 Taiwanese students on study or goodwill visits annually as part of his administration's 'soft power diplomacy.' Ma said that by doing so, he also hoped to see 20,000 students coming to Taiwan to study every year, allowing the international community to get to know and support Taiwan through such exchanges (The China Post, 2009).

The term 'exchange student' is sometimes used interchangeably with 'international student' or 'foreign student.' While " 'international student' is a broad term and can be used to refer to different groups of students such as undergraduates, postgraduates, short-term exchange students and so forth" (Wenhua and Zhe 2013, p.400), 'exchange students' typically refer to students who study abroad for a semester or a year (UMAP, 2016), or three to twelve months (Erasmus Programme, 2016).

In 2010, the Taiwanese government lifted the ban on recruiting students from mainland China, and this cross-straitisation of higher education in Taiwan has further increased the number of exchange students in the state. A report in *Taipei Times* shows that the majority of the international students in Taiwan come from Asian countries: "Southeast Asian nations are the top source of

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expatriate students pursuing formal academic degrees, while those from China form the bulk of exchange students in short-term study programs" (Taipei Times, 2012).

As the number of international students in Taiwan has been increasing, Hwang et. al. (2011) suggest that universities should focus on improving campus support for international students. This paper investigates the experiences of exchange students from the Philippines and mainland China and examines their needs while studying in Taiwan. In order to increase students' level of satisfaction with their international experience, Roberts and Dunworth (2012) argue that service providers for international students need to be more aligned with the students' expectations of service provision. Therefore, to enhance exchange students' experience of studying in Taiwan, and to provide support that matches their needs, it is important to first understand their needs by examining their experiences.

Internationalisation and Globalisation of Higher Education

Li and Bray (2007) claim that "international mobility of students not only contributes to the internationalization of institutions but also impacts on the outlooks and subsequent careers and lifestyles of the students themselves" (p.793). Knight (1999) defines internationalisation as "the process of integrating an international/intercultural dimension into the teaching, research and service functions of the institution" (p.16). Internationalisation of higher education can also be understood as "a long-term strategic policy for the establishment of overseas links for the purposes of student mobility, staff development and curriculum innovation" (Rubzki 1995, p.422). Further according to Knight (2008), this can be achieved through the following:

> (…) international cooperation and development projects; institutional agreements and networks; the international/intercultural dimension of the teaching/learning process, curriculum and research, campus-based extracurricular clubs and activities; mobility of academics through exchange, field work, sabbaticals and consultancy work; recruitment of international students; student exchange programs and semesters abroad; joint/double degree programs; twinning partnerships; and branch campuses. (p.xi)

These views suggest that international students play an important role in the internationalisation of higher education. International student recruitment can "help support a wider 'internationalisation' agenda in terms of developing globally relevant curricula, facilitating student and faculty exchange, and improving campus diversity and fostering cultural understanding" (Woodfield 2010, p.115). International students can also "bring information (social, political, or economic) about their home countries and thus widen the instructor's and the [host] students' perspectives on the world" (Ladd and Ruby 1999, p.363).

Altbach, Reisberg, and Rumbly (2009) see the effects of the global environment as unavoidable for higher education and describe internationalisation as a response to globalisation. Knight (1997) refers to the latter as the "the flow of technology, economy, knowledge, people, values, [and] ideas… across borders" (p.6), and further distinguishes internationalisation and globalisation by claiming that "internationalization is changing the world of education and globalization is changing the world of internationalization" (Knight, 2003, p.30).

With the effect of educational globalisation in Taiwan, English education has been emphasised throughout primary and secondary education (Chang, Wu, Ching, Tang and Xiao, 2011). In addition, Taiwan's higher education institutions have been actively attempting to participate in the globalised world of education by internationalising themselves (Lo, 2009), and as a result, "foreign students, international students, sister schools, and exchange programs are quite common in [Taiwan]" (Chang et al. 2011, p.37).

Exchange Student Adjustment

Andrade (2006) argues that universities must become more knowledgeable about the adjustment issues faced by international students and provide appropriate support services. Adjustment refers to the 'fit' between students and the academic environments (Ramsay, Barker and Jones, 1999); it may include issues such as learning style, study habits, educational background, culture and language proficiency (Andrade, 2006). Adjustment can also be seen "as representing a transitional process that unfolds over time as students learn to cope with the exigencies of the university environment" (Al-Sharideh and Goe 1998, p.701).

Yi et al. (2003) identified five adjustment issues that international students are likely to experience in the United States. These include academic, physical health, financial, vocational, and personal/social issues. Jenkins and Galloway (2009) investigated adjustment problems faced by international and overseas Chinese students studying in Taiwanese universities and found that international students experienced more problems in the area of Chinese language than overseas Chinese students. Chou, Roberts, and Ching (2012) examined issues and dilemmas surrounding international students' experience in Taiwan, and they found that understanding lectures, expressing opinions to teachers, and communicating in Chinese were among the most difficult aspects of studying in Taiwan, followed by making oral presentations, working on group projects, studying in a different educational system, completing assignments on time, and managing their study loads. Further, Hwang, Wang, and Sodanine (2011) investigated factors that influence learning performance of international students in Taiwan and found that adjustment and support are two important factors that assist international students in improving their learning performance. While research has been conducted to explore the adjustment issues faced by international students in Taiwan, no comparative studies have been performed to investigate how these adjustment issues and challenges differ depending on the students' country of origin.

Research on enhancing international students' experience has focused on programmes to help them adjust to the new environment by pairing them with local students. These programmes go by different names depending on the researcher, including peer programme (Abe, Talbot and Geelhoed, 1998), peer-support programme (Andrade, 2006), peer pairing programme (Devlin, 1997), international peer programme (Geelhoed, Abe and Talbot, 2003), S.O.S. (Student for Other Students) program (Stone, 2000), and the buddy project (Campbell, 2012).

Campbell (2012) conducted a 'buddy project' in a university in New Zealand, where students from the host institution became the buddies of newly arrived international students for a semester to help them adjust to the new environment. The findings suggest that the buddy project was beneficial for both the guests and the home students in that it helped each gain practical experience in intercultural communication.

Furnham and Bochner (1982) claim that if students "are introduced into a new society by close, sympathetic host-culture friends, the evidence indicates that they may encounter fewer problems than if they are left to fend for themselves" (p.171). Furthermore, studies conducted by Furnham and Alibhai (1985) in British universities and Kashima and Loh (2006) in Australian universities have found that students can adjust better psychologically if they have personal ties with the locals.

While a number of studies have investigated adjustment in international students, many of these were done in Anglophone countries in the West. As Kondakci et al. (2008) argues, "there is a need to analyze students' experiences in the non-Anglophone and non-traditional destination of foreign students" (p.449).

