A Change Laboratory: A collective approach to addressing issues in laptop-mediated English language classrooms

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Declaration

This thesis has not been submitted in support of an application for another degree at this or any other university. It is the result of my own work and includes nothing that is the outcome of work done in collaboration except where specifically indicated. Many of the ideas in this thesis were the product of discussion with my supervisor Dr Kyungmee Lee.

Abstract

This thesis describes a Change Laboratory (Engeström et al., 1996; Virkkunen & Newnham, 2013) intervention carried out by a group of English Language Teaching (ELT) professionals with the aim of improving teaching and learning in laptop-mediated English language classrooms. The research was carried out in the English preparatory course at a federal institution in the United Arab Emirates (UAE). Following the methodology of the Change Laboratory, the project first identifies a number of historical and current contradictions, manifesting as dilemmas, conflicts, critical conflicts and double binds, which may be causing unintended outcomes of attrition and failure among students on the preparatory English course. Using the principles of expansive learning, the participants, a group of eight English language teachers, propose, model and examine a number of solutions to the contradictions identified. These solutions are presented as a proposed future model of the activity system. The results are specific for the English preparatory course, but the solutions proposed provide a model for effective device usage, increased student collaboration and sound pedagogical practice that could be applicable in other university teaching environments where one-to-one devices are deployed. Rather than proposing a state-of-the-art solution focusing on hypothetical possibilities, the Change Laboratory has focused on the state-of-the-actual, and proposed a new model of teaching that is effective in this context and could provide a starting point at least in other contexts where technology is being used to enhance learning. This project contributes to knowledge using Change Laboratory methodology and in particular the insider Change Laboratory, activity theory, ELT and technology enhanced learning (TEL) in face-to-face teaching environments. Opportunities for future research are also identified.

Key words: Change Laboratory, activity theory, ELT, TEL, English Language Teaching, technology enhanced learning, collaboration, laptops, insider research, contradictions

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1. Introduction

1.1 An overview of the problem

Degree programs at federal institutions in the United Arab Emirates (UAE) are delivered primarily in English, and students consequently need to achieve the required English proficiency before embarking on their academic careers. This proficiency is measured primarily through a standardized national English proficiency test, the EmSAT, or through an internationally benchmarked exam such as the International English Language Testing System (IELTS). Students who fail to achieve this proficiency – 60% of students in 2018[1] - can enrol on a one-year pre-university preparatory English course. Successfully passing this course enables students to continue with their degree level studies in their chosen program.

The preparatory English course has been a flagship for technology focused interventions and innovations. From massive one-to-one (1:1) device interventions to a fanfare of learning management systems, 100% online assessments and a mandated 40 hours of training for teachers each academic year, technology has been heralded as they key to improved teaching and learning, higher pass rates and ultimately more students moving on to their chosen degree programs (Cavanaugh et al., 2013b; Cavanaugh et al., 2013a; Miles, 2019; Miles, 2020)

[1] Institutionally available data

However, despite these much-vaunted interventions, pass rates have remained at best static and in some cases have actually begun to fall. Top-down interventions of technology have not, it would seem, led to improved teaching and learning. High profile, widespread implementation of classroom devices, learning technology and proficient teachers has not delivered the promised results. Technology has, perhaps, failed. This project aims, by means of a teacher-led, bottom-up intervention, strongly rooted in theory, to identify the reasons behind this failure to improve and to suggest ways in which technology can be better deployed. This takes place through a Change Laboratory (Engeström et al., 1996; Virkkunen & Newnham, 2013).

1.2 The Global Context

We live in a world that is increasingly driven and defined by technology, a situation that is simultaneously championed as a utopian ideal by its proponents and derided as dystopian domination by its detractors. The world of education has not been slow to embrace technology. From 'prehistoric paintings flickering in the light' (Duval et al., 2017) teaching ancestral children to hunt, to the fully-online delivery modes adopted by modern universities in the post-COVID 19 world, the prevailing view in education has been that the introduction of technology is 'a desirable outcome that will lead to more learning' (Scanlon & Issroff, 2005). Indeed, the 'computer assisted learning' of recent decades has become 'technology enhanced learning', both expressions that leave 'little doubt over the inherent connection' (Selwyn, 2011) between technology and improvements in teaching and learning. The umbrella term 'technology enhanced learning' (TEL) has come to encompass any situation where technology is seen to play a significant – and positive - role in making learning more effective, efficient or indeed enjoyable (Goodyear & Retalis, 2010).

Consequently, the last decade has seen TEL increase exponentially in universities and other educational institutions worldwide. In the UK this has been the result not only of government initiatives but also in direct response to student expectations (UCISA 2018; Dunn & Kennedy, 2019) and student satisfaction (Walker et al., 2018; Walker et al., 2016). Government spending on ICT in secondary schools increased by 3.5% in 2018/19 (2020) while the European Commission continues to cite the inseparability of digital technologies and education (EC, 2018). In the USA, the Every Student Succeeds Act in December 2015 and the Effective Use of Technology Plan (Title IV A) have led to the National Education Technology Plan. NETP's vision of equity and collaboration aims to make 'everywhere, all-the-time learning possible…to ensure equity of access to transformational learning experiences enabled by technology' (2017). Education, learning, is the key to prosperity, global stability and even survival (Goodyear & Retalis, 2010), and increasingly global stakeholders, from governments to educators to students, see technology in education as the key to academic success on both national and international stages.

There are of course two sides to the argument. There is a danger that the overwhelming positivity displayed towards TEL becomes hegemonic and 'limits the validity and credibility of the field' in terms of 'serious academic endeavour' (Selwyn, 2011). There is therefore a need for 'generous and open-minded' criticality around discussions concerning TEL and pedagogy (Castañeda & Selwyn, 2018), and a need to disentangle positive student appraisals from actual academic benefits (Dunn & Kennedy, 2019). Fundamentals of teaching and learning need to be distinguished from the 'transient froth' (Goodyear & Retalis, 2010) brought up by each wave of new technology. Indeed, evidence of actual transformational change in pedagogy remains harder to discern and delivery modes in UK universities remain little-changed (UCISA, 2018; Walker et al.,

2018), and for every utopian champion of TEL there are dystopian detractors calling the benefits of technology in education into question (Elhai et al., 2017; Jacobsen & Forste, 2011).

However, the COVID-19 crisis has forced education online from kindergarten to university, and brought evermore into focus technology and its ability, or at least potential, to enhance both teaching and learning. If there is a gap between institutional rhetoric and the reality of academic practice (Walker et al., 2018), between what we should be doing as educators and what we are limited to, then this gap needs to be examined. Adopting a balanced and critical approach will allow us to sit between the utopian and dystopian camps, closing the gap, and presenting a balanced case for the potential of technology enhanced learning.

In the context of this research, heavily-resourced and publicised investment in devices, infrastructure and training appear not to have realized this potential. This project aims to identify the causes, and propose solutions, thereby creating a middle ground between utopia and dystopia that actually improves teaching and learning, leading to greater student success.

1.3 The UAE Context

The importance of education and the hype around education technology is not a situation unique to the western world. From humble origins as a British protectorate, the United Arab Emirates (UAE) has risen in status to become ‘the Middle East’s power broker’ (England & Kerr, 2017). Not content with regional recognition with Vision 2021 the UAE has made clear its desire to become a leading player on the world stage. A central pillar of this vision is a ‘First-Rate Education System’ feeding educated human capital into a ‘Competitive Knowledge Economy’ (UAE, 2010). The UAE

Ministry of Education has implemented a bold series of five-year plans, Education 2020, to transform education and ensure that the UAE's youth are able to compete internationally at both universities and in the global marketplace (UAE, 2020). Technology is a 'key element in modernization and reform of education' (Lightfoot, 2016) in developing nations, and the UAE is no different to other governments in its enthusiastic adoption of TEL.

Technology and the Drive for Educational Excellence

Technology is thus a key component in the UAE's drive for education excellence. Students in the UAE study in a technologically rich environment, a core component in the UAE's drive for educational excellence. Vision 2021 and the National Agenda aim for all schools, universities and students to be equipped with Smart systems and devices as the basis for all teaching, projects and research in the UAE (UAE, 2020a). This is not a new situation, however. Laptops have been deployed as one-to-one (1:1) devices in UAE universities since the early 2000s, but it has not all been plain sailing. Saunders and Quirke (2002) describe one of the initial 1:1 device initiatives in tertiary education, laying out the four crucial factors necessary for success as culture, gender, infrastructure and the faculty themselves. Federal university classes in the UAE are monocultural and single sex, challenges perhaps specific to the Gulf, while issues with infrastructure are relatable across international contexts. Device initiatives cannot succeed without the hardware and software to support the devices. Saunders and Quirke found that the most critical factor related to faculty themselves. For devices to be successfully employed, faculty need to know how to employ them. The challenges of single sex Gulf classrooms combined with the fast pace of development meant that many teachers did not feel able to successfully employ laptops in the classroom. Revisiting the institutions three years later, Schoepp (2005) found the same barriers to faculty implementation. More recently,

Ali (2013) still found teachers claiming that they did not know how to teach with technology.

Classroom Devices and the Paperless Environment

Such barriers have not, however, deterred the further implementation of 1:1 classroom devices in UAE universities. In 2012, the use of iPads was mandated for all preparatory-year students and teachers. Paper hard copies were effectively banned, with some campuses even going so far as to remove all printers and copiers from faculty areas. This initiative was expected to revolutionise teaching and learning (Cavanaugh et al., 2013b; Cavanaugh et al., 2013a). Subsequent professional development conferences were heralded as indicators of this move to classroom redefinition (Cavanaugh et al., 2013b), while the only serious barriers were seen as 'misalignment between assessments and teaching' (Hargis et al., 2014). The reality, however, was somewhat different. Teachers reported a bombardment of professional development that left them unprepared (Donaghue, 2015). In one event, teachers were rotated through a series of random 15-minute training sessions over a one-day period, a process likened to 'water boarding' by one disgruntled participant (Miles, 2017). Teachers were simply unable to absorb the barrage of information they were subjected to. Training aside, the introduction of iPads coincided with a change in the preparatory-year program itself. Where previously student passed on the basis of college-based course work and a standard, but internal, final exam, students were now required to achieve a band 5.0 on the International English Language Testing (IELTS) exam in order to progress to their degree courses, a change applied to all federal institutions in the UAE. The IELTS is a paper-based exam testing speaking, writing, listening and reading skills in English. This created an instant mismatch – teachers were expected to prepare students for a paper-based exam while teaching in a paperless environment. This mismatch between

assessment and teaching also meant the course moved from a developmental stepping stone between high school and college to a remedial English course focusing solely on exam success. The potential of the iPad was thus never fully exploited as teachers sought ways to solve the dichotomy of preparing students for a paper-based exam in a supposedly paperless environment. At the same time, the initiative did lead to a core of digitally literate teachers, able to effectively and appropriately to use iPads within the constraints of curriculum, time and learner (Miles, 2019; Miles, 2019). The iPad initiative serves as an exemplary representation of the problems typical to ineffective implementation of education technology. iPads were quietly replaced by laptops some five years later.

Smart Classrooms

Devices aside, 'Smart' classrooms are the institutional norm. Each classroom has 'Smart' touch screens, high speed internet connections and even intelligent lighting systems that turn off lights when nobody is present. However, these 'Smart' systems are also causes of frustration. 'Smart' screens, connected to desktop machines, have automatic shutdown times that see teachers having to re-enter log in data repeatedly during lessons, and intelligent lighting systems plunge rooms into darkness if students and teachers are not actively walking around during classes (Miles, 2021). It should also be mentioned that the use of the term 'Smart' is perhaps an ambiguous catch-all without a clear definition. While the Ministry may mandate 'Smart' systems and student devices in Vision 2021 and the National Agenda (UAE, 2010, 2020), it is less clear what these 'Smart' systems actually are. This is not a situation unique to the UAE. Riezebos, Ming-Hua,and Peter recognize the lack of a 'clear and unified definition of Smart learning' (2016) and that the meaning of ''Smart' has 'different definitions' for different entities and institutions. For Mason and Jon, 'Smart' is the opposite of stupid. Intelligent

environments use smart technologies to personalize learning and empower learners (2018), but there remains ambiguity in the concept (Tikhomirov et al., 2015).

The Research Site

Students entering degree programs in 'Smart' classrooms at the federal institutions in the UAE are taught in English. In order to gain direct admittance, students need to score between band 5.0 and 6.5 on the International English Language Testing System (IELTS) exam. For high school leavers this is measured by a nationally administered English proficiency exam, the EmSAT. Students that fail to achieve the required proficiency can enrol in a one-year pre-university preparatory English course. All students are required to have laptops, and materials are accessed via a Learning Management System (LMS) in a paperless environment. Assessments are 100% online.

A large number of students require the preparatory program. In 2016, over 80% of high school leavers did not meet the English language entry requirement for degree courses. Although this fell to approximately 60% in 2018, this remains a significant number. This is shown in Table 1. 1.

Table 1.1: Students requiring English preparatory programs[2]

	Fall 2016		Fall 2017		Fall 2018	
Campus	%	N	%	N	%	N
Research site	84%	782	54%	541	59%	651
Institution	83%	5564	57%	4290	62%	4208

The *institution* is the largest federal tertiary education provider in the UAE, with a total of over 23000 students studying across 16 campus. The *research site* is one campus of the 16 that make up the *institution*.

1.4 Research Problem and Motivation

There is a clear problem. Technology has been deployed, teachers have been trained, and yet the promised transformation in teaching and learning – a transformation that should be visible as increased student success – has clearly not taken place. The English classroom is lauded as 'state-of-the-art', but this ignores the 'state-of-the-actual' (Selwyn, 2011) that sees large numbers of students failing despite the deployment of technology. In actual terms, almost half of all students who enrol on the preparatory English course do not succeed. This is shown in Table 1.2.

[2] Data collated from the institution portal

Table 1.2: Three-year average numbers for the institution and research site[3]

Campus	Status	2016-17	2017-18	2018-19	3-year average
Research site	Total registered	704	487	586	592
	Failed to progress	300	241	224	255
	Failed %	43%	49%	38%	**43%**
Institution	Total registered	5008	3861	3787	4219
	Failed to progress	2671	2264	1317	2084
	Failed %	53%	59%	35%	**49%**

For an institution to lose 49% of a student cohort is catastrophic. This is a situation, the state-of-the-actual, that must be addressed. Students study in Smart environments using the latest laptops and mobile devices. Materials are delivered to these devices through state-of-the-art learning management systems (LMS) and assessments are carried out 100% online. Lessons are delivered by highly experienced, well-qualified and highly-trained teachers, yet still students are failing to progress. Large numbers of students are experiencing failure multiple times. The government insists that no Emirati be left behind, but many fail to bridge the gap between high school and higher education.

This study aims to identify the causes of this problem, and to discover and attempt to apply solutions.

[3] Data collated from the institution portal

There are also personal motivations to investigate this problem. I have a long history with the institution and with the English preparatory course, particularly in technology initiatives within the department. I was an enthusiastic and active member of a team putting laptops in classrooms in 2011, and played a key role in the iPad initiative of 2012. I have been heavily involved in the implementation of Learning Management Systems, paperless classrooms and online assessment, and I subscribed to Scanlon and Issroff's (2005) assertation that the introduction of technology is something desirable that will lead to more learning. However, my research into iPads (Miles, 2019), classroom collaboration (Miles, 2018) and the contradictions that exist within the course potentially causing failure and attrition (Miles, 2021) have led me in a direction that questions the actual impact of technology, particularly when large numbers of students are failing to progress. If I have been a central player in implementing technology, then I need to take a key role in attempting to solve this issue.

Classroom Technology: Great Expectations

Firstly, the use and deployment of technology must be investigated. Perhaps expectations have been set too high. Limitations have been ignored in favour of the 'imagined limitless potential' of technology (Selwyn, 2011). The reality may be that the impact of technology has been modest and needs realistic consideration rather than the 'excessive optimism' (Hammond, 2014) that often greets 1:1 device initiatives. While literature in the UAE has claimed improvements in attainment for English students, particularly in terms of writing (Mokhtar et al., 2009; Raddawi & Bilikozen, 2018; Tubaishat & Bataineh, 2009), claims echoed for ESL learners in the USA on standardised tests (Grimes & Warschauer, 2008; Park & Warschauer, 2016), results on the preparatory English course do not support these claims. In fact, 1:1 classroom devices are a source of distraction in the UAE, with students using laptops almost

exclusively for non-college work (Awwad et al., 2013) while iPads were described as a 'distracting smorgasbord of fun' (Miles, 2019). Outside the UAE, 1:1 devices have been reported as distracting both for users and those around them (Fried, 2008; Sana et al., 2013). Clearly the distracting nature of 1:1 devices poses a detrimental threat to classroom teaching and overall learning.

Ubiquitous computing (Brown, 2003; Brown & Petitto, 2003; Mei et al., 2018; Weiser et al., 1999) is now the norm. Both teachers and students have 1:1 devices with Wi-Fi access on almost all campuses across the world, and this is 100% true for teachers and students in the UAE. How these devices are being deployed and employed in class by both teachers and students needs careful consideration and examination.

Classroom Practice: Great Limitations

It is an oversimplification to place the potential blame solely on technology. The preparatory English course is laptop-mediated, but is taught face-to-face. English teaching is still largely driven by loose adherence to Communicative Language Teaching (CLT), with an emphasis on collaborative meaning creation and small group or pair work (Richards, 2005). CLT remains a global influence on most published ELT material. How teachers teach matters tremendously, and the pedagogy behind this teaching needs to be aligned with the 1:1 device delivery taking place in the laptop-mediated classroom. The alignment between pedagogy and deployment needs investigation.