Context

The site for investigation of this study was one of the top private universities in Taiwan, with approximately 21,600 undergraduate and 3,800 graduate students. The university has accepted more than 400 exchange students. The study was guided by the following research questions:

1. What issues and challenges are faced by exchange students from the Philippines?
2. What issues and challenges are faced by exchange students from mainland China?
3. How do exchange students from the Philippines and mainland China compare with regard to the issues and challenges they face?

A convenience sample of eleven (11) exchange students, six from the Philippines (female n=2; male n=4) and five from mainland China (female n=5) were recruited for this study. The students from the Philippines were all business management majors and the students from mainland China were all English majors. All 11 participants were in their third year of undergraduate study, and were studying in Taiwan for one semester. The host university has a peer-pairing support program called 'babysitters' to support the exchange students' adjustment to Taiwan. In this study, all 11 exchange students were automatically paired with local Taiwanese students who volunteered to be the babysitters.

In order to understand their adjustment issues in Taiwan in great detail, in-depth semi-structured interviews were conducted with each of the participants. The interviews were done in English and all participants consented to be interviewed. The interview questions focused on the issues and all the difficulties they had encountered in Taiwan. The same set of interview questions was used for both the Filipino and Chinese exchange students. Although the sample size in this study was small, the number of interviewees was believed to be adequate since, according to Kuzel (1992), in an exploratory study, "five to eight data sources…will often suffice for a homogeneous sample" of informants (p.42). The interview data from this study was expected to provide an insight into aspects that might not have been revealed in studies that mainly used quantitative methods. The interviews were transcribed, and thematic content analysis was performed to collate the information into succinct themes.

The Case of Exchange Students from the Philippines

Difficulties in Completing Documents Written in Chinese

One major difficulty encountered by the exchange students from the Philippines was completing a course registration form written in Chinese that they received shortly after arriving in Taiwan. This was expressed by the students in the following comments:

> *We were surprised to find out we had to ask teachers to sign the course registration documents, and go to the secretary and the documents were all in Chinese!*

> *The course registration documents were written in Chinese and I didn't understand any of the things. I didn't even know where to put my name because it was all in Chinese. So I had to ask someone to help me fill out all my documents.*

As the comments above show, the documents written in Chinese made the course registration process very difficult for the exchange students from the Philippines, as they did not have adequate Chinese language skills to be able to complete the forms.

Lack of Specialised Courses in English

While there was a wide range of courses offered in English at the host university, a lack of specialised courses conducted in English was a problem for the exchange students from the Philippines.

> *I hope they offer more classes in English. There are a lot, but they are Business English, Basic English, Conversational English, and foreign students already know those, so if we take those, it would be useless and it would be a waste of time, so I hope the university offers more English subjects in the future.*

Since the exchange students from the Philippines already spoke English (considering that English is a working language in the country), it was apparent that they were not interested in taking courses related to learning English language skills but would welcome specialised courses conducted in English.

Language Barrier in Classrooms

The exchange students were taking classes conducted in English. However, in some classes, the instructors switched from English to Chinese from time to time during lectures, and the exchange students were frustrated whenever this happened.

> *All our courses are in English, but sometimes the professor translates things in Chinese and if he asks the students, the students reply in Chinese. So there are times when I don't relate to what's happening in the classroom.*

> *The teachers were speaking Chinese and some of the students were speaking Chinese, so sometimes I don't really understand that well. And they know that I can speak some Chinese so they speak to me in Chinese and sometimes I can't really understand what they are saying when they are speaking too fast.*

The Filipino students' language-related problems were not limited to situations when teachers spoke Chinese, but also occurred when local students spoke Chinese to them during group discussions.

> *The way of instruction here is a little different from the Philippines. The classes here encourage a lot of talking in the class, but then, it's kind of hard for me because sometimes the students speak in Chinese and I don't understand.*

> *I think it's difficult to communicate with the people. Because when I speak in English, sometimes they don't understand what I am saying in the discussion. Sometimes they talk to me in Chinese, even though I explain to them that I am from the Philippines. It's hard.*

> *There was an incident in my Global Fashion class. Our group mates were speaking in Chinese and we were speaking in English, and we didn't understand that much, so we were having difficulty just making a group report because both sides were speaking different languages (…).*

As these comments show, in courses where English is supposed to be used as the medium of instruction, exchange students from the Philippines became frustrated whenever their instructors and classmates unexpectedly used Chinese during the classes or group work.

Difficulty Adjusting to the Local Learning Style

Learning behaviour varies across students from different Asian backgrounds (Marambe, Vermunt and Boshuizen, 2012). One exchange student from the Philippines described his difficulty in adjusting to the local learning style as follows:

> *In the Philippines, we really don't memorise things, so I think that's the biggest obstacle that I faced here, because I'm not used to memorising things. I'm used to reading and analysing and teachers ask us to write a paper, but here, we need to read the book and memorise terms for exams.*

The Chinese way of learning is characterised by the intention to understand and memorise (Kember, 1996), and the learning style in Taiwan follows this tradition by putting emphasis on rote learning. This made for a difficult adjustment for the exchange students from the Philippines.

Need for Compatible Grading Standards

The differences in grading standards between the exchange students' home university in the Philippines and their host university in Taiwan was also pointed out as a concern.

> *We didn't look through the syllabus. Personally I didn't look that much at the syllabus when it was first given to me, but then when we received the grade for the first time, I was shocked that it was really low. In the Philippines, we have the letter grading system: A, B+, B, C+, C, and so on. But here, I think there's just the number system, so it's very unusual for me, and the standard is different. In our school in the Philippines, you get an A if you get a score of 90 and above. An A here is around only 85, and if you get 80, the professor will interpret you as smart, and you are doing good in her class. But in my university, if you get 80, then you're doing so-so, not very well. So that came as a big surprise to me. So I brought it up to some professors to see if they could adjust the score…we were scared to get 80.*

From this account, it can be said that the problem regarding what are considered 'good grades' under the two different systems needs to be resolved in order for the exchange students to be assessed fairly.

Lack of Support from the 'Babysitter' System

The responsibility of 'babysitters' is to help exchange students fit into the academic and social environment in Taiwan. However, the exchange students complained that they did not get any help from their 'babysitters' when they needed help. One student commented as follows:

> *The babysitters are not helpful at all (…) I was asking her to help me find the department during the first week, and she just gave me a map of the campus. So we just found our own way. I didn't see her at all. She just added me on the Facebook and that's all.*

While some babysitters helped the exchange students a little in the beginning, the exchange students expected that their babysitters would help them more. Consider the following comment:

> *I think the babysitter could have done some more for us. He just left us. Like on the first day he just told us some things to do and that's it and I never saw him again.*

Lack of help from and contact with babysitters can be especially serious when exchange students become ill during their study at the host institution. One student described how much he needed help from his babysitter when he became ill:

> *I got sick and I found it difficult to find a clinic here. I have insurance, but we don't know how to use it, because I don't know how it works, and I can't really ask how it works because I can't understand what they say to me. I have a babysitter, but he doesn't really help me.*

From these comments, it can be said that babysitters for exchange students should be people who will be available and able to support the exchange students for their entire stay in Taiwan. As exemplified in the comments above, a smooth adjustment in the country can be played in part by a successful babysitter programme.