Teacher proficiency with technology is also a potential issue. Early 1:1 initiatives in the UAE found teachers were uncertain how to use classroom devices effectively (Saunders & Quirke, 2002; Schoepp, 2005) a state of affairs that continued with iPads (Ali, 2013). Usually this proficiency has been facilitated through training. At the research institution,

teachers are mandated to complete 40 hours of classroom technology centred training each academic year, yet the efficacy and usefulness of this training is questioned by the teachers themselves (Miles, 2017; Miles, 2021; Miles et al., 2021), and student pass rates do not suggest that the training is having an impact on effective teaching. While teachers at the research site may be comfortable and to large degree proficient with classroom devices themselves (Miles, 2019), how teachers are teaching, and the pedagogical and methodological underpinnings of this teaching, also need careful examination.

Research Motivation: The Search for Success

Put simply, the motivation for this research is student success. Students are failing, and the technology that has been trumpeted as the panacea for this lack of success has failed to deliver. This study aims to figure out how the technology is actually working at the research site by examining the interplay of actual deployment, pedagogy and methodology and then, in collaboration with the stakeholders, introduce changes and attempt to find solutions to this very real problem.

The current preparatory English course should be a gateway to academic success, opening the door to a variety of degree programs for Emirati youth. However, despite much heralded investment in classroom technology, ‘Smart’ classrooms and 1:1 devices, this door remains firmly closed for almost half those students seeking entrance. This is the issue that we must address, so that the state-of-the-actual becomes a state of success for a substantially higher number of Emirati school leavers.

1.5 Research Approach

This is a complex problem in need of careful consideration and examination.

There is no simple solution. The need here is for improved collective classroom practice rather than isolated, individual efforts that only benefit small numbers of students in individual classrooms. Large numbers of students are affected negatively by failure, and a collective solution has the potential to affect large numbers positively instead. The problem is a complex one, and therefore any proposed solution will be correspondingly complex. There are many different actors, and many different components, and the approach needs to be systematic and involve collective effort. Making a collective improvement to teaching practice means ignoring the approaches that have failed to address what is a very real issue. The solution is not a top-down management dictated intervention. Nor is it the introduction of yet more technology in a whirlwind of excitement, and neither is it more institutionally mandated training. The approach taken needs to be critical but not dystopian (Castañeda & Selwyn, 2018) and criticality needs to be underpinned by strong theoretical frameworks (Jameson, 2019; Passey, 2019). The approach taken needs to combine these facets in one clear, theory-driven intervention. The answer could lie in a Change Laboratory.

A Change Laboratory: Theoretical Approach

A Change Laboratory is a formative intervention for the development of work activities by practitioners in collaboration with a researcher-interventionist (Virkkunen & Newnham, 2013). The Change Laboratory is deeply rooted in activity theory, and this theory underpins the basis for the approach, the design of the project and also the analysis and presentation of any findings.

In activity theory, all human activity is social, and has intended outcomes. For example, the intended outcomes of teaching activity are the transfer and acquisition of knowledge. Unintended outcomes, in the context of teaching failure and attrition, are evidence of contradictions, or problems. Activity theory, or more exactly activity

systems analysis, allows for the identification and classification of these contradictions. Contradictions can be classified not only in terms of where they occur, but also in terms of how they are expressed by the members of an activity. These are known as discursive manifestations of contradictions. Activity theory, contradictions and discursive manifestations of contradictions will be explained in more detail in later sections.

Activity theory not only provides a framework for the identification and classification of contradictions. It is also the theoretical framework of the Change Laboratory.

A Change Laboratory: Methodological Approach

The Change Laboratory and activity theory are inseparable. Activity theory provides the strong theoretical framework necessary not only for criticality but also transformation of actual practice. A Change Laboratory brings about this transformation through a theory-driven process of interconnected steps that take abstract ideas to concrete implementation by means of a cycle of expansive learning. But what does this mean in practice?

A representative group of actual classroom practitioners will examine the problem as it stands and identify both current and historical causes of contradictions and their manifestations. As the cycle of expansive learning progresses they will discuss, identify and experiment with solutions. As potential solutions are modelled and become concrete it will be possible to address and potentially solve the contradictions causing student failure and attrition. The Change Laboratory is also discussed in greater detail in later sections.

Students are entering pre-university preparatory English courses with high expectations, but are experiencing failure in large numbers. This is an issue the individual can do little

to address, but by deploying the collective effort of the Change Laboratory it is hoped that solutions will be found to the problems identified.

1.6 Research Objectives and Contribution

This project has three main objectives. Firstly, it aims to identify the contradictions causing failure and attrition in a laptop-mediated preparatory English course. Secondly, it aims to provide solutions to these contradictions. These solutions are sought through a direct intervention carried out as a Change Laboratory, giving course teachers direct agency to combine efforts collectively in this search for solutions. Thirdly, this collective effort aims to create a new, revised model of teaching and learning in the laptop mediated classroom. This new model will address and resolve the contradictions presently causing failure and attrition, leading ultimately to improved language learning and greater student success.

Consequently, the following research questions are addressed:

RQ1: What contradictions are experienced by English language teachers in a laptop-mediated federal preparatory English program in the UAE?

RQ2: How can these contradictions be resolved through expansive learning via a Change Laboratory intervention?

RQ3: How can the solutions of the Change Laboratory ultimately foster collaborative language learning in a laptop-mediated environment?

While we should perhaps never lose sight of the state-of-the-art, by focusing on and improving the state-of-the-actual we may be able to make tangible differences to teaching and learning in the technology enhanced classroom, and more importantly to the academic success of the students placed in our care as educators.

1.7 Thesis Structure

This thesis consists of eight chapters. Following the *Introduction*, the *Literature Review* identifies key themes and highlights relevant research. It also describes a gap in terms

of literature and research that this project aims to close. The *Theoretical Framework* describes the theory underpinning this project, activity theory and the Change Laboratory, in some detail, while the methodology and actual research steps taken can be found in *Research Design and Methodology***.** The findings have been divided into two chapters. The first chapter, *Findings 1: Contradictions in the historical and current activity systems*, reports the contradictions manifesting in the historical and current activity systems. The contradictions are described and mapped to the activity system. The second chapter, *Findings 2: The future model of the activity system*, is concerned with solutions and also presents a potential future model of the activity system. The findings are discussed in relation to theory and literature in *Discussion***,** and the final chapter, *Conclusion*, focusses on the project's contribution to knowledge and practice, the impact on policy, the limitations and finally the opportunities that arise for future research. *References* can be found at the end of the thesis, followed by the *Appendices.*

2 Literature Review

2.1 Overview

The English preparatory course occupies a unique position, bridging the gap between K12 and degree level education. Consequently, research concerned with both K12 and tertiary students has been included. Initially research post-2012 was considered as this coincided with the first technology intervention, the iPad initiative, that impacted on the course, teachers and students at the institution. However, this quickly proved limiting and where relevant research previous to this date has also been included. Research was identified using the search functions of Google Scholar and Scopus. The literature is based around three broad, key themes related to the context of the project and also areas highlighted in previous research (Miles, 2019; 2020; 2021). As the English preparatory course is essentially an English language program, English Language Teaching (ELT) is considered first and broken down into areas of theory, collaboration, culture and classroom interventions. Similarly, the use of classroom laptops, online materials and assessments means that Computer Assisted Language Learning (CALL) has also been examined in terms of areas of research and theory. The third key theme, classroom devices, investigates positive and negative impacts, CALL practice and issues related to the nature of student multitasking. The final section identifies the gap in the literature that this project aims to occupy.

2.2 English Language Teaching

The following sections are concerned with the field of English Language Teaching (ELT). Firstly, the links between theory and methods are discussed, and the concept of principled eclecticism among ELT practitioners is introduced. Research into collaboration and interaction in the classroom is examined in terms of ELT and

language learning, and there is a short section on the impact of culture in ELT. Given the interventionist nature of this project the final section highlights examples of teacher-led classroom interventions in an ELT context.

Theory and Method

The field of English Language Teaching (ELT) is an active and productive research area, but despite regular proposals of tentative methods 'no single theoretical position has achieved dominance' (Mitchell et al., 2019, p. xiii). This is not for want of desire. The global status of English in education, where it is now the language of instruction in many countries from primary to tertiary, has led to ongoing review and a near constant search for effective methods, materials and practices (Richards & Rodgers, 2014). Indeed, the concept of methods in language teaching is powerful and has been a preoccupying quest for teachers and applied linguists over the last century of ELT. This can in fact be considered a continuum. Theory is considered first. Methodology then attempts to link theory to practice. A method is then a 'fixed teaching system with prescribed techniques and practices'. However, some practitioners prefer to talk of approach rather than method. An approach represents 'language teaching philosophies that can be interpreted and applied in a variety of different ways in the classroom' (Rodgers, 2001, p. 3). Methods are highly prescribed, approaches are loosely described. This ongoing search means that language teaching has been in a constant state of 'transition and tradition since its inception'(Pica, 2000, p. 1). What is today a tradition started life as an innovation, and it is worth briefly mentioning the traditions of past ELT methods and approaches as they have bearing on today's practices.

The 1950s to the 1980s has been described as the 'age of methods' in ELT. Audiolingualism, Situational Language Teaching and Grammar Translation gave way to Total Physical Response (Asher, 1969), the Silent Way (Gattegno, 1972) and

Suggestopedia (Lozanov, 1978) among others. The 1980s saw a substantive change in ELT with the introduction of Communicative Language Teaching (CLT). In contrast with the prescribed practices of preceding models, CLT is based on a set of broad principles that place it 'clearly on the on approach rather than the method end of the spectrum' (Rodgers, 2001, p. 4). In CLT, language is learnt through using it to communicate, with authentic meaningful communication the goal of classroom activities. Fluency holds high importance, and learning occurs through trial and error. The ramifications of CLT continue to be felt today, and indeed many argue that the general principles are in fact widely accepted around the world (Richards & Rodgers, 2001). As a result CLT still forms the backbone of many ELT course books and much teacher training across the globe. Indeed, in the institution at the centre of this thesis CLT is listed in the curriculum as 50% of the applied methodology in the preparatory English course. CLT is often referred to as the Communicative *Approach* (Swan, 1985), thus different from a 'tightly structured 'method' of teaching' (Mitchell, 2002, p. 33). There is perhaps a preference among modern ELT teachers for the relaxed looseness of an approach over the enforced rigidity of a method.

Principled Eclecticism

The looseness surrounding theory and method in ELT, however, means that practitioners are also not rigid in their adoption of methods (or approaches), even given the dominance of CLT in publishing and teacher training. In fact, CLT is not without its critics. Second Language Acquisition (SLA) theory argues that learners need input that is meaningful and, most importantly, comprehensible (Krashen, 1982, 1992; Krashen, 1985). Learners also need to receive feedback on their use of the language, and be able to ask questions, reformulate and adapt their output. While CLT can adapt input so that it is meaningful and comprehensible, it lacks these processes for feedback

and reformulation. This feedback and reformulation is necessary to achieve really high proficiency, and it is therefore necessary to 'incorporate traditional approaches, and reconcile them with communicative practices' (Pica, 2000, p. 15). This combination of methods and approaches has been called 'disciplined eclecticism' (Rodgers, 2001) and 'principled eclecticism, combining techniques and principles from various methods in a carefully reasoned manner' (Larsen-Freeman, 2012, p. 34). Indeed, today's ELT teacher could be likened to an artist choosing from a full palette of colours in order to make the best picture. Teachers need to be educated to choose the best way rather than blindly follow one method or approach (Larsen-Freeman, 2012; Pica, 2000; Richards & Rodgers, 2014). Teachers need to make informed, educated choices about which methods and materials to employ in order to best teach their students. The strongest teachers are reflective teachers (Hyland, 2019).

It would seem that ELT has arrived at a post-method juncture (Pica, 2000; Richards & Rodgers, 2014), where an increasingly professionalized and qualified workforce of teachers is making informed, educated choices for the benefits of their students. The days of the back-packing native English speaker seeking only to travel are, if not completely over, then at least numbered (Copland et al., 2020; Hyland, 2019; Keaney, 2016). Today's ELT teachers are increasingly well-educated and making well-informed choices over methods and approaches to the language classroom. At the same time, there is a danger that theory and practice disconnects if the lives of teachers and researchers are not parallel (Copland et al., 2020). Practitioners and researchers need to converge to truly link theory, to methodology, to method and approach. The lack of tenured positions for ELT professionals and consequent lack of a serious research agenda (Garrett, 2009) mean that there remains much scope for serious, theory based research and its practical application in the field of ELT.

Collaboration and Interaction in the Classroom

A practice that the observer will see taking place in most ELT classrooms is the use of pair and group work in learner to learner interaction. One area of comparatively recent research investigates learner-learner interaction as a means of solving language problems, scaffolding and the co-construction of new language (Dobao, 2014a, 2014b; Ohta, 2001; Swain, 2000). This draws on the claims of sociocultural theory that all learning is socially situated. Higher cognitive functions first appear on the social plane, then move to the psychological plane once they are considered learnt (Vygotsky, 1978). A novice carries out a new task with the assistance of a more knowledgeable other, an expert. The expert provides support for the novice, scaffolding, that assists the novice in completing the task (Wood et al., 1976). As the novice becomes more proficient, the scaffolding is removed until eventually the novice is able to complete the task by themselves. The process is internalized, and learning is considered to have occurred. Vygotsky's theory of cognitive development is explored in more detail in the Theoretical Framework.

Vygotsky's original novice-expert relationship was based around the fixed one-directional roles of child and adult. However, in L2 interaction the role of the expert is dynamic. No two learners share the same strengths and weaknesses. By working together, a pair or group of learners at the same approximate language level can work together to overcome language problems and produce work well above their individual ability (Donato, 1994; Ohta, 2001; Swain, 2000). Problem solving creates 'collaborative dialogue' (Swain, 2000), a form of 'languaging' whereby learners make meaning, and shape their knowledge and experience, through language (Swain, 2006). From a sociocultural perspective, knowledge is socially constructed through collaborative dialogue, and internalized as individual knowledge (Dobao, 2014b). L2 learning is

mediated through collaborative dialogue (Swain, 2000, 2006). Research shows that learning may in fact be even more successful when employing small groups rather than pairs (Dobao, 2012; Dobao, 2014a, 2014b; Dobao & Blum, 2013) given the wider pool of knowledge and language provided by a larger number of participants. Learner-learner interaction, and their dialogue, is an essential part of the L2 learning process.

Cultural Issues

An area of concern that must be highlighted are potential issues surrounding culture. English is undoubtedly the current lingua franca, and those taking a benign view of this see learning English as merely the learning of skills you will need to be part of a global workforce. From a postcolonial perspective, however, ESL teachers are not only helping students achieve their aspirations, but 'supporting the linguistic, cultural, commercial and increasingly military dominance of the USA and its allies' (Edge, 2006, p. xiii). English teaching professionals act as 'a second wave of imperial troopers' with the unspoken role of 'facilitating the consent that hegemony requires so that the fist can be returned to the glove' (Edge, 2003 in Kumaravadivelu, 2006, p. 14). In other words, English is a hegemonic tool supporting western, Anglophone dominance. This is an extreme view but one that must at least be kept in mind. Perhaps less dramatically, recent research into Communicative Language Teaching (CLT) has questioned the cultural suitability of this approach for cultures and contexts outside those in which it was originally developed. CLT over represents Anglophone ideals and has a hegemonic approach to Western English-speaking culture (Baker, 2015; Kramsch & Zhu, 2016; Thornbury, 2016). Indeed, some argue that the apparent liberalism of the learner-centredness of CLT and other modern methods and approaches could be concealing attempts to manipulate learner behaviour. The emphasis on close monitoring, 'learner training' and precise methodological staging in current practice can be seen as hiding a

subtle agenda aimed at 'correcting' 'non-native speaker' culture (Anderson, 2005; Holliday, 2006). It's not enough to simply learn English. You have to learn it our way. In terms of learner interaction, questions have long existed as to the acceptability of collaborative learning in classrooms in different parts of the world (Oxford, 1997), and recent research suggests students in non-western cultures struggle with the concept of collaboration whether online or face to face (Liu & Lan, 2016). We need to remember that 'the way students are used to learning affects all future learning' (Andersson et al., 2016, p. 426). We cannot presume that our students know how to interact, just because we have sat them in groups or pairs and given them a task. This seems equally true of the preparatory English course, where my own research has suggested that collaboration and interaction, where occurring, are rarely taking place successfully (Miles, 2018). This reflects the findings of an earlier study into a classroom laptop initiative in a UAE university. Quirke and Saunders (2002) found that students used laptops to work individually, rather than in groups, and asked teachers for solutions more often than before, rather than relying on their peers. Similarly, a more recent study cited students' lack of teamwork skills, irresponsibility and indifferent commitment as a major obstacle to classroom collaboration (Ishtaiwa & Aburezeq, 2015), while perceived lack of respect, inappropriate materials and even the very language of instruction may be creating a 'culturally hostile or insensitive environment that is not conducive to learning (Palmer, 2015, p. 78) in UAE classrooms. The English preparatory course and the UAE classroom are unique contexts with specific challenges. The contribution of culture and previous learning to these challenges cannot be ignored.

Teachers in ELT and Classroom Interventions

A final area to consider is research into ELT teachers and classroom interventions. Research into ELT teachers has tended to focus on training. For example, research areas

have included pre and in service training (Roberts, 2016), pre service beliefs (Ghanaguru & Rao, 2017), national training programs and Masters degrees (Karim et al., 2019; Sofiana et al., 2019) and also online language teacher education (Shin & Kang, 2018). In the UAE, research has also focussed on training, particularly where CALL is concerned. While institutionally-led research has been keen to praise the merits of the training offered (Cavanaugh et al., 2013b; Cavanaugh et al., 2013a; Hargis et al., 2014), independent research has painted a less positive picture (Donaghue, 2015). My own research has suggested that where this training has been top down it is less warmly received and held as less useful, especially when delivered at a pace described as akin to 'being water-boarded' (Miles, 2017). Note that this training was related to a top-down management driven intervention, the UAE's iPad initiative.

Examples do exist of teachers themselves carrying out interventions to improve student learning. For example laptops were used to improve spelling in students with learning difficulties (Eden et al., 2012) and in another example research aimed to identify appropriate interventions for MALL (Jordaan, 2014). Interventions in the UAE, however, have largely been top-down, implemented by management or the Ministry of Education, such as the previously mentioned iPad initiative in 2012 and the subsequent reintroduction of laptops in 2017.

While small-scale classroom action research does take place, it needs both teacher motivation and institutional support (Edwards & Burns, 2015) and this has not been the case recently in the UAE. It may be that teachers are carrying out interventions, but are not reporting this fact in the literature. Medgyes (2017), for example, argues that teachers do not see academic research as relevant. Teachers are self-evaluating, modifying their practice and sharing this with others, but not via academic writing. For

the author, more weight needs to be given to 'teacher-inquirers' as opposed to outsider researchers. In my own context teachers expressed a clear preference for professional development delivered by 'department experts' – peers delivering training on technology they are using in class with clear purpose and immediate application in the classroom (Miles, 2017). As we have seen, researchers have raised concerns over the lack of a clear research agenda in ELT and CALL, and point to the parallel lives of researchers and teachers and the lack of tenure for many ELT teachers today (Copland et al., 2020; Garrett, 2009). Teachers are carrying out interventions, but these are not being advertised or reported beyond the immediate classroom they affect, or at least not beyond that immediate department. There are examples of research using the theoretical framework of activity theory in the UAE (Al Ali, 2020; Miles, 2020; 2021), but while there are examples of bottom up interventions, in particular Change Laboratories (Barma et al., 2017; Englund, 2018; Nleya, 2016) few examples can be found in the literature connected to teaching English (Mbelani, 2018; Montoro, 2016). Change Laboratory research has highlighted the challenges of creating new models when the participants lack the mandate to actually make changes to practice (Englund & Price, 2018). Similarly, there is the suggestion that the adoption of neoliberal management practices means that academics lack the agency necessary to make improvements in educational institutions (Vähäsantanen et al., 2020), and that there is a struggle between teachers and academics and those in positions of authority (Di Napoli & Clement, 2014). This perhaps applies even more strongly to ELT teachers lacking tenure. Universities and similar institutions are complex activity systems, and partnership and equality between academics and authorities is needed for the system to work effectively (Saroyan, 2014). Even where the participants have agency, there is no guarantee of Change Laboratories creating a new, finished model. This can be the result of the

amount of time and commitment required (Virkkunen & Newnham, 2013) and by their very nature Change Laboratories are ‘pilot units’ (Bligh & Flood, 2015), limited initially to local exploration (Garraway, 2020).

Where interventions are concerned, teachers may be better educated and more professional than ever before (Hyland, 2019), but this is not translating into teacher-led, theory based intervention at the level of academic research.

2.3 Computer Assisted Language Learning

The English preparatory program is delivered 100% on laptops, with online materials delivered through learning management systems, online assessments and an environment that exploits Smart screens and high-speed Wi-Fi networks. The field of Computer Assisted Language Learning (CALL) is therefore a key theme. Following a general overview, CALL research is examined and then the areas of CALL and Technology Enhanced Learning (TEL) theory are discussed.

An Overview of CALL

The use of computers in education has a long history, and this is particularly true of language education and the field of English Language Teaching (ELT). English teachers, and perhaps foreign language teachers more generally, have often in ‘the field of computers and education…[been] in the vanguard’ (Levy, 1997, p. 3). Computer-assisted language learning (CALL), defined by Beatty (2013) as ‘any process in which a learner uses a computer and, as a result, improves his or her language’ came into common usage as a term in the 1980s, and as technology has advanced over the last four decades has ‘progressed and evolved at a remarkable rate’ (Levy & Stockwell, 2013, p. 1). CALL is both a ‘middle-aged multidisciplinary field’ (Warschauer, 2013 in Tafazoli, 2019) while remaining ‘filled with areas that are unknown and in need of exploration’ (Beatty, 2013, p. 22). CALL has mirrored developments in English

Language Teaching, moving from the behaviourist approaches of early language laboratories, through communicative approaches and towards perhaps becoming more integrative in the present day (Lee, 2000). Indeed, it was behaviourism that drew early CALL advocates. In the audiolingualism of the 1950s and 1960s, students learned languages through dialogues. New structures and language were introduced through these dialogues that students then learnt and practiced as rote. This was highly attractive for the developers of early CALL software, who realized the relative ease of programming drill and practice exercises that lacked open-endedness and were systematic and routine in character (Levy, 1997). Even today, many ELT online resources remain essentially audiolingual in nature and may not have overcome earlier accusations of being 'structure-bound and reflecting the audiolingual approach of the 1960s' (Sanders & Kenner, 1983). There is even today a focus on individual learning that does not give enough opportunity for interaction and negotiation in the target language (Berns et al., 2016). Audiolingual behaviourist approaches cast a long shadow on CALL.

Areas of CALL Research

Audiolingualism aside, CALL remains a broad field, and indeed one of the problems for teachers and researchers is 'how to absorb and relate what has been achieved so far, and how to make sense of it' (Levy & Stockwell, 2013, p. xi). CALL in fact acts as an umbrella term. Rather than representing one finite area, the term CALL pulls together a diverse field. As new technologies have emerged, new areas and acronyms have been created and investigated. A summary of the current terms that may fall under the umbrella of CALL can be seen in Table 2.1.

Table 2.1: CALL and related acronyms

CALL	Computer-assisted language learning	Focuses on the learner
CAI	Computer-aided instruction	Focuses on the instructor, teacher centred
CALT	Computer-assisted language teaching	Focus on the teacher
CAT	Computer-assisted teaching	Any subject, not limited to language teaching
CBT	Computer-based teaching	Computers used to teach discrete language skill
CMC	Computer-mediated instruction	L2 learners communicate with L1 speakers via computer
CMI	Computer-mediated instruction	Distance learners use computers for communication with tutors
ICALL	Intelligent computer-assisted language learning	Computer software gives feedback on performance
WELL	Web-enhanced language learning	The Internet is the medium for instruction

MALL	Mobile-assisted language learning	Mobile devices are used by learners for language learning

(Tafazoli et al., 2019)

The plurality of terms is reflected in the research. Areas include telecollaboration and distance learning (Lamy et al., 2013; O'Dowd, 2013), 'vodcasting' (self-selected video casts) to improve listening among distance learners (Faramarzi et al., 2019), virtual worlds in online 3D environments (Sadler et al., 2014) and digital feedback (Ware & Kessler, 2013). CALL and learner autonomy is another area of common interest (Bahari, 2019; Blin, 2004; Reinders & Hubbard, 2013; Schwienhorst, 2012)including learner autonomy and informal language learning (Godwin-Jones, 2019). Other recent research has looked at how automatic writing evaluation (AWE) has been used by Chinese university students (Li et al., 2019) and how interactive courseware has also been used to improve students' writing in English (Tsai, 2019). There has also been research into CALL systems providing corrective feedback in spoken grammar practice for autonomous learners (Penning de Vries et al., 2019), and the successes or otherwise of the flipped classroom in different international contexts (Webb & Doman, 2019). The use of mobile devices, particularly for self-directed learning, is evident in much recent MALL research. Teachers need to recognize that language learners may desire to study anywhere, any time (Kim et al., 2019), a situation that is facilitated by mobile devices. There are of course various applications and online games to support MALL. However, researchers report that while students are positive, and report favourably regarding gamification and the flexibility of such applications, actual sustained usage and motivation remains low (Blume, 2020; García Botero et al., 2019; Loewen et al.,

2019). Attitudes to CALL in general are favourable both among students and teachers, although while some report no differences based on age, gender and educational background (Tafazoli, 2019; Tafazoli et al., 2018) others do report resistance from teachers in some contexts (Mei et al., 2018), and one cannot ignore culture when integrating CALL into teachers' pedagogy (Alresheed et al., 2017). In general, much of the broader CALL research is focusing on autonomous use and distance learning contexts, while research concerned with face-to-face contexts is focusing more on teacher and student attitudes. There is less recent interest on what students and teachers are actually doing in class, face-to-face, with computers and classroom technology.

CALL and TEL Theory

Despite, or perhaps because of, the plurality of terms falling under its general umbrella CALL as a field lacks a common theoretical framework. CALL has been influenced by a number of other disciplines, for example, psychology, AI, computational linguistics, instructional design, human-computer interaction (Levy, 1997) and various theories of Second Language Acquisition (SLA) (Chapelle, 2009). However, a single, unifying theory remains elusive. Researchers recognize that the need for theory-based research and development in CALL, 'in a principled fashion led by theoretical insights' is the ideal (Levy & Stockwell, 2013, p. 5) but the fact remains that much CALL practice remains based on teacher intuition and practical needs. It is 'practitioner-led, not research-based' (Levy, 1997, p. 4). Rather than being theory based, the jumping off point is often based instead on a student need or specific language points – students need to learn *X* or I need to teach them grammar point *Y*. Researchers may make use of theory, but practitioners are still using material built on 'the intuitions of artful instructors' (Resnick & Johnson, 2020, p. 139). It may be that the nature of modern ESL employment is partly to blame. Few, if any, ESL professionals hold tenure positions in

universities, and this is a serious hindrance to developing research agendas in the field. Indeed, 'CALL has the capability to make far greater contributions to language education than most institutions, or most language education organisations – perhaps even most CALL specialists – yet realise' (Garrett, 2009, p. 736). Universities need to recognize CALL as a serious field, rather than a mere practical skill taught by instructors. Perhaps more focused theory-driven research will lead to more theory-based teaching.

Of course, theoretical frameworks have been applied to CALL. As well as Second Language Acquisition (SLA) theories including psycholinguistic theories and theories of human learning and language in social context (Chapelle, 2009), researchers have also investigated cognitive theories in relation to CALL (Resnick & Johnson, 2020), for example. Relating more to the technological dimension of CALL, there have been a number of investigations using TPACK (Mishra & Koehler, 2009; Mishra & Koehler, 2006) as a theoretical framework. There are a number of examples applying TPACK in ESL classrooms in various contexts (Fathi & Yousefifard, 2019; Parr et al., 2013; Tai, 2013; Tseng et al., 2019). An example of another technology-centric framework is the SAMR Model (Puentedura, 2010, 2012). In the UAE, the SAMR Model has informed research into teachers attitudes to iPads in ESL classrooms (Miles, 2019) and has also been combined with TPACK to study the efficacy of iPad implementation and integration over the initial stages of an intervention (Cavanaugh et al., 2013b; Cavanaugh et al., 2013a; Hargis et al., 2014).

However, a single unifying theory remains elusive. CALL research either borrows from other related fields, or for many practitioners remains instead a practical pursuit devoid of theoretical underpinnings. There is serious scope for theory-based research both in

the wider field of CALL as a whole and the narrower perspective of the face-to-face laptop mediated CALL environment.

2.4 Classroom Devices

The language laboratories of previous generations of CALL have now become obsolete, and dedicated computer rooms have suffered a similar fate in the face of ubiquitous computing. By accident or design, few classrooms in modern education are device free. Classroom device initiatives take two main paths; one-to-one (1:1) device initiatives and Bring-Your-Own-Device (BYOD). 1:1 device initiatives are often institutionally initiated and implemented, such as the iPad initiative in the UAE, while other institutions have taken a device agnostic approach with (BYOD) projects. Organized interventions aside, the mobile phone is all-pervasive, and except in situations where education administrations can enforce bans on usage 'mobile phones are truly pervasive' and 'truly ubiquitous' (Cook & Das, 2012). Whether we like it or not, devices are in-class and students are online, a reality that educators need to acknowledge and accept (Marinagi et al., 2013; Norris & Soloway, 2008). Literature on classroom devices is broad and growing, and takes both positive and negative stances. We will consider the positive impact of classroom devices, CALL practice, barriers to implementation, negative aspects and differentiate between positive and distractive multitasking.

The Positive Impact of Classroom Devices

The wider view in education that has seen classroom technology as positive and a tool that can only lead to more learning (Scanlon & Issroff, 2005) has meant that much literature has taken a positive stance on the impact of one-to-one devices on student learning. For example, in the case of ESL students, researchers point to examples of significant improvements in writing abilities. Studies in the USA describe clear gains in scores in standardized writing assessments in one-to-one laptop programs (Grimes &

Warschauer, 2008; Park & Warschauer, 2016). In the UAE researchers make similar claims, again in relation to students' writing scores (Mokhtar et al., 2009; Raddawi & Bilikozen, 2018; Tubaishat & Bataineh, 2009). Students in the Gulf region in general and the UAE in particular do badly in standardized tests such as the IELTS where writing is a component [4]and the claims of 1:1 advocates regarding the possible benefits of such initiatives are therefore particularly attractive.

Beyond the language classroom, researchers have recognized the potential for increasing student engagement through technology. Realising that 'students learn more when they actively engage in the classroom' (Bergstrom et al., 2011, p. 1), lecturers have experimented with the use of online, instant, interactive feedback tools, such as the 'fragmented social mirror' (Bergstrom et al., 2011) that allows for anonymous, instant text interaction and polling tools and clickers in attempts to engage students (Stowell, 2015). In general, advocates of 1:1 initiatives have been keen to report the successes of such programs, perhaps unsurprisingly given the investment and hype that has accompanied the projects. Research has concentrated on the actual implementation of such initiatives in terms of infrastructure, training teachers and impact on the community and parents rather than what is actually occurring in class.

CALL Practice

Research into CALL has also tended to ignore what is actually happening with devices in class. Research concerning classroom devices, CALL and learner interaction has tended to focus on the use of Web 2.0 tools such as wikis, blogs and forums, particularly in terms of writing and revising texts collaboratively (Arnold et al., 2012; Ebner et al.,

[4] This is further expanded on in the Research Design chapter

2008; Miyazoe & Anderson, 2010; Woo et al., 2013; Zheng et al., 2015). The focus here is more on the technology and the affordances of Web 2.0 tools rather than the actual learners themselves. On the other hand, some research has in fact focused instead on what students are actually doing in class with devices. For example, Andersson, Wiklund and Hattaka (2016) look specifically at how students actually work together with laptops in class. They found that collaboration occurs face-to-face and is not computer-mediated. Students discuss the task collaboratively, often dividing parts of the task between group members for example. Students then work individually to complete the tasks on their computers, but cooperatively in the sense that there is a responsibility to complete the overall task as a group. Interestingly, certain deployment patterns, or 'constellations', were found to be more effective. In 1:1 device initiatives, the deployment is normally that – one device per student. Andersson et al., however, found that alternative constellation patterns had differing success in terms of student engagement. Constellations such as 1:2 and 2:4 (one laptop between two, two laptops between four) were more effective than constellations involving three students (1:3, 2:3 etc.). In these cases, one of the three students was often quickly found to become inactive during the group work, inactivity that was, if not accepted, 'at least not contested' (2016, p. 424). This research shows that it is necessary to firstly carefully consider the nature of group tasks to encourage collaboration and secondly to consider too the actual deployment of classroom devices into effective constellations. This is an area for further research.

Barriers to Successful Classroom Device Implementation

Despite the reported successes of classroom device initiatives and the generally positive attitude of research towards TEL, barriers clearly exist to the successful implementation of classroom devices, whether BYOD or management-led top-down initiatives. An

early study into a laptop initiative in a UAE federal university identified four main barriers: 1. Culture, 2. Gender, 3. Infrastructure and support and 4. Faculty (Saunders & Quirke, 2002). The later iPad initiative in UAE federal institutions (2012) recognized the existence of barriers but focused largely on the fourth barrier, teachers, and in particular on teacher training in order to overcome this barrier. Researchers concentrated on management-led teacher training events, and painted a largely positive picture of professional development, extrapolating from this that training was successful and therefore more successful teaching and improved learning would be the result (Cavanaugh et al., 2013b; Cavanaugh et al., 2013a; Hargis et al., 2014), a view not necessarily shared by teachers (Donaghue, 2015).

Research also recognizes that teachers are not the only barrier, and mentions the importance in K12 contexts of including parents, the 'key to BYOD success' (Kiger & Herro, 2015, p. 51). While teachers and students may be comfortable with technology, parental lack of skill may lead to feelings of alienation (Parsons & Adhikar, 2016). However, much research still focusses on the important role of teachers in the success or otherwise of classroom device initiatives. These teacher-centred barriers can be broken down into two clear categories; external barriers and internal barriers (Ertmer et al., 2012; Kelly, 2015). External barriers include hardware, software, infrastructure and support. Time and training also fall into this category. The internal barriers focus on the teachers' own beliefs, values and experience with technology. It is perhaps easier for institutions to control and measure the success of improvements to external barriers such as hardware and infrastructure. Measuring successful teaching is more problematic, yet teacher beliefs and readiness, through training, are still seen as strong indicators of the potential success of 1:1 initiatives (Inan & Lowther, 2010). How well teachers can use the devices, both in terms of their internal perspectives and external

observations, tends to be the focus of evaluating 1:1 device initiatives, rather than what is actually happening in the classroom. In the resource-rich UAE environment, external barriers may be less of an issue, but despite attempts to train teachers and break the internal barriers issues remain, and the expected improvements to teaching and learning have not occurred. How far internal and external barriers influence this is an area for investigation.

The Negative Impact: The Backlash Against Distraction

At the same time, the picture is not wholly positive. Few educators would disagree that engaging students can lead to more successful learning. However, rather than engaging students there is a significant and growing body of research that is pointing to classroom devices as a major source of distraction (Andersson et al., 2016; Goundar, 2014; Jackson, 2012). Rather than facilitating engagement, 1:1 devices and ubiquitous computing are perhaps leading to decreased participation, decreased attention in classes and consequently lower levels of achievement and learning. Fried (2008) found that students were on average spending 23% of class time on non-class related activities such as checking emails, playing games, surfing the Internet and so on. Of more concern, Fried found that these students were more likely to achieve lower academic grades, even after factoring in attendance and overall ability. Faculty frustration has boiled over, leading to a 'true backlash against laptops' (Fried, 2008, p. 907), with some teachers manually unplugging wireless routers and others insisting on laptops closed in class in an attempt to get students offline and on task. More recent research also supports Fried's claims that students spending more time on non-class related work that is those that are distracted by their laptops in class, are obtaining lower academic scores. Gaudreau, Miranda, & Gareau found that '[h]igher usage of school-unrelated laptop during the semester was related to lower end of semester grade point average' (2014, p.