The Case of Exchange Students from Mainland China

Analysis of the interview data from the exchange students from mainland China shows that for the most part, they encountered different kinds of difficulties than those by the exchange students from the Philippines.

Difficulties Choosing the Right Courses

For many exchange students from mainland China, it is crucial for them to carefully select their courses in Taiwan in order for those courses to be recognised for credits by their home university. This, according to some exchange students from mainland China, was a difficult process.

> *My school wants me to take the similar courses in order for the credits to be recognised back home. It was difficult to choose courses because we need to choose the courses according to the courses we need to take at our school.*

One reason why this was a difficult process was because the exchange students found that the course descriptions at their host university in Taiwan were not detailed enough for them to judge the compatibility of the courses. A following student reflected on this in the following comment:

> *A more detailed course description may be helpful. I had a hard time selecting courses because the courses I take in this university must match with the courses at my home university in terms of course name and content, in order to be considered as credits. But some of the courses have different names, and while it would be all right as long as the course has similar content, it's hard to tell by reading the course descriptions, as they are so vague. Our school is very strict.*

Such comments suggest that the need for a more detailed description of courses in the receiving country to accommodate the needs of the incoming students (from China), this will also avoid confusion in terms of course credits procedures in the future.

Difficulty Adjusting to the Local Teaching Style

The exchange students from mainland China found the teaching style in Taiwan quite different from that of China, and they had difficulties adjusting.

> *The way class is organised here is very different from what I have experienced. The classes in my university in China are like, teachers teach and students just sit there and listen, and we don't have much interaction. But classes here pay more attention to group work, which is very different, and we are not quite used to this way.*

> *Most of the classes here have discussions but in China we don't have much discussion. In China we focus more on textbooks.*

> *I think the teaching is quite different (…) In my university, we have group work but not that much. I was not very well adjusted to the educational environment here, but I gradually got used to it. Group work was a challenge.*

As these comments show, it took some time for the exchange students from mainland China to get used to an educational environment where there is much discussion and group work.

Lack of Support from the 'Babysitter' System

Just like the exchange students from the Philippines, mainland Chinese exchange students also voiced concerns about the lack of help and support from their local student buddies, or 'babysitters.' The following comments show how little their buddies helped them:

> *My buddy helped me only on the first day to show me where to buy things and get the transportation pass. That's all. She is only a Freshman, so she can't help us much.*
>
> *At first my buddy gave me some information on how to register for courses, but she is busy now so there's no time for her to help me. Especially because she is a Freshman.*
>
> *My buddy is a Freshman, and I am a little confused about that. She is quite nice, but when we ask some questions, she sometimes is not sure about it because she is a Freshman. It would be more practical for some Juniors to help us.*
>
> *The buddy program doesn't make much sense. They helped us at the beginning of the semester when we first came here, but we didn't see each other after two or three weeks. My buddy is a senior student but the school should provide a buddy with the same year as us so that we can take classes together and they could help us more.*

It can be seen from these comments that one reason why the local babysitter-buddies were not so helpful was due to the fact that they were freshmen, and the babysitters themselves were busy trying to adjust to life as university students. The fact that most of the babysitters were freshmen created a gap between the needs of the exchange students and the ability of the babysitters to help the exchange students.

Discussion

The comparative analysis of the issues and challenges faced by the exchange students from the Philippines and mainland China reveals that both groups, to a certain extent, faced similar difficulties during their study in Taiwan. However, there were also some group-specific issues and challenges that were faced by the exchange students. Based on the findings of the study, this section outlines ways in which support services for future exchange students in Taiwan can be improved to help exchange students from both Chinese and non-Chinese-speaking backgrounds.

Instructors Should Create an English-Friendly Classroom Environment

The exchange students from the Philippines commented that some of their instructors' tendency to switch to Chinese from time to time during lectures caused them frustration, and they were unable to follow the lecture when such a language switch occurred. The exchange students from the Philippines also had problems communicating with the local Taiwanese students due to the limited English proficiency of the local students. While the issues related to exchange students' difficulty in following lectures and communicating with classmates are consistent with previous research (e.g., Jenkins and Galloway, 2009; Chou, Roberts and Ching, 2012), the findings from this study offer insight into how such problems can occur so easily in the classroom. To minimise the problems related to instructors' occasional use of Chinese during lectures, instructors should observe to speak English at all times during lectures where exchange students from non-Chinese-speaking backgrounds are present.

According to Liu and Dai (2012) "the English proficiency of the teachers and students of a university indicates the degree and potential possibility of the internationalization of the university" (p.62). Teaching in English requires instructors to have high English proficiency and that "reasonable proficiency in English is prerequisite for the courses offered in English" (Liu and Dai 2012, p.62).

Therefore, instructors who opt in to offer courses in English must at least be reasonably fluent in English and be capable of conducting lessons in English without switching to Chinese. In addition, when conducting group work and assigning group reports in class, instructors could try to match exchange students from non-Chinese-speaking backgrounds (e.g., the Philippines) with Taiwanese students who have a good command of English. This may further minimise the exchange students' language barrier in the classroom.

Forms and Documents Should Have an English or Bilingual Version

The exchange students from the Philippines in this study encountered great difficulties in completing their course registration forms, which were entirely in Chinese, and had to ask for help to complete them. While language problems of international students found in previous studies show their challenges in understanding lectures and communicating with classmates (e.g., Jenkins and Galloway, 2009; Chou, Roberts and Ching, 2012), the language problems associated with their completion of forms and documents (e.g., course registration forms) have not been addressed. Therefore, this finding sheds new light on matters related to their language issues. To avoid exchange students from experiencing this kind of problem, forms and documents, such as course registration forms, should have English versions or bilingual versions (English and Chinese) to accommodate exchange students in Taiwan who do not speak Chinese.

Repertoire of Specialised Courses Taught in English Should be Expanded

While there are many courses in English available for exchange students to take, those courses tend to be EFL (i.e English as Foreign Language) courses, and the exchange students from the Philippines are usually not interested in taking such courses given their high level of proficiency in the language. This issue has not been addressed in previous studies on exchange programmes in non-Anglophone countries, and it is of crucial importance to expand the repertoire of specialised courses offered in English to accommodate exchange students who already speak or are competent in English.