252) ,while for Kraushaar & Novak there is a 'statistically significant inverse relationship' between what they describe as 'distractive multitasking' and lower academic grades (2019, p. 241).

The situation is not limited to western institutions. In the UAE, students in one university also admitted to almost exclusively using laptops for non-college related tasks (Awwad et al., 2013), while 55% of UAE students surveyed more recently admitted turning to mobiles during class as they 'zone out' through boredom (Genena et al., 2019). It seems students in the UAE are also engaged in distractive multitasking. My own research supports this and suggests that there may well be critical issues with distraction and 1:1 devices. One teacher described iPads as 'a distracting smorgasbord of fun' that caused real classroom management issues in terms of student engagement and attention to class (Miles, 2019), while the reintroduction of laptops has seen teachers returning to paper in attempts to gain a modicum of control over what students are doing during lessons (Miles, 2021). Minds have always wandered during classes, but 1:1 devices are providing a ready access to media distractions and this is proving damaging. The ability to 'maintain attention while engaging with a task, whether it be listening to a lecturer or writing a paper, is undeniably crucial for success' (Wammes et al., 2019, p. 76), but media access and the distractions it poses are having an extremely negative effect. For Patterson & Patterson, computer use is significantly detrimental, particularly among low achieving, male students (2017). Indeed, some researchers go as far to suggest that any computer access at all, even under extremely controlled circumstances, is detrimental to student success. For example, researchers at the US Military Academy, a highly competitive institution with highly motivated students, found grade point averages dropped by as much as one-fifth of a standard deviation when computer use was allowed in the classroom (Carter et al., 2017). This gives

support to the question as to whether institutions should, in fact, ban laptops as a matter of policy (Elliott-Dorans, 2018; Yamamoto, 2007). However, this seems a Luddite solution and is `impractical in a world consisting of a 'generation of multitasking students' (Gaudreau et al., 2014, p. 253) whose lives are 'saturated in media' (Roberts et al., 2009, p. 314).

Distractive vs Productive Multitasking

The distractive nature of devices is a central criticism from those who believe the classroom should be device free. It is therefore important to consider the fact that what a teacher sees as distractive behaviour may in fact be productive. Central to this is the concept of multitasking. Multitasking, it can be argued, is a part of the modern classroom and students need, in fact, to learn to multitask effectively in today's world (Kraushaar & Novak, 2019). Indeed, we need to able to distinguish between effective, productive multitasking and ineffective, non-productive or distractive behaviour. There is a clear difference between the student using a mobile device or laptop to check key terms online during a class, and the student watching unrelated YouTube videos or talking online with friends in the same lesson. Neither use is necessarily sanctioned in class, and the challenge for the teacher is to differentiate between them. One obstacle to this differentiation might be in fact the attitudes that students and teachers are bringing to class. For students, unsanctioned use is in fact 'self-selected purposes' (Leander and Frank, 2006 in Knobel & Lankshear, 2007). Modern students expect, indeed need, to be able to multitask in order to perform effectively, whether to check information instantly in related activity or to surf the Internet, talk with friends and participate in other non-related activities in order to stave off boredom. What the teacher sees as 'cyberloafing'(Wu et al., 2018) might in fact be aiding learning and a necessary part of the modern students' approach to the classroom. For Knobel and Lankshear

(2007) this is evidence of two conflicting mind sets. Teachers bring a mindset to the classroom that expects, traditionally, 100% attention from the students to the task at hand. Students, on the other hand, expect to engage in several tasks at the same time. A student can, in their mindset, be focused on the classroom task and at the same time check social media and other non-related activity. Attention is no longer exclusive perhaps. Furthermore, in the traditional mindset, education is 'scarce'. Knowledge is a commodity that educational institutions share and measure the acquisition of. The new mindset, however, sees expertise and knowledge as hybrid and collective, something to be distributed that is freely available. If a teacher sees themselves as the sole source of knowledge, and expects a single-minded devotion to their teaching from students, then they will be sorely disappointed. This clash of mindsets can only bring about conflict and contradiction in the modern classroom.

Classroom Devices: A Summary

In short, research into classroom devices, if not yet completely polarized, is falling into two distinct camps of thought. While one camp sees the classroom device as perhaps the utopian solution, the other, while not denouncing device initiatives as a dystopian disaster, sees the truth perhaps as one of limited realities. The challenge for the researcher is to occupy the middle ground of realism and practicality in the modern digital world. Research should not be utopian, but should recognize and acknowledge the reality of classrooms today. Devices, whether laptop, tablet or mobile, are here to stay. The challenge now is to realise their potential, and overcome their shortcomings, in the search for improved teaching and learning.

2.5 The Gap

To conclude, the field of CALL is broad and wide-ranging. Much recent research has concentrated on the many offshoots of CALL such as MALL and often focused on

autonomous use and distance learning contexts. There is the suggestion that audiolingual approaches still pay a major part in much CALL material, consequently preventing learner to learner negotiation and interaction. Where there has been research into face to face CALL, this has tended to focus more on students and teacher attitudes. While theories have been applied to the study of CALL, much practice is based on the pragmatic use of technology, and the lack of recognition for CALL practitioners is perhaps fuelling the lack of a consistent research agenda. There is serious scope for more theory-based research in the field.

Research into classroom devices falls generally into two camps. One side takes a largely positive view of the implementation and use of laptops, tablets and mobile devices in classrooms. However, this research often concentrates on perceptions of how well teachers are trained to use the devices rather than what is actually happening in the classroom. The other side, taking a more pessimistic view, points to the widespread distraction caused by classroom devices and raises questions over productive versus distractive multitasking, and a potential generational clash of ideals between educators and students. This is, however, a limited view, and ignores the reality of a world where technology and devices are ubiquitous and all-pervasive.

Like CALL, ELT is a broad field lacking a single unifying theory, despite the continual search for and application of theory-based methods and approaches over the last 100 years and more of language teaching. Rather than one method or approach dominating, it is felt that most teachers now practice a ‘principled eclecticism’, making educated choices from a variety of approaches and methods in order to best serve their students, although CLT remains a key influence on most modern ELT. Research recognizes the importance of classroom interaction, but questions how this is being facilitated or

hampered by classroom devices, and there are clear potential issues surrounding culture in the expectations and methodology of ELT. Where teachers themselves are concerned, research has focused on training, particularly where technology is concerned. Interventions have largely been top-down and driven by management or ministry initiatives. Where teachers are carrying out interventions, this is not being reported in the literature on a large scale. As with CALL, the lack of tenure for ELT professionals combined with an over-practicality and disconnect between researchers and classroom practitioners may be at the root of this chasm between ELT teachers and academic research.

This project carries out a teacher-led, bottom up intervention that is strongly rooted in theory at all stages of the research, from design to implementation to data analysis. The project focuses on face-to-face device usage in a laptop mediated environment. While devices are central to the project, as an English preparatory course ELT also plays a major role, with the overarching aim of making teaching more effective through collective effort. Governments and institutions both globally and in the UAE continue to see technology as the key to improved educational performance, and English is increasingly the language of instruction from primary to tertiary. By identifying the problems potentially causing failure and attrition in the English preparatory course, this project aims to find teacher-led solutions to these problems, and ultimately to create a new model for face-to-face teaching in laptop-mediated environments that is more broadly applicable in contexts beyond the current project. This is the gap this project aims to occupy.

3 Theoretical Framework

This project carries out a direct intervention in order to firstly identify and secondly attempt to solve the problems causing failure and attrition in the Preparatory English program. It seeks to do so through a theory-driven process of expansive learning, re-mediation and development known as a Change Laboratory. Direct agency is given to the participants under the guidance of a researcher-interventionist. The background, theoretical underpinnings and justification for its deployment are described in the following section.

3.1 The Need for Theory-based Criticality

In the field of Technology Enhanced Learning (TEL) classroom technology has been championed as a panacea, a desirable and beneficial tool in a teacher's armoury that can only have a positive impact on teaching and learning (John & Wheeler, 2015; Livingstone, 2012; Scanlon & Issroff, 2005). More recently, however, this utopian view has been challenged. Scholars have argued that focusing on the perceived benefits of TEL has wrongly concentrated on the 'state-of-the-art' and failed to report on the 'state-of-the-actual' (Selwyn, 2011). The successes of TEL have been brought to the fore by enthusiastic scholars and practitioners, while failures and less positive voices have been relegated to the side-lines. However, research is now emerging that problematizes the claims of TEL. Where such work previously ran the risk of being labelled dystopian (Castañeda & Selwyn, 2018) , the call for increased criticality is now increasingly recognized. This criticality needs to be underpinned by strong theoretical frameworks (Jameson, 2019; Passey, 2019), yet many papers remain vague or wholly lacking in their use of theory (Hew et al., 2019).

The framework to combine both criticality and a strong theoretical framework already exists. One possible framework is Cultural Historical Activity Theory (CHAT). CHAT frees the researcher from techno-centric perspectives and allows for the examination of the complex interrelations of the context where the technology is employed (Murphy & Rodriguez-Manzanares, 2008). It possesses a 'utility for enquiry' (Bligh & Flood, 2017, p. 138) that 'provides a language and conceptual toolkit' (Hopwood & Stocks, 2008 in Bligh & Flood, 2017) to describe and analyse 'complex social situations such as education' (Murphy, 2013, p. 45). In addition, the principle of contradictions central to CHAT encourages and supports critical analysis and identifies areas in need of modification and transformation. Finally, the concept of expansive learning allows for abstract ideas to become actual concrete practice through the mechanism of the Change Laboratory. The 'best kept secret in academia' (Engestrom, 1993, p. 64), CHAT can guide all stages of theory-driven research, underpinning the design and collection of data, the analysis and presentation of results, binding all to a strong theoretical framework that not only promotes criticality but encourages the discovery of concrete solutions to real world problems.

3.2 The Theoretical Background

The Change Laboratory cannot be separated from CHAT. The theoretical basis of the Change Laboratory is strongly rooted in CHAT, and 'understanding the theory-methods relations is crucial' (Bligh & Flood, 2015, p. 142). In order to gain this understanding, it is first necessary to attend to the 'specific dialectical view of change and development of human activities behind it' (Virkkunen & Newnham, 2013, p. 29).

Marxism and CHAT: Three Core Positions

Dialectical ontology grew from nineteenth century Enlightenment questions over the nature of being and activity. It developed through thinkers such as Hegel in response to

Kantian dualists and was then adopted and refined further by Marx. CHAT itself draws heavily on Marx for its theoretical underpinnings which form 'the origin of many core positions of activity theory' (Bligh & Flood, 2015, p. 144).

The first core position is the concept of *dialectical materialism*. In what Virkkunen and Newnham (2013) call common or everyday thinking, objects and ideas are isolated from individuals and are fixed. However, these seemingly separate and disparate phenomena are in fact connected elements. Reality is the result of a complex interplay between these elements. In dialectics, the process of interaction is primary, and objects themselves are actually moments of these processes, or 'moments congealed in thinking' (Virkkunen & Newnham, 2013, p. 30). The individual – the actor – moves through the world, identifying themselves with a certain way of thinking and acting until they meet an obstacle, be it internal or external, that challenges this. The actor is forced to act in reaction to this challenge. They stop, step back, reflect and seek ways to overcome the obstacle. Development then takes place when the actor is able to creatively overcome the problem, deepening their understanding and developing new ways of thinking and acting. This changes the relations between the actor and their environment, the system they are part of. Humans overcome these obstacles through the use of cultural artifacts, physical tools and ideas that have been previously developed that are now put to new uses in order to solve the issues at hand. In other words, we look to the past to find solutions to our present problems – a hammer, for example, is just a culturally more developed rock. We fight today's wars with the 'battle cries and costumes' of our ancestors (Marx, 1852/1979, pp. 103-104). In short, everything that exists is material. Thoughts and concepts are reflections of material objects. Life is then a series of conflicts and contradictions between these material objects. Solving these conflicts and

contradictions through the use of cultural artifacts leads to human development. Change does not come from without, or within, but from the relationship between them.

The second core Marxist position concerns *ascending from the abstract to the concrete*, and relates directly to human development. This is an intertwined, interrelated process of analysis and synthesis. Firstly, humans confront the complex world of interconnected, complex reality. This causes conflict with their current way of being and thinking. Secondly, humans attempt to make sense of and overcome this complexity through abstract concepts. At first, these concepts are weak and insufficient. However, as these concepts are applied they are analysed and developed. These abstract ideas are used to examine concrete reality until eventually a *thought-concrete* emerges, and conceptual understanding is thus developed. Human consciousness develops from the activity of making sense of the world we confront. Concrete practicality outweighs abstract idealism.

The final core Marxist position highlights the *importance of change*. Mere introspection is insufficient. It is not enough to simply describe the world, practical change is needed. The abstract has no point if concrete applications are not created. Intervention far outweighs interpretation, and the priority is "practical-critical" activity. As Marx states, 'the philosophers have only *interpreted* the world in various ways; the point is to *change* it' (1852/1979, pp. 5, emphasis in original). The challenge for humans is not simply to confront and understand the world we live in, but to confront, understand and ultimately shape it.

First Generation Activity Theory: Vygotsky and Mediated Activity

The first generation of activity theory was the result of the work of Vygotsky and other scholars during the early years of the Soviet Union. Vygotsky draws heavily on Marx

in the development of activity theory and dialectical-materialist psychology. A key concept in Vygotsky's work is *internalization*. Put simply, human consciousness arises through the internalization of the external concrete world. We face the complex realities of concrete external reality, which we then internalize through the process of making the abstract concrete. We meet an external obstacle, consider, reflect and seek to solve it, thereby creating internal thought-concretes. Again, all our ideas, thoughts and concepts are concrete reflections of external objects.

Vygotsky also introduces the concept of *mediation*. This is central to and a key concept within activity theory. Mediation implies that two items are connected by means of a third that lies between them that causes them to interact and interrelate. In social sciences this implies that the two items are i) opposite poles, ii) part of a totality and iii) changed or altered in some way by the mediating object (Bligh & Flood, 2015, p. 146). Mediation occurs in two ways. Firstly, it is the basis of all activity, with mediation occurring either through physical or psychological tools and artifacts. Secondly, mediation is related to consciousness activity. We have internalized socio-historic forms of mediation and we use these to mediate between opposing poles. Basically, all artifacts, whether physical, psychological or related to consciousness have been developed socially and culturally along historical lines. Again, we fight today's battles with yesterday's weapons, but this very act causes development to take place. Mediation is constant evolution, where tools are 'cultural mediators that are used for changing the external world…for reaching an otherwise unreachable objective' (Virkkunen & Newnham, 2013, p. 39). Cultural mediators also include signs. Signs are psychological tools we use to help us complete complex chains of reasoning. The most important signs, for Vygotsky, are 'the words of natural language and the concepts to which they refer' (Virkkunen & Newnham, 2013, p. 39). Like tools, language develops socially,

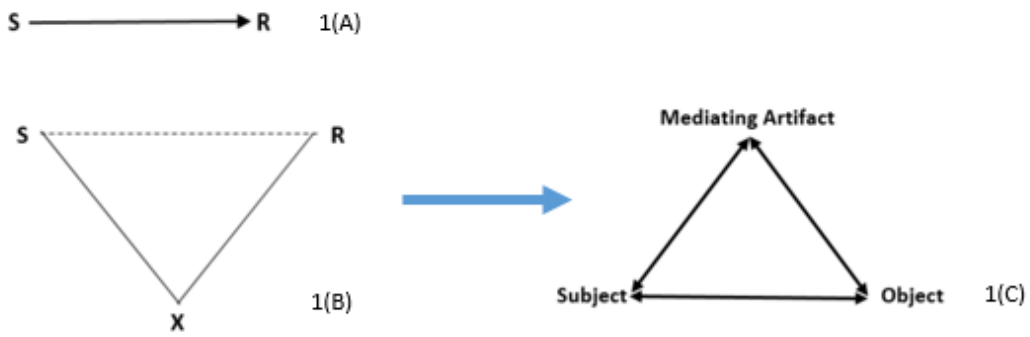
culturally and historically and allows us to collaborate with others in mediating our environment.

The concept of mediation leads us to dual or *double stimulation*. As the name suggests, double stimulation has two parts, and was employed by Vygotsky as a way to study internal and external behaviour and development. Vygotsky used the example experimental context of a child (Vygotsky, 1978). The subject is given a task. This task cannot be completed using existing skills. This is the first stimulus. A neutral object – the second stimulus – is then placed nearby. The child then involves this second stimulus in order to solve the problem. In solving the problem, the second stimulus becomes a tool, artifact or sign, and is eventually internalized. This internalization must take place if double stimulation is to be deemed as having been successful. Vygotsky employed double stimulation in his study of developmental change, or developmental research. This led to the identification of the *zone of proximal development*. Vygotsky defined this as 'the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers' (Vygotsky, 1978, p. 86). In other words this is the distance between individual problem-solving capability and the ability to solve problems with the help of a second stimulus. This could be a physical tool, a concept or idea, or even a more knowledgeable other, an expert colleague to help solve the problem at hand. The concept of double stimulation is central to the Change Laboratory. Essentially, the Change Laboratory is attempting the real-world application of Vygotsky's developmental approach.

Vygotsky's idea of the mediated act is represented in the triangular model shown in Figure 3.1. Simple, elementary behaviour suggests a direct line between stimulus (S) and response (R) (Figure 3.1A). However, in cultural mediation of actions the second stimulus

acts as an intermediate link, and 'the simple stimulus-response process is replaced by a complex, mediated act' shown in Figure 3.1B (Vygotsky, 1978, pp. 39-40). This is commonly now shown as the triangular model showing subject, object and mediating artifact (Figure 3.1C).

Figure 3.1: Elementary behaviour (A), Vygotsky's model of mediated behaviour (B) and the common representation (C)



Second Generation Activity Theory: Leontiev and Collective Activity

The work of Vygotsky is considered first-generation activity theory. Vygotsky's ideas were further developed by his disciple, Leontiev (Leontiev, 1981; 1978) in second-generation activity theory. Vygotsky's ideas of artefact mediated activity are important, but not sufficient to understand human activity. One must also consider the object of human activity, and the societal and hierarchical division of labour. The object of an activity has a societal motive, a motive that gives the activity direction and defines the meaning for society. The object is 'a contradictory combination of something given that exists independently of the human activity forcing the activity to adapt to it and a human idea and purpose that motivates the activity of transforming what is given' (Virkkunen & Newnham, 2013, pp. 33-34). An object meets a need and has meaning and motivation related to meeting that need, a meaning and a sense. The individual, however, has a

different perspective of the object, and this leads to the hierarchical division of labour. An individual's position in this hierarchy affects what actions they can take towards it. People work together to fulfil a social need, but take different roles according to authority, speciality and motivation. For society, labour needs to be divided and organized so that both the needs of society and the needs of the individual are met.

For example, Leontiev uses the example of the 'primeval hunt' (1981). In this example, one person acts as a beater, driving animals towards his colleagues waiting in ambush. In this case, the division of labour shows the differentiation between a person's motivation (food) and how they direct their actions (making animals, the food, run away). The actions taken may seem counterintuitive. The hunter wants food, yet they are making the food run away. However, in the overall activity this makes sense as it drives the animals into the ambush. Leontiev takes this further with a fishing example (1978). The motivation for an individual remains food, but a person may have to undertake actions that do not directly involved obtaining food. For example, a person whose task is to prepare fishing equipment will prepare the equipment whether or not they intend to use it themselves or intend instead give it to others. The person still wants to obtain food, but may do so not by directly catching the fish themselves. They can provide the equipment to a third party, who will then provide them with food through either a share of the catch or some other means of barter. The motivation which 'aroused his activity and those to which his actions are directed, are not identical' (Leont'ev, 1978, p. 63). Eventually this disassociation 'becomes a basic aspect of human activities in general' (Kaptelinin, 2005, p. 12).

In a modern society, individuals work to earn a wage, or to advance a career, to do something interesting, to help others etc. This differs from the societal motive –

different players have different takes on the object of an activity, and this is based on the relationship of the object to their personal life. Society needs to organize and divide labour so that the individual's needs are met by the activity, as well as the object of the activity itself being met. There is distinction between the individual's *sense* of the activity, and *meaning* of that activity in society, externally.

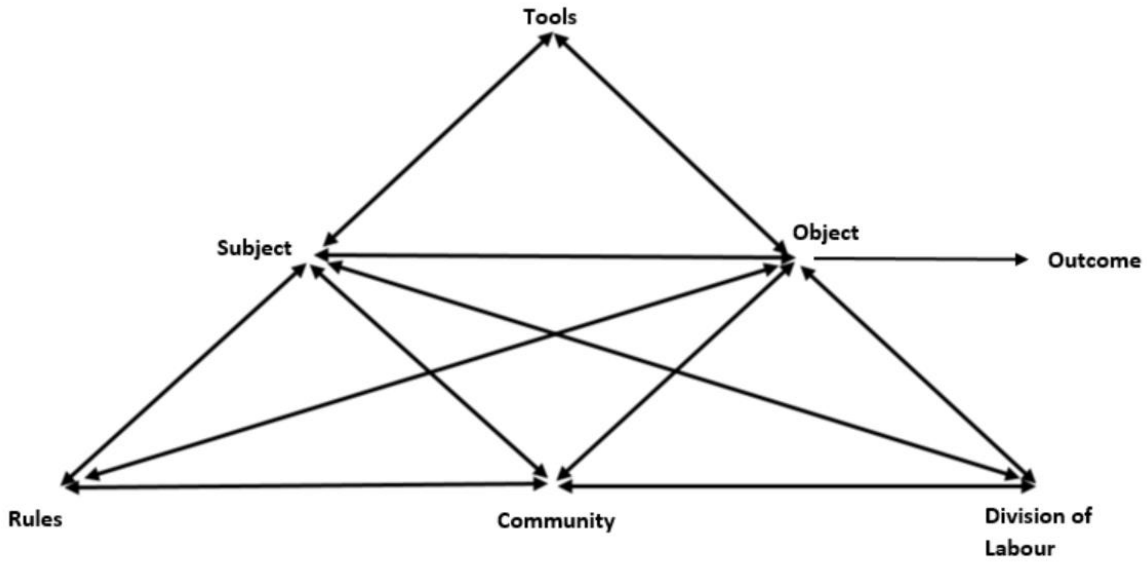
Leontiev defined activity, action and operation as related hierarchically. *Activity* is collective and sustained effort towards an object with both sense and meaning. *Action* is more time-bounded, granular, regulated by object, and may be consciously undertaken by individuals. Finally, *operations* are routine processes that adjust actions, regulated by conditions (Bligh & Flood, 2015, p. 148). Activity generates actions, and actions get their meaning from their place within the activity. A tool, meanwhile, is a 'material embodiment of an operation' (Virkkunen & Newnham, 2013, p. 37). In order to achieve the object of an activity, subjects carry out actions, either individually or collectively, and these actions are mediated by operations. Following Vygotsky's concepts of development, mediated internalization and externalization means that activities become actions, objects of previous activities become mediating artefacts and so forth.

Third generation Activity Theory: Engeström, the Activity System and the Change Laboratory

We now turn to focus on the work of Yrjö Engeström. Engeström introduced the concept of the activity system and the methodology for the Change Laboratory. The Change Laboratory is directly underpinned by Engeström's variant of activity theory, and indeed cultural historical activity theory (CHAT) 'underpins most uses of activity theory within Anglophone educational research' (Bligh & Flood, 2015, p. 147). For Engeström, first-generation activity theory was limited as the unit of analysis focused solely on the individual. Leontiev's work introduced the crucial differences between individual and

collective activity, but Vygotsky's original model (Figure 1) was 'never graphically expanded…into a model of a collective activity system' (Engeström, 2001, p. 135). For Engeström, Vyogtsky's original model represents merely the 'tip of the iceberg' (2001, p. 134). The original triangular model of subjects, tools and object (Figure 1C) represents only the directly productive aspect of human activity, and ignores the socially mediated aspects and complicated interrelations that constitute the true picture. Engeström's activity system (1987/2015) can be seen in Figure 3.2.

Figure 3.2: The activity system (adapted from Engeström, 1987/2015)



Engeström's triangular diagram represents human activity. All human activity is social and interrelated, and has an *object* with intended *outcomes*. As we have seen with Vygotsky, the relationship between the *subject* – the individual or group – and the object is mediated by tools. *Tools* can be physical, conceptual, theoretical or take the form of a more knowledgeable other. A tool, or artefact, could be a hammer, an idea, or an expert colleague. Subjects are part of a *community*, and this relationship is mediated by *rules*. The relationship between the community and the object is in turn mediated by the *division of*

labour. Ultimately, all the elements of the activity system are interrelated and have influence upon the object of the activity system and intended successful outcome.

Let us take the example of a classroom as an activity system, and teachers as the subject. The object of their activity is to teach students, the success of which is nowadays often measured by standardised tests. Teachers use tools to achieve this object. They may use physical text books and whiteboards, they may use laptops, tablets and learning management systems, and they will employ pedagogical theory and other techniques gleaned from their training and colleagues acting as more knowledgeable others. Teachers are part of a community of students, parents and school management. There are rules that govern the school at micro and macro levels as well as expectations over the division of labour. Where Vygotsky's model represented only the directly productive aspect of mediated human activity, and Leontiev did not graphically represent collective activity, Engeström's model includes all the socially mediated aspects at the level of activity within activity theory. These aspects form four, interlocking sub-triangles within the model. These can be seen in Table 3.1.

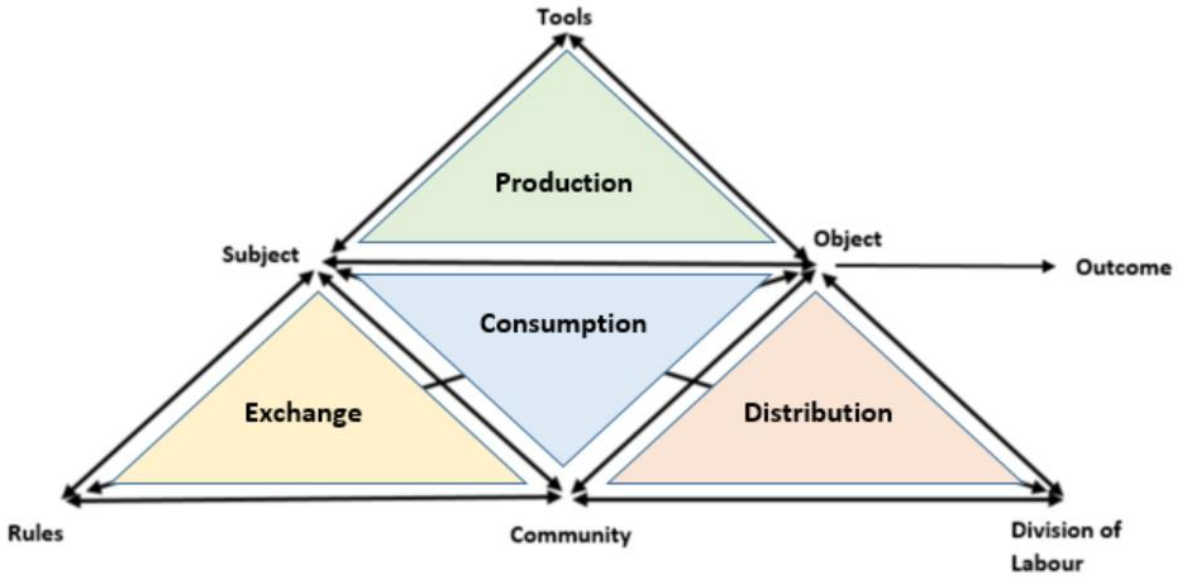
Table 3.1: The four aspects of activity

Aspect	Description	Mediation
Production	The relationship between subject, tool and object directly related to production	Subject-tool-object
Distribution	How objects, tools and people are divided in	Community-division of labour-object

	relation to the needs of society	
Exchange	How objects, tools, communication and interaction are further divided according to the need of the individual	Subject-rules-community
Consumption	How products are used to satisfy human needs	Community-subject-object

The four sub-triangles are represented graphically in Figure 3.3.

Figure 3.3: Engeström's activity system with four sub-triangles of production, distribution, exchange and consumption



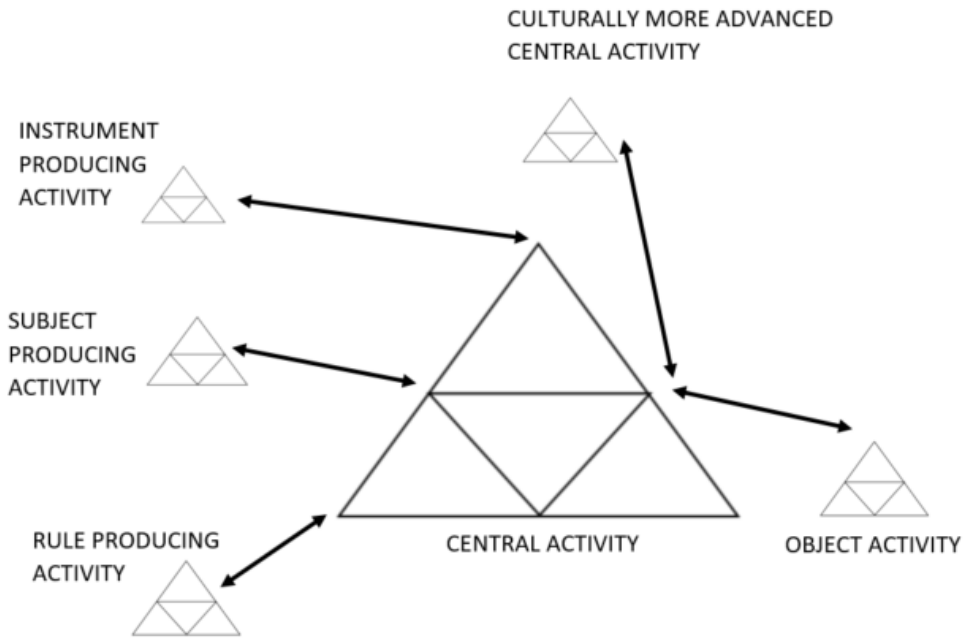
3.3 The Five Principals of Activity Theory

As mentioned, Engeström's variant of activity theory (1987/2015) underpins most Anglophone education research utilising CHAT, and also underpins the Change Laboratory, and therefore guides this project. Engeström summarises activity theory with 'the help of five principles' (2001, p. 136).

i) The Prime Unit of Analysis is the Activity System

An activity system is collective, artefact-mediated and object-oriented and forms the unit of analysis. This unit may be as small as a team working on a project, it could be a department or even an institution. It could be a social practice or even a social system. The key principle is that 'whatever its size or scope, the unit can be represented by the activity system' (Miles, 2020, p. 66). It must also be remembered that activity systems do not exist in isolation, and are in 'always a node in a network of functionally interdependent activity systems' (Virkkunen & Newnham, 2013, p. 35). Taking the example of a school, the central activity is focused on student learning. However, dependent activity systems also exist for each element of the central system, as shown in Figure 3.4.

Figure 3.4: The activity system as a node in a network of activity systems (based on Engeström, 1987/2015)

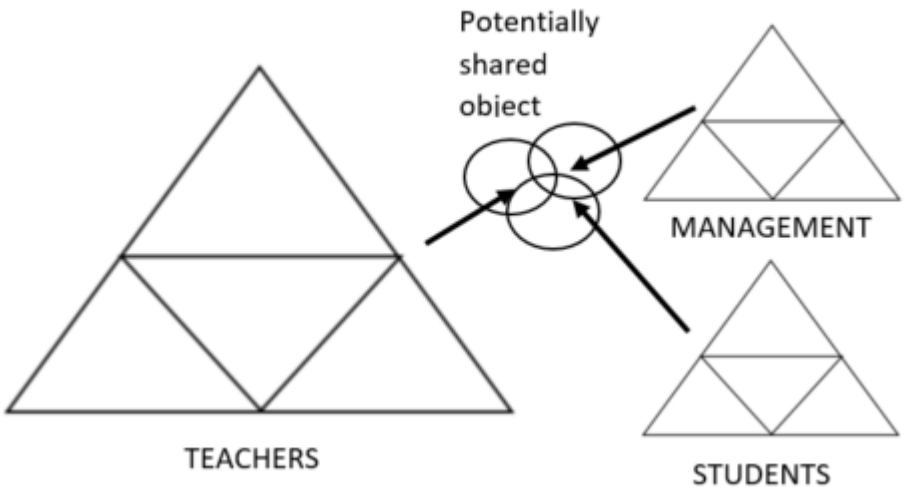


The object activity represents actual classroom teaching. The subject-producing activity, in the case of a school, relates to teacher training. Instrument producing activity amounts to the production of textbooks, eLearning materials and so on, while boards of governors, school management and education authorities are involved in the dependent activity of rule production. There are also culturally more advanced versions of the central activity itself. For example, developing nations may look towards established systems in the developed world and use these as models on which to base and improve their own current practice.

While activity systems are separate they are interdependent, and interrelated systems may potentially share objects. Students and teachers, for example, partially share the object of knowledge creation, a goal one would hope is also shared by educational

management at both local and national levels. This is represented graphically in Figure 3.5.

Figure 3.5: A potentially shared object between two activity systems



It is crucial to remember that although the activity system, represented by Engeström's triangular model, is the basic unit of analysis, it is not merely a 'static classification structure to depict the elements of an activity system (Virkkunen & Newnham, 2013, p. 44). Instead the research must consider the relationships between elements, both within the activity system and between related interdependent systems.

ii) The Multi-Voicedness of Activity Systems

By its collective nature, an activity system is always a community of multiple viewpoints, cultural traditions, viewpoints and perspectives. Sense and meaning of the object activity, for example, vary depending on a subject's position within the hierarchy. Subjects also bring their own backgrounds and history to the current practice, and the activity system itself is built on 'multiple layers and strands of history engraved in its artefacts, rules and conventions' (Engeström, 2001, p. 136). This multi-voicedness is

then multiplied in interacting activity systems. This adds another layer of complexity to activity systems analysis.

iii) Historicity

An activity system is the result of developmental, mediated action, shaped and transformed over potentially lengthy periods of time. As such, 'their problems and potentials can only be understood against their own history' (Engeström, 2001, p. 136). In order to understand where we are now, we need to study where we have come from, which will in turn inform what we can aspire to become in the future. The local history of an activity system and its objects needs to be studied, along with the artefacts and ideas it has used to shape itself. You cannot separate history from the present.

iv) The Principle of Contradictions

Contradictions are the 'historically accumulating structural tensions within and between activity systems' (Engeström, 2001, p. 137), and play a central role in the change and development of an activity system.

As we have seen, all activity systems have an object, a goal. Successful achievement of that object is the intended outcome of that activity. The intended outcome of the preparatory English course is for at least 70% of enrolled students to successfully pass the course and enter their degree program of choice. The failure to achieve this pass rate is an unintended outcome. Unintended outcomes are unwelcome and unwanted results of the activity, and their existence signifies the presence of contradictions in the activity system.

Contradictions are disruptions in the activity system. They develop historically due to introduced changes in the activity of that work unit, and then manifest currently as contradictions. The introduction of a new tool, for example laptops or tablet devices in

the case of the preparatory English course, may disrupt the activity and lead to contradictions. The introduction of new rules, changes in community expectations or changes to the object are all disruptions that can lead to contradictions. These changes do not automatically lead to contradictions, but the presence of unintended outcomes makes it clear that they are occurring. These unintended outcomes cannot be resolved without first identifying, and then addressing, the contradictions as they occur in the activity system.