Grade Conversion System Should be Developed

The exchange students from the Philippines expressed great concerns about the different grading standards between their host and home institutions. The findings reveal that there are cross-institutional differences in what constitutes 'good grades,' and that a grade conversion system between institutions should be developed to translate grades obtained in the host institution to the grading standards of the home institution. For example, the grade of '86 and above' would be considered an 'A' in Taiwan, while it would be equivalent to a 'B' in the Philippines. International students have a tendency to expect that they perform just as well as or better than how they performed in their home country (Chen, 1999; Mori, 2000; Pederson, 1991). However, without a fair grade conversion system, their seemingly excellent academic performance at the host institution may be interpreted as poor at their home institution. Just like the credit transfer systems, e.g., the European Credit Transfer and Accumulation Systems (ECTS) and the UMAP Credit Transfer System (UCTS), where credits are calculated and transferred between host and home institutions, grade conversion systems that appropriately translate and convert grades between institutions requires development for future exchange programmes.

Detailed Course Descriptions Should be Provided

One major difficulty faced by the exchange students from mainland China was related to the course descriptions offered at the host institution. Exchange students must select courses carefully to ensure that the courses they take at the host institution will be counted toward their degree at their home institution. In this study, exchange students from mainland China expressed concern over

the fact that the course descriptions at the host institution did not include enough detail for them to tell whether or not those courses would be accepted for credit by their home institution. Such a problem has not been mentioned in previous studies on exchange students in Taiwan.

Liu and Dai (2012) argue that "(i)nternationalization of the curriculum in a university cannot be rendered possible without internationalization of the instructors" (p.61). In order to help exchange students to more easily determine the compatibility between the courses at the host institution and the requirements set by their home institution, detailed syllabi for courses open to exchange students must be provided by instructors, and the instructors should be fully aware of such needs.

Information on the Academic Practices of the Host Institution Should be Included in the Orientation Programme

In this study, exchange students from both the Philippines and mainland China reported that they found it challenging to adjust to the academic environment in Taiwan. Similar to the finding from a study by Chou, Roberts and Ching (2012), which found that international students find it challenging to engage in group projects, the exchange students from mainland China reported that they found it demanding when they experienced group work and group discussions in Taiwan. The exchange students from the Philippines, on the other hand, encountered difficulties when they discovered that the examinations at the host institution emphasised rote-learning skills. To help exchange students adjust to the teaching and learning styles of Taiwan more smoothly, an orientation programme for exchange students before or after they arrive in Taiwan should include some information on the differences between the academic environment in Taiwan and that of their home institutions.

'Babysitter' Buddy Should Have Frequent Contact with Exchange Students

Unlike previous studies showing that peer-pairing buddy programmes for international students are in fact beneficial (e.g., Furnham and Alibhai, 1985; Kashima and Loh, 2006; Campbell, 2012), the exchange students from both countries in this study were frustrated over the lack of contact and support from their 'babysitter' buddies. Based on the findings from this study, it is recommended that institutions set certain conditions for local students who want to serve as babysitter-buddies for exchange students. For example, babysitter-buddies should agree to have frequent contact with the exchange students and must agree to look after the exchange students until the end of their study. The babysitter-buddies should also be, if possible, at the same year level and major in the same academic field as the exchange students, so that they can meet more often and provide more appropriate support.

Conclusion

The voices of the exchange students are valuable for understanding their needs while studying in Taiwan. In this study, the issues and challenges faced by exchange students from the Philippines and mainland China in Taiwan were identified using the qualitative research method. Major issues reported by the exchange students from the Philippines included difficulties in completing forms and documents written in Chinese, lack of specialised courses in English, the language barrier in the classroom, difficulty adjusting to the local academic environment where rote-learning is emphasised, the need for compatible grading standards, and a lack of support from their babysitter-buddies. In contrast, the issues reported by the exchange students from mainland China included difficulty in choosing the right courses, difficulty adjusting to a local academic environment that included discussion activities during lectures, and the lack of support from their babysitter-buddies. These findings suggest that while exchange students from the Philippines and mainland China both encountered difficulties during their study in Taiwan, exchange students from the Philippines who do

not speak Chinese have a tendency to encounter more difficulties compared to those from mainland China due to the language barrier they face.

As exchange students' "perspectives of their experiences can impact future enrollment trends" (Lee, 2010, p.68), appropriate information, services, and programs are vital in helping exchange students have positive experiences (Carr, McKay and Rugimbana, 1999). Moreover, to achieve internationalisation of higher education, it is crucial that local administrators, teaching staff, and students work together to provide support services that actually meet the needs of exchange students.

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New Directions in the History of Education

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Abstract: *The history of education has often been interpreted either in terms of its importance for education, or for its value as part of history, or for its relevance to the social sciences. However, there is also an inclusive tradition in the history of education that appeals to all three of these constituencies, with distinguished pioneers in Emile Durkheim and Brian Simon, but which has tended to be neglected. Current research in the field is beginning to recognise the multifaceted nature of the history of education, leading to new awareness of theoretical and methodological issues, and new treatments often of themes such as social inequalities, teaching, learning, and comparative and transnational perspectives.*

Keywords: *History, historiography, methods, theory, interpretation*

Introduction

This paper looks forward to the future of the field of the history of education and to analyse fresh trends, with an emphasis on comparative and international issues. How far can we point to new directions and a vibrant research agenda emerging that engages in a critical way with historical perspectives, insights, methods and theories? And how relevant is this to the future of education in a comparative and international context?

As all historians well recognise, in order to look forward we must first of all understand where we have come from, and to understand change we must also recognise continuity. I have tried to look both forwards and backwards in my book *The Struggle for the History of Education* (McCulloch, 2011). This work provides a critical analysis of the historiography of education, with reflections on my own professional experiences in this field. It is certainly true that our lives and experiences do stimulate our ideas and questions about history to a large extent.

Initially, then, this paper will outline some important ways in which our history has shaped what we are today as a field and as researchers and teachers in this field, and the dimensions of this history which provide the sources of our strengths and of our characteristic weaknesses. This history may be described in terms of a struggle, a contest, about the fundamental nature and purpose of the field, one which is still unresolved and is at the heart of dilemmas about our future development. This struggle is closely connected to our intellectual location as a field of study, on the borders of education, history and the social sciences, which offer us rich hinterlands to support our work but which can be vulnerable to attack. In acknowledging some of our traditions as an international field, it is possible to propose an integrated vision that engages with all of these constituencies or tributaries of our work (see also McCulloch, 2012).

This leads us on to consider some of the promising new approaches to informing our research and replenishing our field. In one respect, this is about developing our connections with different theories and methods, and perhaps more fundamentally about bolstering our ideas on theory itself and on the principles of methodology. It also involves seeking new directions in our work, often in familiar areas but looking at these in fresh ways. And it is this search for novelty, for freshness, for boldness in looking forward that is the key issue for us today.