Activity systems analysis allows not only for the identification of contradictions, but also provides a toolkit for distinguishing both the type of contradiction and how this contradiction is manifested discursively by those experiencing it. This in turn can then allow those within the activity system to take this experience and attempt to overcome the contradictions and their manifestations through the Change Laboratory.

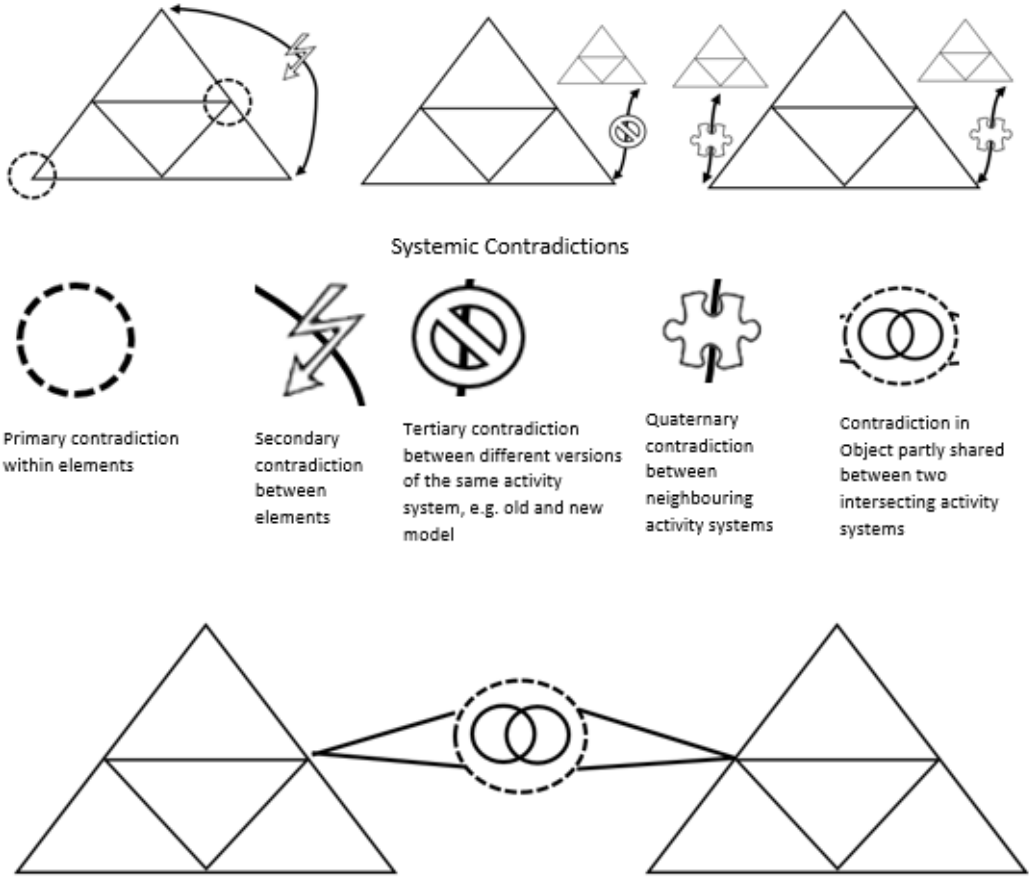
Contradictions take place within or between activity systems, and can thus be described as systemic contradictions. Systemic contradictions take four forms:

- *Primary contradictions* that occur within one element of the system.
- *Secondary contradictions* that occur between elements of the system.
- *Tertiary contradictions* occurring between systems and the attempt to apply a new model. Note that this is particularly relevant to the Change Laboratory and new activity aiming to solve contradictions.
- *Quaternary contradictions* between neighbouring activity systems.

(Engeström, 1987/2015 in Bligh & Flood, 2015)

These contradictions can be visually represented in a form that is ‘useful for Change Laboratory research-interventions’ (Bligh & Flood, 2015, p. 152). These representations are displayed in Figure 3.6.

Figure 3.6: A graphical representation of systemic contradictions, based on Bligh and Flood (2015, p.152)



However, it is not enough to simply identify the four types of contradictions. This risks falling prey to the danger where ‘contradiction becomes another fashionable catchword with little theoretical content and analytical power’ (Engeström & Sannino, 2011, p. 368). Engeström & Sannino maintain theoretical content and increase analytical power by identifying four ways in which subjects experience systemic contradictions as discursive manifestations. These can be seen in Table 3.2.

Table 3.2: Discursive manifestations of contradictions

dilemmas	An expression or exchange of incompatible evaluations between people or an individual's discourse, typically reproduced rather than resolved.
conflicts	These take the form of resistance, disagreement, argument and criticism. Resolution typically means compromise or submitting to authority.
critical conflicts	These cannot be resolved by the subject alone, and involve feelings of guilt, inner doubt that are emotionally and morally charged. Resolution often involves emancipation and liberation.
double binds	Subjects facing pressing and equally unacceptable alternatives with seemingly no way out. Resolution requires practical transformation.

(adapted from Engeström & Sannino, 2011)

Discursive manifestations are subjective experiences represented verbally by those experiencing the contradictions (Miles, 2021). They allow for a more nuanced and personalised account of systemic contradictions within the activity system under investigation. As these manifestations are discursive, the researcher can use rudimentary linguistic clues in order to identify them. Firstly, *dilemmas* may be identified through the language of hedging and hesitation, through "but" and "on the other hand". *Conflicts* may manifest as the language of disagreement, denial and rejection, such as "no" and "I disagree". *Critical conflicts* may be indicated by personal,

emotional and morally charged accounts, often manifested as strong narrative and metaphor. Finally, *double binds* may manifest in the form of 'rhetorical questions indicating a cul-de-sac' (Engeström & Sannino, 2011, p. 374) and expressions of collective helplessness such as "What can we do?" and "What is the point?".

Thus a contradiction can firstly be identified in terms of a systemic label, and then further defined by its discursive manifestation. For example a *secondary contradiction* between the Subject and Tools might be manifested discursively as a *critical conflict* by those experiencing the contradiction, and so on. At the same time, a systemic contradiction might be simultaneously expressed as a dilemma by one subject, and a critical conflict by another. A single systemic contradiction can have multiple discursive manifestations.

v) The Possibility of Expansive Transformations

Engeström's fifth principle 'proclaims the possibility of expansive transformations in activity systems' (Engeström, 2001), and ties back to Marx's importance of change and Vygotsky's developmental mediatied activity. Activity systems are in a state of long-term qualitative transformation. As contradictions occur, a subject attempts to overcome them. This may lead to collaboration and a deliberate effort to overcome the contradiction collectively. When this change occurs, it may be understood as a 'collective journey through the *zone of proximal development* of the activity' (Engeström, 2001, p. 137, italics in the original), the distance between the current and new form of the activity that is 'collectively generated as a solution to the double bind potentially embedded in the everday actions' (Engeström, 1987/2015, p. 174).

Expansive learning is a cycle that 'carries out the process of ascending from the abstract to concrete' (Virkkunen & Newnham, 2013, p. 59). Firstly, the current state of the

activity is examined and contradictions are recognized. Secondly, the current state is analysed and solutions are proposed. Thirdly, solutions are put into practice, new models are created, analysed, discussed and modified. Finally a new model of the activity is consolidated and internalized. In this sense, activity theory does not simply describe the world as it has existed or exists now, but also provides a framework for analysing and describing developmental, collective change. The process of expansive learning occurs continuously as exisiting systems build on their current states. All activity systems are thus 'the offspring of historical systems, a culturally more advanced version of the previous system' (Miles, 2020). This process of expansive learning is commonly applied by researchers through direct intervention known as the Change Laboratory.

3.4 The Change Laboratory

The Change Laboratory is a formative intervention for the development of work activities by actual practitioners in collaboration with a researcher-interventionist (Virkkunen & Newnham, 2013). While expansive learning can be considered an organic process, a naturally occurring phenomena in the development of human activity, the Change Laboratory is a deliberate intervention designed to foster change. Essentially, the Change Laboratory is a cycle of expansive learning that is designed to 'apply a Vygotskyan, developmental approach in real-world, collective, organisational settings' and 'render this process more directly *visible* to its participants' (Bligh & Flood, 2015, p. 150). In practice, the Change Laboratory follows a prescriptive series of steps in order to make this process visible and overt to the participants. The actual steps are described in more detail in the *Research Design* section, and the duration, design and implementation of these steps will depend on the context, the interventionist and other external factors. The theoretical underpinnings of the Change Laboratory, however,

remain constant. In fostering expansive learning, the Change Laboratory follows a chain of double stimulation and re-mediation that occurs in collaboration between the actors involved. This chain has clear stages.

Firstly, the interventionist prepares 'mirror data'. This is data that demonstrates problematic aspects of the current practice. It could take the form of video recordings, interview data, and feedback from customers etc. This is the *first stimulus*. Participants are then given concepts and theories that they can use to explain this mirror data as a *second stimulus*. The participants use this second stimulus in order to form a clear picture of the problems – the *contradictions* - in their current activity system. This description is now taken as a new *first stimulus*. The interventionist now introduces the activity system model (Figure 2) as a *second stimulus*. The participants use this model to develop a psychological understanding of the structure of the activity and also to identify the inner systemic contradictions. Finally, the participants attempt to overcome these contradictions (first stimulus) by means of building a new model of the activity system (second stimulus). Each step takes place within the zone of proximal development, development and re-mediation occur as second stimuli become first stimuli and so on, until a new internalized model of activity emerges.

This process of expansive learning is both a collaborative activity and agency building. The collaborative agency is threefold. Firstly, participants collaborate to use their knowledge to build a model of the problematic aspects of their practice. Secondly, the contradictory motives of the participants play part of the collective drive for a solution. The different players have different senses and meanings of the object, but combine collectively in order to achieve it. Thirdly, the participants, both as individuals and collective actors, can themselves take actions to transform the activity through the

invention and use of artefacts. This central role of the actors means that the Change Laboratory is essentially different from other linear interventions.

In summary, the Change Laboratory is a theory-based and theory-driven intervention that follows a clear tradition from Marx through Vygotsky and Leontiev to the present day. It that aims, through the application of Vygotsky's double stimulation and re-mediation in combination with collective participant agency, to foster change in collective activity. The strong theoretical background and clear methodology give it the potential to change organisations, develop concepts and empower individuals (Bligh & Flood, 2015). These are ambitious aims, but ideals this project seeks to emulate. It is not enough to merely describe the world. We must change it.

3.5 The Case for the Change Laboratory

Activity theory and consequently the Change Laboratory are not without critics. Some have argued that the framework is inadequate for investigating human culture and psychology (Toomela, 2000 & 2008b in Yamagata-Lynch, 2010). Others cite arguments that CHAT is too difficult to learn and not worth the effort to do so (Nardi, 1996 in Yamagata-Lynch, 2010). Peim is directly critical of Engeström's apolitical ontology. He argues that CHAT is actually political and Engeström's activity theory is 'a misappropriation of the Vygotskian legacy' (2009, p. 167). For Peim, Engeström's commitment to progressive, apolitical improvement has led CHAT away from its social, political and historical theoretical roots, but seems to cede that this is perhaps the result of what CHAT must be under contempory global conditons. This is perhaps evidence that CHAT itself is a constantly evolving activity system, adapting to current conditions despite its historical theoeretical background. Bligh and Flood (2015) point out that the Change Laboratory's 'exceptionally close alignment between ontology, epistemology, theory and methology' (p. 19) comes at a cost. Both research-interventionists and

participants have to get to grips with unfamiliar concepts, new terms and language and potentially counterintuitive procedures. Montoro (2016) echoes this, reporting reports that the triangles representing the activity system were not 'readily picked up by the participants' of a Change Laboratory involving English Language teachers.

There are of course other intervention methodologies, but these lack the agency of the Change Laboratory. Action research, for example, focuses on person-person discourse, is less prescriptive and lacks the specificity of the Change Laboratory. For Engeström, if a model lacks the specific nature of the expansive learning model 'it is practically impossible to test it and develop it critically; almost any process will fit it' (2008, p. 131). Design-based research (DBR), on the other hand, applies theory at 'different *levels* within interventions' (Penuel, 2014 in Bligh & Flood, 2015). While activity theory and expansive learning are present in all stages of the Change Laboratory, DBR takes a more eclectic approach with regard to theory and lacks the agency central to the Change Laboratory. While it also employs researchers and practitioners in real-world settings (Wang & Hannafin, 2005), Engeström's 'natural teams' (1996), in seeking to address the issues within the English Preparatory course this study has not sought the flexibility of DBR's approach to theory. Nor is it seeking to employ a top-down, researcher led intervention. The need here is for bottom-up, participant driven change.

The researcher's role is the researcher-interventionist, but not the leader. The participants in this study have agency, guiding their own way through the process of expansive learning. The epistemological and ontological viewpoints of the theory behind the Change Laboratory has in turn guided all stages of the research from design to implementation. The Change Laboratory, with its strong theoretical underpinnings in activity theory, is the tool chosen in the re-mediation of the collaborative, collective

activity as the project seeks to not only identify but overcome the contradictions causing attrition and failure in the Preparatory English course, and allow abstract ideas to become concrete solutions to the very real problems that exist. In doing so it may be possible to make tangible differences to teaching and learning in the technology enhanced classroom, and more importantly to the academic success of the students placed in our care as educators.

This remains the overarching motivation driving this project.

4 Research Design and Methodology

The following chapter details the methodological approach to carrying out the actual intervention, the steps undertaken, and also describes each of the sessions that made up the Change Laboratory. A description of data collection, ethical concerns and issues arising during the intervention are also included.

4.1 Methodology: The Change Laboratory

Changing the world, or at the very least identifying the causes of the contradictions in the phenomena under investigation and the attempted application of solutions, does not come easily. The Change Laboratory is a direct attempt to apply theory to practice through a cycle of expansive learning, and rather than apply externally mandated change or preordained solutions the Change Laboratory seeks instead to actually redefine the activity and its object. New tools and artefacts may be developed, new rules may be created to mediate the division of labour, and new interrelationships with neighbouring activities might develop. A whole new activity system may emerge from the historical ashes of its predecessor. These are broad aims (Bligh & Flood, 2015) and consequently they require broad planning.

While the Change Laboratory does not start with a solution in mind, this does not mean it is directionless. There are, in fact, a number of areas that require careful thought and consideration before the intervention begins.

- Firstly, the location for the intervention must be decided. The work unit then needs to be identified and the participants selected.
- Secondly, the intervention must be designed. For example, the scope and timings of the sessions need to be planned out. A suitable venue also needs to be identified.

- Thirdly – and this is a crucial and time-consuming step – mirror data needs to be identified, collected and analysed.

The above three steps make up the preliminary planning for the Change Laboratory. Once these have been completed, it is then necessary to go ahead with step four, the design and implementation of the actual sessions for the intervention. These sessions need to be mapped to expansive learning actions. This is a 'particular challenge' (Bligh & Flood, 2015, p. 157), especially given the fact that later sessions build on the outcomes of earlier meetings. The Change Laboratory might be free from pre-provided solutions, but it is not free from rigorous and detailed planning and careful thought, activities that place considerable demands on the researcher-interventionist.

These steps are described in more detail in the following sections. *Step one* describes the research context, the research site and participant selection. *Step two* is concerned with the design of the Change Laboratory sessions. *Step three* looks at the identification and collection of mirror data, while the final *step four* describes the actual sessions that took place.

4.2 Step One: Determining the Intervention Unit

The first critical step in the Change Laboratory is to determine the intervention unit. Virkkunen and Newnham (2013) make three recommendations. Firstly, there should be recognition of the need for change. Secondly, the participants need to be placed strategically within the organization, and thirdly the group needs sufficient stability in order to cope if matters become intense (p. 65).

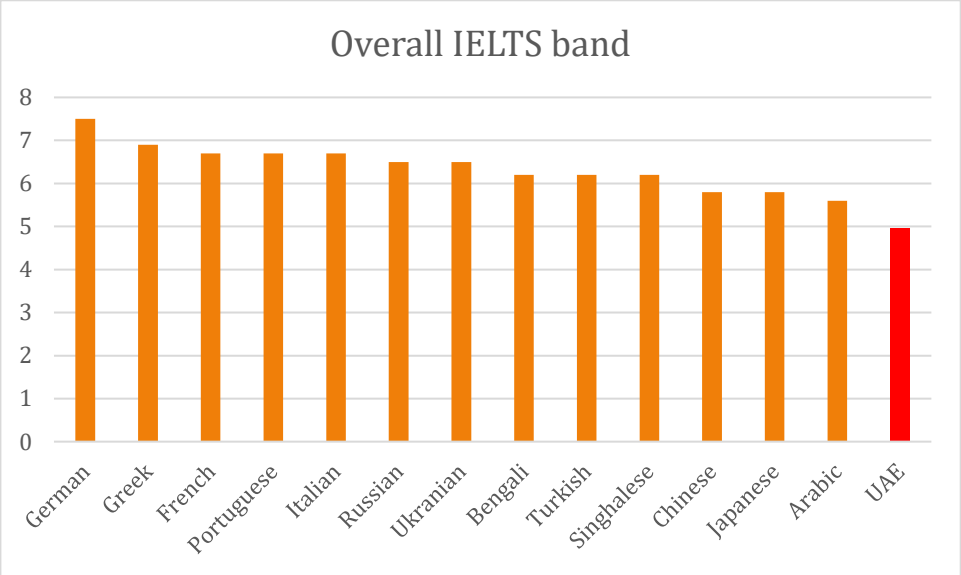
The Research Context

As we have seen, the UAE's drive for excellence has placed great importance on the role of education as one of the pillars of a modern, first-rate nation. Growth in the tertiary sector has been rapid, and degree programs are almost exclusively taught in

English. Consequently, students wishing to enter a degree program need to score a minimum band 5.0 on the International English Language Testing System (IELTS) or the equivalent on the national English proficiency test, the EmSAT.