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A Site of Struggle

The history of education is often regarded, at least by newcomers to the field, as an uncontroversial and perhaps an undemanding type of study, far removed from the great debates of our time, perhaps of marginal concern. It could be seen as providing a reasonably stable body of knowledge which grows organically over time, which is always with us as a familiar and perhaps comfortable presence. Yet beneath its placid surface it can be recognised as a site of struggle. It can be an exciting and intellectually challenging field of study that is highly relevant to an understanding of broader issues in history, education, and society as a whole.

It is also prone to often fierce debates about identity and its future direction as a field. Indeed, debates about what it is for, and about its basic rationale and contribution, have gone on for at least the past century. It is beset with underlying uncertainties and insecurities.

These issues about contestation, identity, rationale and strategy are played out in different ways in different countries. The problems and opportunities facing the field can look very different if you are in England, or in the United States, or in New Zealand, or in Malaysia, or Japan, or China, or Taiwan. They are closely related in each case to broader educational, social and political issues affecting each country. And yet they have common roots, a shared intellectual heritage which we all inherit.

For many years, as is well known, the dominant rationale of the history of education was to support the further development of the national systems of schooling that had arisen around the world in the nineteenth and early twentieth centuries. Its main tendencies were to celebrate the spread and growth of education, to proselytize on behalf of the teaching profession, and to underpin further advances in the form of gradual, progressive reform, presenting these as symptoms and stimulants of gradual social and economic improvement.

It was this that was often described as the liberal-progressive model of the history of education, an uncritical exercise in nostalgia and myth making, written mainly by educationists for the benefit of teacher trainees. The historical value of such work was somewhat limited, and it placed little store by social science methods and perspectives, but it fostered a convenient and usable version of the past that teachers, educators and policy makers could use to support their own endeavours. In other words, it tended to be highly instrumentalist in nature, fashioning a usable past in the interests of contemporary institutions and policies.

By the 1960s, the liberal-progressive model was being decisively undermined, partly because it was so unhistorical but also because increasingly its optimistic narrative did not ring true alongside the deep-seated dilemmas of western schooling. In the United States, scholars such as Bernard Bailyn and Lawrence Cremin led the way in questioning the general thrust of writing in the history of education, and their critique was echoed and developed further in other western countries over the following decades (Bailyn, 1960; Cremin, 1965).

In its place, there rose an alternative, rival rationale that emphasised the historical claims of the field. According to this general formulation, the history of education should be viewed as an aspect of social history, in such a way that it would be concerned principally with discovering the historical connections between education and other aspects of society. In Britain, this key objective was expressed most forcefully perhaps by the leading social historian Asa Briggs, writing in the first issue of the journal *History of Education*, when he argued that the study of the history of education was best considered as part of the wider study of the history of society: "social history broadly interpreted with the politics, the economics, and, it is necessary to add, the religion put in" (Briggs 1972, p. 5).

One implication of this approach, at least for some, was that the history of education should concentrate on its mission to illuminate the past for its own sake, rather than become contaminated with concerns about the present. There were many historians of education who regarded themselves as both historians and educationists. Nevertheless, to the extent that history and education

represented competing rationales, the rise of the historical standpoint was a major challenge to a rationale that depended principally on the value of the field to education.

The third basic approach has emanated from the social sciences. There have long been significant contributions to the history of education by a wide range of social scientists. In Britain, for example, sociologists such as A.H. Halsey and Olive Banks have produced important historical work, and more broadly the insights of social theorists such as Pierre Bourdieu have stimulated many new approaches (see for example McCulloch, 2008; McCulloch and Richardson 2000, chapter 4).

Yet there have often been tensions that have developed as a result. Sociologists and historians have tended to have an uneasy intellectual relationship, the former being concerned with developing theory and articulating methodological concerns in a way that historians have often found strange and difficult. The cultural historian Peter Burke has characterized the mutual relationship of historians and sociologists as a "dialogue of the deaf" in which "each group tends to perceive the other in terms of a rather crude stereotype" (Burke 2005, p. 22).

These tensions have been mirrored in and around the history of education. There has also been an emergent tension over the past two decades between broadly social scientific and interdisciplinary rationales, and other established justifications for the history of education. Some historians of education, then, have asserted the historical contribution of the field, others its educational importance, others its implications for the social sciences more broadly. All of this has generated important and interesting research.

Yet we should also recall a grand, more inclusive tradition across these key constituencies to address concerns that lie across all three great domains. In doing so we can draw very consciously from the examples of two great figures from our past. The first is Emile Durkheim, the second is Brian Simon. Both Durkheim and Simon, in their different ways, emphasized the importance of cultivating the history of education within a broad framework involving education, history, and the social sciences.

Over a century ago, Emile Durkheim, the French sociologist and professor of pedagogy at the Sorbonne in Paris, expressed an expansive vision for the history of education in his lectures on the formation and development of secondary education in France. His rationale for the study of the history of education embraced education, history and the social sciences. Durkheim argued eloquently that it is only by carefully studying the past that we can come to anticipate the future and to understand the present, so that the history of education provides the soundest basis for the study of educational theory. History could also help us to understand the organization of education and to illuminate the educational ideals which the organization was designed to achieve, while in broader terms it helped us to understand humanity itself and the aspirations of individuals and groups.

The present was itself merely "an extrapolation of the past, from which it cannot be severed without losing the greater part of its significance". Thus, he insisted,

> …only history can penetrate under the surface of the present educational system; only history can analyse it; only history can show us of what elements it is formed, on what conditions each of them depends, how they are interrelated; only history, in a word, can bring us to the long chain of causes and effects of which it is the result (Durkheim 1977, p. 15).

It was for these reasons, according to Durkheim, that we should carry out historical research into the manner in which educational configurations have progressively come to cluster together, to combine and to form organic relationships.

At the same time, Durkheim linked these concerns systematically with his broader sociological interests. He argued that historical and social studies were "close relatives" that were "destined eventually to merge with one another", and that education was bound up with both (Durkheim 1977, p. 331). For example, he defined education as the methodological socialization of the new generation, through which society renewed itself under the supervision of the State. Moreover, an

understanding of psychology was also necessary in order to comprehend the diversity of human intelligence and character (see also Durkheim, 1956).

For his part, Brian Simon, the leading historian of education produced in Britain since the Second World War, insisted that the study of the history of education should be designed to illuminate the nature of education as a social function, of primary importance in every society. According to Simon, "It should be one of the main tasks of historical study to trace the development of education in this sense, to try to assess the function it has fulfilled at different stages of social development and so to reach a deeper understanding of the function it fulfils today." (Simon 1966, p. 91). Simon's work emphasized the differences of social class interests: "Modern education systems, it seems to me, are an area where the interests and objectives of difference social classes, strata and even groups meet and very often clash." (Simon 1985, p. 27).