A score of 5.0 is considerably lower than that required of most international universities. In the UK, for example, undergraduate programs usually require a minimum score of 6.5. However, large numbers of students in the UAE are unable to achieve the required English proficiency on leaving high school. This is reflected in regional and international IELTS results. Arabic speakers average an overall band of 5.6 compared to in excess of band 6.0 for speakers of European languages such as German, French and Italian. For the UAE in particular the overall average IELTS band is a disappointing 4.97, slightly below the minimum entry requirement for federal undergraduate degree programs. See Figure 4.1.

Figure 4.1: Overall IELTS bands worldwide, 2018



Source: (Ielts, 2020)

Students who do not meet the English entry requirements can enrol on a one-year preparatory English course. These courses have had various guises over the years, but their remit has remained constant. Students enrolled in the preparatory courses have one aim: to meet the required English proficiency and enter on an undergraduate degree program.

The UAE's drive for educational excellence has placed great importance on classroom technology, and students joining the preparatory English courses are entering an environment that is not only high stakes but also hi tech. Classrooms are 'Smart', and all classes are laptop mediated, with 1:1 device deployment. All materials are delivered via Learning Management Systems (LMS), and assessments are administered 100% online. However, these high-profile technology interventions have not led to improved teaching and learning, and large number of students do not continue to degree programs. The preparatory English course is the first hurdle for many students in the UAE, but many are stumbling at this first obstacle, effectively closing the door on their academic careers. The reasons for this must be identified, and where possible, solutions provided. This Change Laboratory recognizes this need for change.

The Research Site

The research site is one campus of several that make up a large federal institution. It is one of the larger campuses, with a catchment including both rural and urban areas, and in keeping with the culture of the UAE is single-sex, teaching female students only. For all campuses, 60% of students entering the institution did not meet the English requirement in the academic year 2018/19. This is mirrored at the research site, with 59% of new students (651 students) enrolling in the English preparatory course.

The choice of site has largely been governed by my own limitations as researcher-interventionist as the research site is also my employing organizational unit, thus creating the Insider-Change Laboratory scenario. This provides an opportunity rather than an obstacle as the scenario of insider research and the Change Laboratory is 'poorly documented in the literature' (Bligh & Flood, 2015, p. 155). This is discussed further in *4.7 Ethical Considerations* later in this chapter.

Participant Selection

Participant selection is a key component of any qualitative research project, yet its significance is often overlooked. As researchers we do not merely collect and analyse data, but we also decide where – who – this data will come from. Indeed, in choosing the participants the researcher effectively decides 'who matters as data' (Reybold et al., 2013). In qualitative research, there are no clear rules over the sample size. Samples need to be large enough to generate 'thick descriptions' (Geertz, 1973, in Cohen et al., 2013, p. 162) but not so large that the data becomes unwieldy. A sample needs to be selected from which the most can be learned – an 'information-rich' group (Merriam, 2009) – that is most likely to provide the greatest discovery, understanding and insights of the phenomena under investigation. Sampling can be purposeful, random or based purely on convenience (Cohen et al., 2013, pp. 110-111). It can be unique or typical, theoretical or an ongoing snowball that develops as the research progresses. Decisions over sample size and the makeup of this sample are largely decisions that the qualitative researcher can make autonomously.

Participant Selection in the Change Laboratory

The Change Laboratory, on the other hand, offers clear guidelines with regard to both selection and size of the sample. The Change Laboratory method was designed to be used with a work team, or unit, in collaboration with the researcher/interventionist

(Engeström, 2007, p. 8). The first key principle is therefore that the sample consists of participants who share the same work goal, the same objectives with the same intended outcomes, regardless of their hierarchical position within that work team. For Virkkunen and Newnham (2013) for example, a Change Laboratory involving a school should invite the whole faculty to participate, not just the teachers teaching one subject. The objectives of a school are shared across a wide range of participants from teacher, to management to administration etc., so all should be represented. At the same time, the number of participants needs to be manageable. If groups become larger than 15 or 20 then it becomes impossible to 'work effectively throughout the process as one group', and smaller sub-groups should be formed (Virkkunen & Newnham, 2013, pp. 65-66). A group needs to represent the work team without becoming too large to manage.

Manageability aside, a further challenge is to form a group that is broad enough to capture an appropriate range of voices, yet at the same time 'ameliorate the likelihood of local hierarchies stultifying contributions' (Bligh & Flood, 2015, p. 156). Groups need to contain the appropriate members in order to be 'information-rich', but these members need to be able to openly discuss issues and opportunities for change without fear of reprisal, rebuke or ridicule. At the same time, the group needs to remain small enough in number to be manageable for practical purposes. A participant will not participate when they are concerned about the potential consequences of their words, yet will similarly fail to participate if there is no opportunity for them to contribute in the first place. The challenge for the researcher/interventionist is to create a sample that is inclusive, representative, liberated and wieldable within the practical limitations of the research context. Bligh and Flood (2015) also argue that balancing these

contradictions may be easier for the insider-researcher given their greater awareness of local dynamics.

Participants in the Present Change Laboratory

Balancing the contradictions of participant selection may be easier for insider-researchers given their unique pre-understanding and awareness of the local situation. In the context of participant selection for this Change Laboratory, insider knowledge played a key role.

The work unit is clearly identified. This is a group of 21 English language teachers, solely employed on the preparatory English course. The group is both highly experienced and highly qualified. On average, teachers in the group have been teaching for just over 20 years, while the average number of years at the institution is 9.8 years. All teachers in the group have a relevant Master's degree. Over half these degrees are MA TESOL[5], while the others include Language Assessment, Education Technology and Applied Linguistics. While Masters degrees in the field are usually theoretical with little or no practical requirements, a number of the group hold pre-service teaching certificates, for example the Cambridge CELTA[6], or post-graduate Level 7 teaching diplomas such as the Cambridge DELTA[7]. In short, this is a work unit that is rich in experience, academic knowledge and practical training.

The whole group of 21 teachers was invited to participate 11 of the group showed an initial interest. As a teacher and colleague with several years' experience on the

[5] Teaching English as a Second or Other Language

[6] Certificate in English Language Teaching to Adults

[7] Diploma in English Language Teaching to Adults

program, I have an intimate knowledge of the course and have worked closely with all the participants. As a program leader I am responsible for the day-to-day administration of the course and assessments. This insider knowledge meant that I was able to identify volunteers who might have problems with the commitment levels required. One, for example, is a PhD candidate and would be carrying out their own research at the same time. Another was seconded to another campus which would mean a considerable amount of extra travelling, while a third was looking for a platform for their own project, Virtual Reality. While I have nothing against this a Change Laboratory should not be limited to one solution before it has even started. The remaining 8 candidates met the researcher/interventionist informally, and then attended an information session or initial meeting. The meeting briefly presented the aims of the Change Laboratory and gave an overview of the theory and practice. The participants then signed consent forms.

The Change Laboratory group is representative of the work unit as a whole. This can be seen by direct comparison in Table 4.1. While not perfect, I would argue that the Change Laboratory group is a representative sample of the work unit, and well-placed to carry out the intervention.

Table 4.1: Participants

	Work Unit	Change Laboratory
Number	21	8
Gender	• 13 female (62%) • 8 male (38%)	• 6 female (75%) • 2 male (25%)
Nationality	• UK 10 (48%) • USA 4 (19%) • Other 7 (33%)	• UK 5 (63%) • USA 1 (12.5%) • Other 2 (25%)

Arabic speakers	• 5 (24%)	• 1 (12.5%)
Practical teaching qualification	• CELTA 12 (57%) • DELTA 8 (38%)	• CELTA 4 (50%) • DELTA 3 (38%)
Average total years teaching	• 20.9 years	• 22.9 years
Average institution years teaching	• 9.8 years	• 8.5 years

There are of course other stakeholders not represented in neither the work unit nor the Change Laboratory. The obviously absent stakeholder group is students. Students are the client of the activity in business terms, and the success of the preparatory program or otherwise has the greatest impact on this group. However, student voices are included in the mirror data that initiates the project. More details follow in *4.4.2 Mirror Data Set 2: Student Voices*.

A second absentee group is management. The institution as a whole is extremely rigid in terms of hierarchy. In that sense most management has little to do with the everyday concerns of the preparatory English program, especially in terms of the teaching. The intended outcomes are set by senior management, who control recruitment both of teachers and students, teacher performance and so forth. At the chalk face, or Smartboard in this case, there is very little direct management. There is a program coordinator acting as direct line manager and answerable to senior management, but beyond that nothing. Within the work unit there are course team leaders with

administrative but not management duties, and assessment and materials specialists, but the hierarchy in the team is essentially flat. Senior management is, therefore, not really part of the immediate work unit. Furthermore, senior management is usually based or working off campus at any given times and regular participation would be impractical. The time will come to include these stakeholders when new models have been proposed, modelled and made concrete.

This group of participants represents a range of voices yet remains of manageable size. It has the experience and the skills to talk knowledgeably and propose solutions to the problems it identifies. This is a group representing the sharp end of teaching in the laptop-mediated Smart environment and is ideal for the Change Laboratory.

4.3 Step Two: Designing the Intervention

The Change Laboratory has broad aims. It is a direct intervention, strongly rooted in theory, to promote expansive learning. The Change Laboratory gives direct, collaborative transformative agency to the participants, in this case the teachers. For institutional improvement, teachers need agency, 'developing the ability to question, analyse and shape their own practice' (Englund, 2018, p. 193). This approach is bottom up, and makes abstract ideas concrete implementations in the classroom. While the outcome of the intervention is not preconceived, the Change Laboratory also has clear stages that must be planned for and implemented.

The Stages of the Change Laboratory

The process of moving the abstract to the concrete is a cyclical process that moves through seven stages, although the process may not be simply linear and stages can be cycled back to or even dropped during the process. The seven stages are:

I. *Questioning accepted practice and wisdom.* Current accepted practices are rejected.

II. *Analysing the situation.* The group investigates and represents the structure and history of the present situation.
III. *Modelling.* A new model is proposed and potential solutions suggested.
IV. *Examining the new model.* The group works with the new model, either in discussion or practice, in order to understand it better.
V. *Implementing the model.* The model is applied practically, becoming more concrete as this progresses.
VI. *Reflection and evaluation.* The group evaluates the new practice, critiquing and identifying further modifications.
VII. *Consolidation.* The group attempts to embed the new practice in a stable form.

(Bligh & Flood, 2015; Engeström, 2016)

These seven stages needed to be carefully considered when planning the sessions. Careful consideration – and this is the challenge – also needs to be given to the fact that later sessions will be largely built on the results and direction of earlier sessions.

Virkkunen and Newnham (2013) suggest 5 to 12 two-hour sessions. It is also important to leave time between sessions in order to analyse the data and prepare for the next session. A total of 8 sessions were planned, with 2 hours allowed for each meeting, throughout August to December in 2019. The meetings took place fortnightly. In the end, a total of 7 sessions took place, plus the introductory meeting. The final exam period for the college was brought forward which prevented scheduling the eighth meeting. In the event, this did not have a negative impact. The schedule is shown in Table 4.2.

Table 4.2: Change Laboratory Sessions

	Week	**Date**	**Stage**
	1	27-Aug	Introductory meeting
	2	3-Sep	Meeting 1

Academic Semester 1	3	10-Sep	Follow up & planning
	4	17-Sep	Meeting 2
	5	24-Sep	Follow up & planning
	6	1-Oct	Meeting 3
	7	8-Oct	Follow up & planning
	8	15-Oct	Meeting 4
	9	22-Oct	Follow up & planning
	10	29-Oct	Meeting 5
	11	5-Nov	Follow up & planning
	12	12-Nov	Meeting 6
	13	19-Nov	Follow up & planning
	14	26-Nov	Meeting 7
	15	3-Dec	Follow up & consolidation

The sessions were recorded and then transcribed verbatim. The analysis of the sessions, and how these informed subsequent sessions, is discussed in *4.5 Carrying out the Change Laboratory: The Seven Sessions.*

Designing the Change Laboratory Sessions

The Change Laboratory sessions are mapped to the sequence of expansive learning stages. The researcher/interventionist needs to anticipate how earlier sessions might inform later sessions, and also to recognize that later sessions will be directed more by the participants than the researcher/interventionist. Within the sessions themselves, the tasks need to be designed around Vygotsky's principles of double or dual-stimulation (Bligh & Flood, 2015; Engeström, 2007; Engeström et al., 1996). Expansive learning is one of the five principles of activity theory (Engeström, 2001), and double stimulation is central to Vygotsky's concepts of behaviour and development (1978), (see *3. Theoretical Framework 3.2.2 and 3.3*).

For the first stimulation, the group is presented with a 'mirror'. The mirror presents problematic situations in the work activity. The participants then work to form a common understanding of these problems. The 'mirror' consists of problematic examples from the actual work activity itself. In a school setting, for example, these might be results, interviews with students or even videos of actual lessons in progress. The second stimulus is a tool, idea or concept that the participants can use to analyse and make sense of the problem, and create a shared understanding of it—a representation of the activity system. The participants attempt to reach an understanding of the problems in relation to the activity system during the session. This principle of dual-stimulation was followed throughout the Change Laboratory, and as the project progressed each session generated new mirror data that formed first and second stimuli in subsequent sessions. The collection of the initial mirror data for the first session is described in the next section.

4.4 Step 3: Identifying, Collecting and Analysing the Mirror Data

Three sets of mirror data were produced for the Change Laboratory. The production of mirror data is a 'significant commitment for the researcher/interventionist throughout the intervention' (Bligh & Flood, 2015, p. 156). Mirror data is basically data that is presented to the participants as evidence of problems – contradictions – in the work activity. Mirror data can take various forms, such as documents and statistics as well as observations of actual work practice. Mirror data should, where possible, be multi-voiced, and include accounts from the various actors in the work activity such as management and clients as well as practitioners. The voices of management were not specifically included, although their views were implicit through the use of statistics that suggest there is no problem with the preparatory program. Clients – students – were also included via a survey, documentation on results from the course was obtained, while the bulk of the initial mirror data came from separate groups of practitioners. This data was gathered via focus groups that took place at different times over a one-year period.

Mirror Data Set 1: Published vs Actual Pass Results

The starting point for the Change Laboratory is based around one simple fact. Despite the much-lauded Smart environment and innovative device initiatives the preparatory English program is not succeeding. This fact is hidden, however, by discrepancies between the published pass rates circulated by the institution, and actual pass rates shown by investigation into the numbers. The institution publishes pass rates showing that over 60% - as high in fact as 70% - of students on the preparatory English program are successful. However, this number ignores all students who withdraw before the end of the academic year. When this number is included – a number that is largely made up

of students leaving due to failure – then the actual pass rates are below 50%. See Figure 4.2 and Table 4.3.

Figure 4.2: Published vs actual pass rates

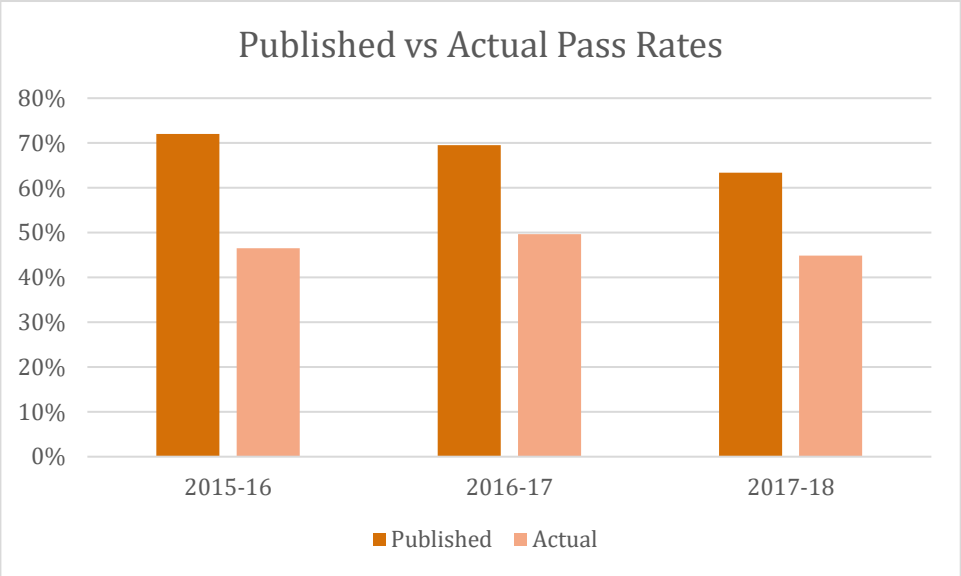


Table 4.3: Actual vs published pass rates in numbers

Academic Year	Incoming Cohort Size	Passed within one year	Withdrew	Remained enrolled but did not pass	Withdrew or failed	Actual pass rate	Published pass rate
2015-2016	3208	1493	1136	579	1715	46.5%	72%
2016-2017	3297	1638	941	718	1659	49.7%	70%
2017-2018	2420	1086	706	628	1334	44.9%	63%

This represents a significant number of students across the institution. This information was presented to participants during the initial meeting as the basis for the project. This is an obvious contradiction. Management is not acknowledging the true fate of half of all students enrolling on the preparatory English program.

The handout used for Meeting 1 can be seen in Appendix 10.1

Mirror Data Set 2: Student Voices

During the summer semester of the academic year 2018-19 a survey was administered online to 42 students. This represented just under 16% of the whole cohort. It should be noted that students who were still attending the preparatory course during the summer semester would have experienced failure at least once during the previous two semesters. The survey consisted of 12 questions, three examples of which are shown below:

- **What is the MAIN reason that you study at college?**
- **Are there any other reasons? Please list them below.**
- **How do you use your laptop to study in class?**

The full survey can be seen in Appendix 10.2. The survey results were somewhat inconclusive. To summarise, students stated that they were at college in order to get a degree or a job. Nobody gave reasons that were not related to education, although one mentioned proximity to home and another that her mother wished her to study. Students only reported using laptops for educational purposes. Videos were only watched outside of class times. Similarly, mobiles were only used for classroom related activities, if used at all. Non-college use was restricted to after lessons. Students saw the teacher's roles as a traditional 'teaching' one, and theirs was to listen and study. The teacher is the sage on the stage rather than guide on the side. Unsurprisingly, students preferred game-based classroom activities, and did not enjoy reading, writing, or non-game-based

activities. Reasons for passing and failing that were give recognised working hard or the lack thereof, but were also fatalistic. I passed from luck, or just because. There are clear contradictions between what students are saying, and what teachers are reporting in the third set of mirror data. An example of the student responses can be seen in Appendix 10.3. The full spreadsheet was available to the participants via a shared drive.