This approach to the history of education had clear implications for an understanding of contemporary policies and problems. It should, he insisted, "bring educational developments into perspective, and in so doing open the teacher's eyes to the real nature of his work" (Simon 1966, p. 92). It should enable the student to understand that educational ideas and institutions contained historical components, some of which might no longer be relevant or viable, and should be open to reconsideration; and he concluded famously, "There is, perhaps, no more liberating influence than the knowledge that things have not always been as they are and need not remain so" (Simon 1966, p. 92).

Theory and Methodology

How relevant, then, are these ideas, and the examples of Durkheim and Simon, to new directions in the history of education today? Over the past twenty years there have been significant challenges to the history of education in many countries, threatening in many cases its strategic position as a field and its potential for the future. Despite the growth in the active role of the State in education, and the long period of educational reform and reconstruction that has been widespread over that time, historians of education have often found it difficult to make a substantial contribution to inform these changes. Changes in teacher education and the nature of educational research have led to strategic difficulties in many countries. Yet at the same time, there have been important advances intellectually in and around the field, pointing the way towards new developments in theory and methodology, and in some key areas of our work these are now bearing fruit in significant new work.

At the end of the twentieth century, the leading American historian of education, Jurgen Herbst, complained that there was little fresh input in the field, so that we are left endlessly repeating old mantras (Herbst, 1999). There are at the same time competing pressures towards specialisation and balkanisation. Nevertheless, contrary to these concerns, the field is now learning, slowly and sometimes painfully, to draw on the full range of our intellectual heritage. This is helping us to engage more fully and openly with theoretical and methodological approaches from across education, history and the social sciences. It is also beginning to have a significant impact on substantive areas of our research.

This is important for strategic as well as epistemological reasons, as we seek ways of defining and defending the position of history of education in the academy and in public discourse. But finding ways of sharing and highlighting our common concerns as historians of education is a key task ideologically no less than pragmatically, in binding together individuals and groups whose work has sometimes come to appear disparate and even incoherent. This is especially urgent in hard times such as we have today, to try to comprehend the economic and social crisis in many contemporary societies, as part of a broad and interdisciplinary vision for the history of education as a whole. Also perhaps where the humanities and social sciences themselves are in danger and coming under attack from different quarters, it is vitally important for us to consider the value and potential of such work.

Let us look first then at the developing relationship between the history of education and theory and methodology. One interesting feature here is an increasing willingness to address theoretical

concerns in an open and explicit way. The history of education has often been uncomfortable with 'theory' in general, unwilling or unable to engage with theoretical and philosophical issues, in common with historians in general. In the 1950s, the sociologist C. Wright Mills claimed that although history was highly theoretical in nature, many historians showed a 'calm unawareness' of this that he found impressive but unsettling (Mills 1959, p. 145). Fritz Stern once commented that "most historians are reluctant to articulate their views about theory" (Stern 1956, p. 15).

Yet, as Peter Burke has recognised, partly in response to the challenge of postmodernism, many historians have overcome their professional reticence and have reflected more broadly on the general relationship between history and theory. According to Burke, this has led to some convergence between historians on the one hand and theorists on the other, in "an age of blurred lines and open intellectual frontiers, an age at once exciting and confusing" (Burke 2005, p. 19).

In the history of education, there has been much more activity in addressing theoretical debates over the past twenty years. This has been reflected in special issues of history of education journals to address theoretical issues, and emerging interest in the implications of diverse insights from Quentin Skinner, Walter Benjamin, Edward Said, Liz Stanley, and many others. The challenge posed by postmodernism has been especially strong in the history of education, where an 'empiricist' tradition based on 'Acts and facts' has been entrenched and difficult to dislodge (Cohen, 1999). Yet here too there is potential movement in current debates about the nature of historical truth, drawing on the potential for a 'social realist' approach to knowledge as Michael Young's more recent work proposes (for example Young, 2008). An epistemological debate formed in the social sciences about the social relationships of knowledge has important implications for the history of education.

In relation to methodology, similarly, the history of education had tended not to be conscious of methodological issues familiar elsewhere, while it generally privileged a 'top-down' narrative of policy changes based on reports and government committees. This had the effect of excluding voices and the views of many such as girls and women, working class youth, ethnic minorities, immigrant groups, and indigenous peoples in many countries around the world.

New sources and methods have been found partly through enlisting a broader range of documentary evidence, as well as by asking different questions of it. Personal documents such as letters, diaries and autobiographies have been examined more frequently and systematically. Novels are one source that has been somewhat underused in the history of education, yet they provide a key means of conveying the subjective experiences of schooling.

One type of novel in particular is perhaps especially important in this regard, the realist novels of the mid-nineteenth century (for example William Makepeace Thackeray, *Vanity Fair*, 1848; Charles Dickens, *David Copperfield*; George Eliot, *Adam Bede*); as also with Gustave Flaubert's *Madame Bovary* (1857) in France. Charles Levine has noted that realism "tended to be the dominant narrative mode of a Victorian England in which perhaps the greatest of all virtues, greater than sexual propriety, was truth-telling". Indeed, Levine adds, "observing things as they are, with quasi-scientific detachment, displaces false representations with authentic ones, and forces readers out of delusions that lead to moral disaster" (Levine 2007, pp. 15-16).

There are many more recent works of fiction that provide interesting historical evidence, from *Goodbye Mr Chips* in the 1930s both as a novel and as a film, to the plays of Alan Bennett in our own time (McCulloch, 2009). Institutional source materials such as textbooks, school magazines, school books and log books have been used more widely (McCulloch, 2004).

Biographical methods have investigated the relationships between the personal and private on the one hand, and the social and political on the other, or what C. Wright Mills described as the 'sociological imagination' (Mills, 1959). Oral history has become a common feature of the field over the past twenty years, and this has been followed more recently by a vogue in visual history. These methodological devices have permitted more detailed attention to be given to the social experiences of education, including in the classroom, which until twenty years ago were no-go areas for historians of education.

A promising new theme which should take this trend still further is that of sensory history, which has begun to be recognised for its potential contribution to the history of education. This involves highlighting the five senses of smell, sound, touch, taste and sight in historical research. Emily Cockayne's historical research on urban environments in England in the seventeenth and eighteenth centuries has helped to take forward our understanding of what she describes as the 'hubbub' of "filth, noise and stench" – a diverse range of "physical and emotional reactions to unpleasant things such as poor-quality food, smoke, dirt, dust, stench and putrefaction" (Cockayne 2007, p. 1).

In relation to the history of education, for example, Burke and Grosvenor have investigated the 'hearing school' in terms of 'an exploration of sound and listening in the modern school', the 'soundscape' of the school in the twentieth century (Burke and Grosvenor, 2011). Mark M. Smith has suggested that there is scope for a great deal of new historical research on the sensory worlds of children, and how they have understood the senses in the process of learning the social protocols and cultural expectations of their society (Smith, 2007). Peter Hoffer points out that this process has applied historically to adults as well as to children as they "enter the sensate environment to conform to learned priorities of sensation" (Hoffer 2003, p. 6). For instance, according to Hoffer, the receptivity of the senses, or the ability to describe what we have sensed, can be expanded with experience, so establishing a 'sensuous etiquette' in which the senses tell us where we belong in society and how we should behave in different circumstances and contexts.

As Smith points out, too, it was smell, perhaps more than any other sense, that served to create and mark out social territory, to identify the 'other', to justify various forms of subjugation and to serve as a barrier against meaningful integration into host or dominant societies. Smith's own research on 'race' and slavery in the American South in the nineteenth century vividly highlights the importance of 'sensory stereotypes'. He points out also that children's books, often published in the North but also read widely in the South, dealt with the senses in some detail and taught children the physiological and cultural functioning of the senses, which in turn could help to justify a given social order (Smith, 2008). In addition, Smith relates this sensory dimension to the resilience and everyday realities of school segregation until the Brown decision of the 1950s (Smith 2008; see also Smith 2014; and Classen 2014).

New Directions

Such theoretical and methodological developments have in turn encouraged new approaches in key areas of the history of education, often familiar terrain but now being addressed in different ways. One such has been the theme of social disadvantage and exclusion. Earlier work had emphasised social class conflict and the role of the organised working class, such as Simon in Britain and Katz in the United States (Simon, 1960; Katz, 1968). More recent work has reflected a wider range of concerns relating to social disadvantage and exclusion, including gender, ethnicity, disability, and sexuality, and greater awareness of what is often called of the 'intersectionality' of these.

In relation to social class itself, some attention has shifted to the nature of the middle classes, engaging with recent research by historians and sociologists. More recent work has investigated the middle class traditions of secondary education in England in terms of insecurity of status, fear of failure and anxiety regarding social decline, familiar neuroses of the bourgeoisie (McCulloch, 2007). Historical discussion of working class education has itself moved from a preoccupation with the political and industrial dimensions to an emerging concern with cultural identities, for example in Jonathan Rose's excellent work *The Intellectual Life of the British Working Classes* (Rose, 2001).

Histories of teaching have likewise shown a tendency to develop from a prevailing concern with professionalisation in the 1960s and unionism in the 1980s to a new interest in the nature of teachers' professionalism, that is, their daily experience of teaching. The work of Kate Rousmaniere in the United States and of Peter Cunningham and Phil Gardner in England are excellent examples of

this recent trend, which has been greatly stimulated by oral history (Rousmaniere, 1997; Cunningham and Gardner, 2004).

At the same time, there has been new awareness of the importance of learners and learning in the history of education. The history of literacy and reading has increasingly sought to illuminate the nature of readers and audiences and their interactions with texts. As Jonathan Rose has observed, "Twenty years ago the historiography of reading scarcely existed. Many historians at that time doubted that we could ever recover anything so private, so evanescent as the inner experiences of ordinary readers in the past. Where were such experiences recorded? What sources could we possibly use?" (Rose 2007, p. 596). More broadly, we are starting to shed more light on the social nature and importance of learning since modern ideas about learning started to be developed in the Enlightenment of the eighteenth century (McCulloch and Woodin, 2010).

In terms of international, transnational and comparative agendas, again there has been evidence of a pursuit of new directions. Much research on education dwells on its characteristics as an aspect of domestic social policy. Much of my own recent research, for example, has examined the history of the raising of the school-leaving age in England, and its implications for the transition from childhood to adolescence and adulthood. Yet this kind of literature has also increasingly recognised the importance of situating national studies in an international context and perspective, as my recent book with Tom Woodin and Steven Cowan attempts to do (Woodin et. al., 2013a). The school-leaving age lends itself to international comparisons, and often serves as a marker of progress and international development. In the last few decades, the extent of compulsory education has become tied to key discourses in international arenas, and reflects increasing international interest in education, including by bodies such as UNESCO, OECD and the World Bank.

Within nations, comparative performance tables have stimulated a fear of being left behind in the global 'race'. Yet although it may seem relatively straightforward to make international comparisons over time on school-leaving ages, the reality may be more complex. This is because, for example, different enforcement rates may exist, and countries with a low official leaving age may in fact record high levels of participation and achievement (Woodin et. al., 2013b).

There is a smaller body of work that highlights the significance of education as part of foreign and overseas policy, especially in the export of ideas and practices to other countries. Yet there is also another dimension to this that has attracted attention only recently, which is the relationship between the country's changing place in the world and the nature of education and society at home. This also relates more broadly still to an awareness of the interdependence of nations and the international and global nature of many challenges in the modern world.

Globalisation has latterly become an emerging theme in the history of education, while authors such as Richard Aldrich have begun to develop historical perspectives on education and environmental challenges to human survival (Aldrich, 2010; McCulloch, 2015). In this context, increasing attention has been given to the history of the British Empire and the nature of its contribution and legacy in the modern world. Much of this general literature, such as the five-volume *Oxford History of the British Empire*, has included little material specifically on education (Louis, 1999).

At the same time, a substantial literature has also developed on the ways in which the ideas and practices of education in Britain influenced the character of education in different parts of the British Empire. This literature has generated interesting debates around the nature of cultural imperialism, the relationship between the 'centre' and the 'periphery', the extent to which imperial influences were beneficial, and the ways in which these influences were played out in different nations and areas. Latterly, there has been increasing interest in the kinds of resistance that developed on the part of colonised and indigenous groups.

Yet the educational relationships between Britain and her Empire did not run only in one direction. As Peter Burke has pointed out, there are evident dangers in a simple model of 'centre' and 'periphery' in which knowledge is diffused from Europe to other parts of the globe, in particular for the tendency of such an approach to take sufficient account of "flows of knowledge from periphery

to centre as well as in the opposite direction" (Burke 2000, p. 57). Over the last decade, there have developed the beginnings of historical interest in the reverse process, that is, how ideas and practices of education in different parts of the British Empire exerted influence in the imperial homeland.

This new literature, stimulated in part by Edward Said's *Culture and Imperialism* (1994), has potential for a great deal of further development to investigate the dynamics of education in the British Empire which were rarely stable and often unpredictable in their nature and effects. Said's work considered the "overlapping territories' and 'intertwined histories" of imperial culture, examining how '"a post-imperial intellectual attitude might expand the overlapping community between metropolitan and formerly colonised societies" (Said 1994, p.19). He went on to investigate how images of Empire have permeated Western culture, for example in major works of fiction: "Cultural texts imported the foreign into Europe in ways that very clearly bear the mark of the imperial enterprise, of explorers and ethnographers, geologists and geographers, merchants and soldiers" (Said 1994, p. 229). This key insight has underpinned a new historical literature focusing on the influence of Empire on the imperial homeland.

So far as the implications for and of education are concerned, some interesting and important earlier work was also produced, for example, by Castle on national identity and the elementary school curriculum (Castle, 1993). This has been taken much further by Catherine Hall, whose work has developed key connections between metropolitan culture and the imperial world (Hall, 2008). Hall and Rose have helped to explore a range of ways in which "Britain's status as an imperial power became a part of the lived lives of Britons" (Hall and Rose 2006, p. 30). The powerful theme of 'Empires at home' has also been discussed in detail in a collection of work that grew out of an international symposium sponsored by the History of Education Society (UK) and held in Hamburg in Germany (Goodman et. al., 2009). In this collection, for instance, Ruth Watts investigates imperial influences on British education in the nineteenth century, drawing on postcolonial theory and broader historical literature as well as comparisons with other imperial countries (Watts, 2009). Recent doctoral work by Mari Hiraoka has considered the impressions made in England in the late nineteenth and early twentieth centuries by images of Japanese education (Hiraoka, 2015).

Conclusions

In conclusion, let us reflect on a few themes that have loomed large in this discussion. First, the theme of change. Our field has changed greatly over the past century. It was once the home of rather dry, smug texts that charted the rise of national systems of schooling. Now it is diverse, outward looking, intellectually reinvigorated by continual contact with educational, historical, and social scientific debates. It must continue to change, to look forward to the future. But it order to do so in a principled and coherent way it must do so by understanding its own past, and the continuities and changes that have brought us to where we are today.

Second, the theme of ideals. The history of education explores the aspirations of individuals and families, of schools and universities, to improve themselves and to build towards a better future. These hopes and dreams involve ideals as well as interests, social ideals that are testimony to the redeeming qualities of humanity. Let us as a field, while exploring the contradictions of education, find it in ourselves to draw upon its ideals also, to teach ourselves build upon our finest traditions and our best minds.

Third, the theme of partnerships. The history of education has drawn eclectically on a wide range of intellectual bases which I have characterised as education, history and the social sciences, and increasingly with an international and global canvas. Let us resolve to regard this as a partnership with complementary interests, rather than as a dysfunctional matching of unequals.

Fourth, the theme of the future, to which it is fair to add a question mark. We can never predict the future, but we can still try to shape it. Can we take forward the large intellectual project that faces historians of education today in different parts of the world? If we can do so, I believe that we

can help to realise in the twenty-first century the grand strategic vision of the history of education, taking forward a continuing struggle for the history of education, contributing towards the rise of new approaches to study that contribute to education, history and society alike, in the spirit of Durkheim and Simon; to an engagement on equal terms that can be central rather than marginal to a wide range of scholars; and analyses that tell us more about our wider world, and about ourselves.

Notes

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Book Review

A Critical Study of Thailand's Higher Education Reforms: The Culture of Borrowing By Rattana Lao (2015), 209 pp. ISBN: 9781317691921, New York: Routledge.

Rattana Lao's *A Critical Study of Thailand's Higher Education Reforms: The culture of borrowing* is part of the Routledge Critical Studies in Asian Education series edited by S. Gopinathan and Wing On Lee. The book covers the major trends and events of Thai higher education policy and utilises an interpretive framework of policy borrowing and lending. It is remarkably readable and its depth and quality of historical, theoretical, and empirical analysis cannot be overstated. The main argument of the book is the "culture of borrowing" which relates to selective borrowing of higher education policy in Thailand from a variety of global sources and the assumption that doing so will achieve a brand of "cultural supremacy" sought after by Thai policymakers.

Much of the book emerges from Lao's dissertation, a qualitative case study using document analysis, semi-structured interviews, and a three-month observation at the Office of National Educational Standards and Quality Assessment (ONESQA), a key governmental organisation in higher education policy. In a region that has also relied overly on quantitative research in social science, Lao breaks from that tradition to offer rich qualitative data to support her interpretive framework.

The book includes chapters on a variety of topics including historical developments of higher education policy, the changing role of the Thai state, and quality assurance policies and repercussions. A chapter on autonomous university policy unveils a controversial aspect of higher education policy in Thailand, where the flagship universities of the country, once controlled by the state, are being empowered to function with increased institutional autonomy and large budgets approved by the Budget Bureau. Additionally, Lao confronts the normative view that Thailand, having never been formally colonised, was free to pick and choose which higher education policies and practices it would like to borrow from other nations. With care and precision she delves deeply into the politics, economics, and culture of borrowing in the Thai context. Lao's in-depth and nuanced analysis shows how Thai elites have jockeyed for selectively implementing international standards in a way that safeguards "Thai-ness." She also demonstrates how the forces of globalisation, regional pressures from the Association of South East Asian Nations (ASEAN), and internal quality assurance goals and measures have ultimately led to "reform fatigue."

One of the major contributions of the books is a compelling exposition of Thai "socio-logic" – a term coined by Schriewer and Martinez (2004), which refers to the unique history, politics, and culture of a nation that influence the policy borrowing process. Lao acutely expounds on how policy borrowing in Thai higher education syncs with the socio-logic at play in the Thai context.

The book is rife with captivating stories and statistics: how Ramkhamheang University at one point enrolled 700,000 students, that only around 1.5% of Thai faculty have achieved academic rank of full professor, and how faculty staff are frustrated with doing hours of paperwork they believe is unlikely ever to be read.

This book will appeal broadly to anyone with interest in higher education in Thailand. For those working in Thai higher education policy, this book will be enlightening. Lao displays a mastery of higher education policy in general, so this book will also serve as a primer to globalisation in higher education policy through the case of Thailand.

This book has the potential to begin a more candid conversation about the past, present, and future of Thai higher education policy. The case study research methodology is an effective way of

contributing to knowledge in this area, and one hopes this book spurs on more empirical research. One limitation is the lack of focus on the experiences of private universities in Thailand, which would have been enlightening considering their emergence after 1969 and subsequent stagnation due largely to government regulation. Also, since higher education was viewed through the framework of policy borrowing and lending, much is left to be said about student experiences and the admissions process, the growing involvement of the business sector in higher education, and how much higher education in Thailand contributes to or assuages societal inequality. Still, despite Lao's admission that this book is not exhaustive, it is by far the most comprehensive understanding of Thai higher education in English print today, and its contribution to knowledge will have significant implications for understanding the future role of Thai higher education in the politics, economics, and culture of Thailand.

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