Mirror Data Set 3: Teacher Voices

The mirror data was gathered from three sources over a one-year period. The sources were two teacher focus groups and one project. The first focus group took place in Spring Semester 2018, and used an interview protocol based around Marken's (2006)adaptation of Mwanza's eight-step-model (2002), a protocol designed to investigate each element of the activity system. The protocol can be seen in Appendix 10.4. Marken's (2006) and Mwanza's (2002) models are also included in Appendices 10.5 and 10.6.

Two further individual interviews took place via email at the same time as the first focus groups. These took the form of 'interview to the double' (ITTD). Teachers wrote a monologue as if instructing a double to take their place in the classroom (Lloyd, 2014; Nicolini, 2009). This method aims to allow for understanding and re-presenting of actual practice that can be mapped onto the activity system in combination with the data from the focus groups. I had originally planned to do the ITTD's orally and transcribe the recordings, but the participants preferred to write their answers down to allow for more thought and reflection. The protocol for the ITTD can be seen in Appendix 10.7. Results from the ITTDs were combined with the Spring 2018 focus groups. Following analysis, ten contradictions were identified (Miles, 2021).

The second data source was gathered from a project involving 5 classroom observations of teaching practice followed by email interviews that took place in Autumn Semester 2018 (Miles, 2018). Again, the interviews were based around Marken's (2006) adaptation of Mwanza's eight-step-model (2002), a protocol designed to investigate each element of the activity system. The actual interview protocol used can be seen in Appendix 10.8. A total of 4 contradictions related to student collaboration were identified.

The final data source was a focus group of 3 teachers that took place in Summer Semester 2019. The Spring 2018 interview protocol (Appendix 10.4) was reused for this focus group. A total of 15 possible contradictions were identified.

These three sources, spread across one year, formed the third set of mirror data. This set identified a number of clear contradictions. Some examples of these contradictions are listed below:

- Student behaviour is often an issue (use of laptops, mobiles in class, attitude and willingness to study etc.)
- Laptops are not deployed in ways that promote collaboration
- Some use of technology is not effective
- Some teachers prefer paper to laptops

The complete list of contradictions, as presented to the participants, can be seen in Appendix 10.9.

A Summary

To conclude, the mirror data consists of three data sets, drawn from various sources. This is summarized in Table 4.4.

Table 4.4: Summary of mirror data sets

	Mirror Data Set 1	**Mirror Data Set 2**	**Mirror Data Set 3**
Source	Published pass results over three academic years	Online survey	• Focus groups • Interviews to the double • Classroom observations • Email interviews
Stakeholder voices	Management / the institution	Students	Teachers
Summary	Actual pass rates are much lower than published pass rates	Students report behaviour and attitudes that contrast sharply with data set 3	Teachers report a number of issues with students, behaviour and the use and deployment of technology

The purpose of mirror data is to provide evidence of the problem, and although time-consuming to gather the mirror data presented here is both extensive and clearly demonstrates the presence of contradictions. The data is longitudinal, having been gathered over a one-year period, and representative. The key stakeholders have been involved, and the mirror data is thus multi-voiced, reflecting the community of multiple viewpoints that make up the activity system.

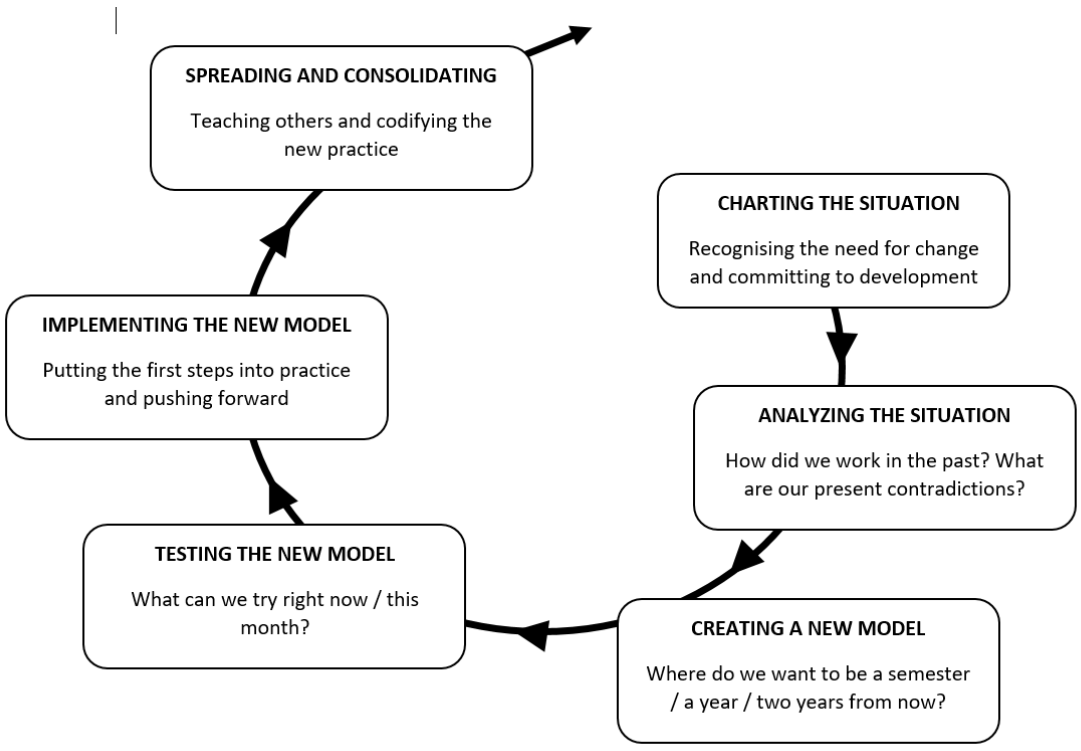
4.5 Step 4: Carrying out the Change Laboratory

Although mirror data is identified, collected and analysed prior to starting the Change Laboratory, collecting mirror data is actually an ongoing task. Data from one meeting

will inform a subsequent session, either as primary or secondary stimuli, or both. This is a continuous challenge for the researcher/interventionist throughout the Change Laboratory. The sessions are recorded, then need to be transcribed. The mirror data is identified and analysed, and then the next set of stimuli and tasks prepared. This is no small undertaking and involves a considerable level of commitment, a commitment that needs to be fully embraced and carefully managed by the research/interventionist.

The Change Laboratory basically consists of 6 main phases, as illustrated in Figure 4.3. Note that these phases do not correspond to single meetings. One phase may consist of several individual sessions. Similarly, the process is not necessarily one direction, and phases maybe cycled back to as needed or combined.

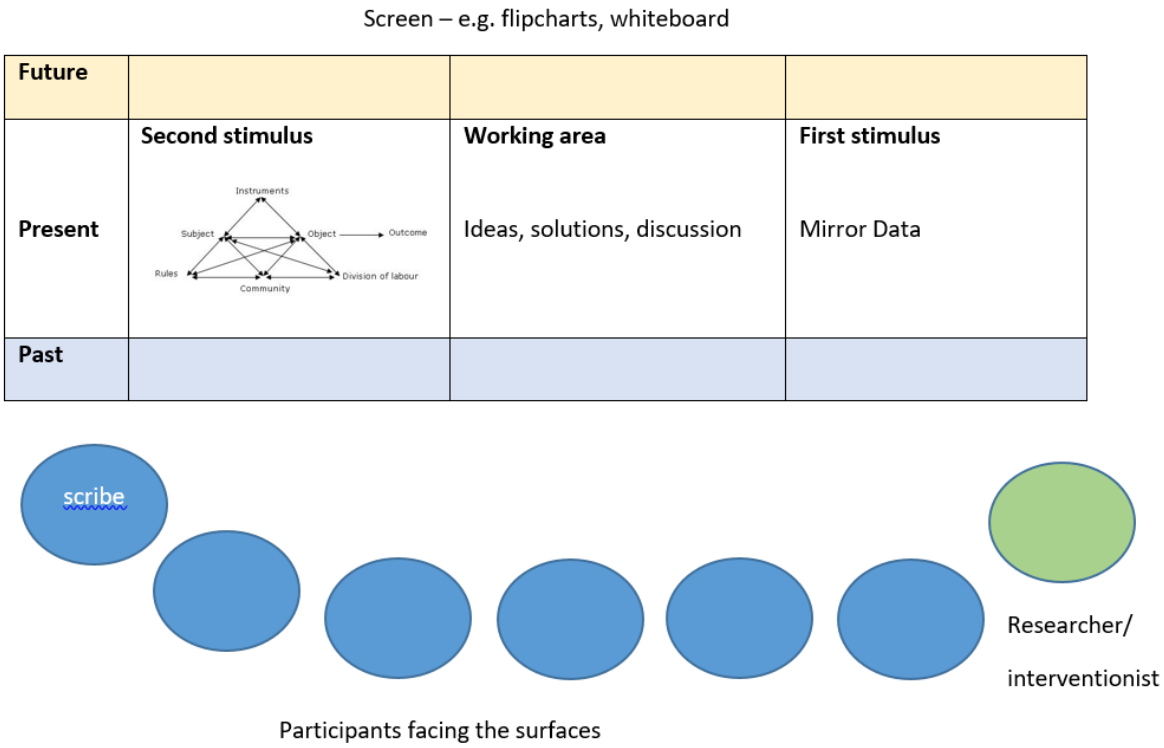
Figure 4.3: Phases of the Change Laboratory



Adapted from Engeström et al. (1996, p. 11)

For Engeström, the process is facilitated through the use of surfaces, the 'central tool of the Change Laboratory' (2007, p. 2). Engeström advocates the use of three sets of surfaces, one to represent the present, one the past and one the future (Figure 4.4). Essentially, the surfaces represent the mirror to present the first stimulus, a presentation space for the second stimulus, and a working area for the group to discuss ideas and solutions in the third, central space. Engeström is also quite prescriptive in the setup of the venue and the assigning of roles to the group. The participants should be set facing the surfaces. He also recommends a scribe should be assigned to take minutes of the meeting. It is worth noting that while a session typically starts in the right-hand panel, participants do not need to rigidly progress from right to left. Discussion will typically move between all three panels in both directions.

Figure 4.4: A representation of a session Adapted from Engeström (1996, p. 3)



Adapted from Engeström (1996, p. 3)

This procedure was followed for the initial sessions, but evolved as the Change Laboratory progressed. A set of surfaces was used throughout to map and record the process. An example of this can be seen in Table 4.5. The arrows indicate that this is not a simple linear process – sessions move vertically through time as well as horizontally through first and second stimuli, from right to left and also left to right. The venue for the sessions was a standard classroom – each participant was able to bring a laptop and a desktop PC, connected to a Smart screen, was used to display the surfaces. It should be noted that while ideally sessions would be video recorded this was impossible due to cultural sensitivities. The sessions were audio recorded only as a result.

Table 4.5: Surfaces

	MODEL/VISION	IDEAS/TOOLS	MIRROR
FUTURE	7. Visioning the future structure of the activity system in which the current contradictions would be overcome.	8. Modelling the new tools and ways of working necessary for realising the vision. Designing the first experiments with the new tools and new ways of working.	9. Follow up data about the feasibility of the new tools and ways of working as well as about needs for their further development.
PRESENT	6. Modelling the most important changes taken place in the elements of the activity system as well as historically evolved inner contradictions the changes have created within the activity system.	2. Shared concerns, identified problem areas. Ideas for further analysis. Solution ideas.	1. Samples of problem situations in the practitioners daily work with the object of the joint activity
PAST	5. Modelling the central features of the past structure of the activity. Analysing the nature of the current phase of the transformation of the activity.	4. Identification of periods and turning points in the development of the activity.	3. Data concerning important historical changes in the activity system.

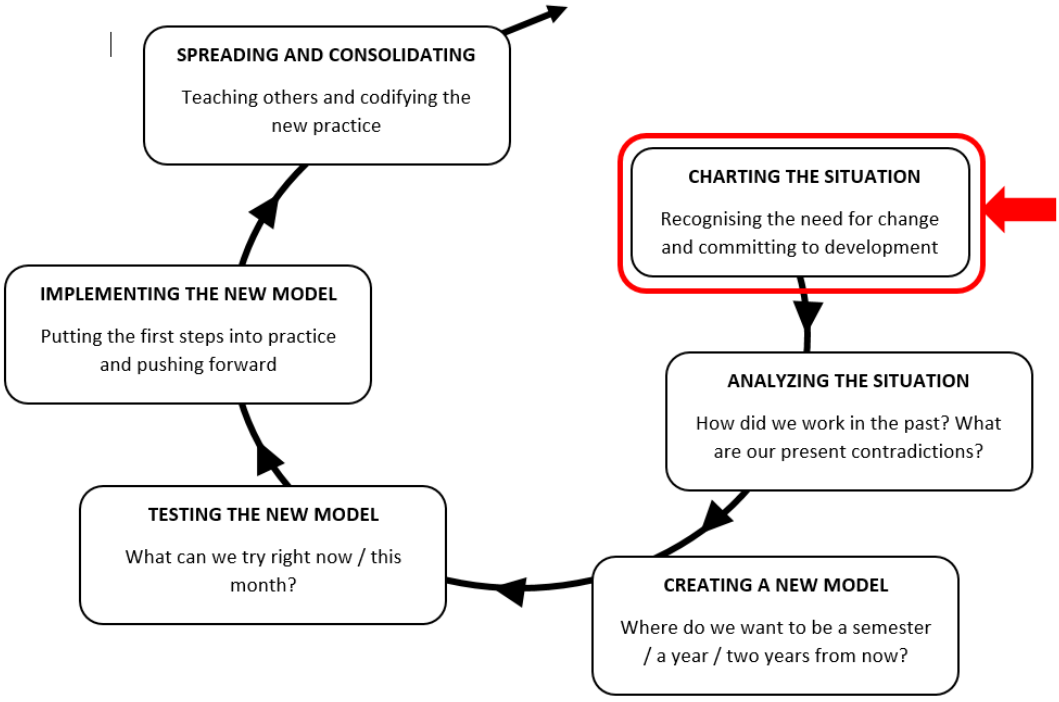
Adapted from Virkkunen and Newnham (2013, p. 18)

In summary, the sessions were mapped across the stages of expansive learning, and facilitated via an adaptation of Engeström's surfaces. Each session was designed to follow the principles of dual-stimulation, with mirror data from previous sessions and

concepts such as the activity system forming first and second stimuli as the Change Laboratory progressed.

Session 1: Charting the situation

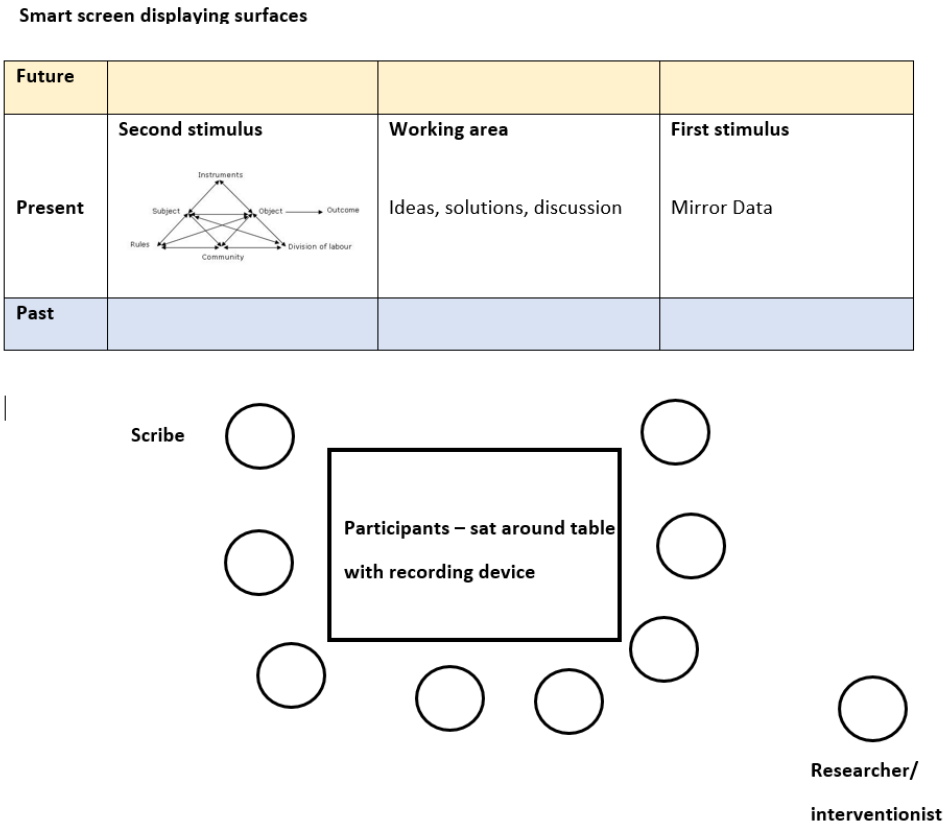
Figure 4.5: Charting the situation



Session 1 took place on September 3rd 2019. All 8 participants were present. The purpose of this session was to discuss the mirror data and recognize the need for change. Mirror data was shared. Initially, the researcher/interventionist went through and summarized the results from Data Set 1 and 2. Participants then received a handout with a list of contradictions from Data Set 3. This handout formed the primary stimulus. The secondary stimulus was the activity system diagram.

The session was audio-recorded, and one member acted as a scribe, taking notes for minutes. The venue set up can be seen in Figure 4.6. The surfaces were presented on the screen in Microsoft OneNote.

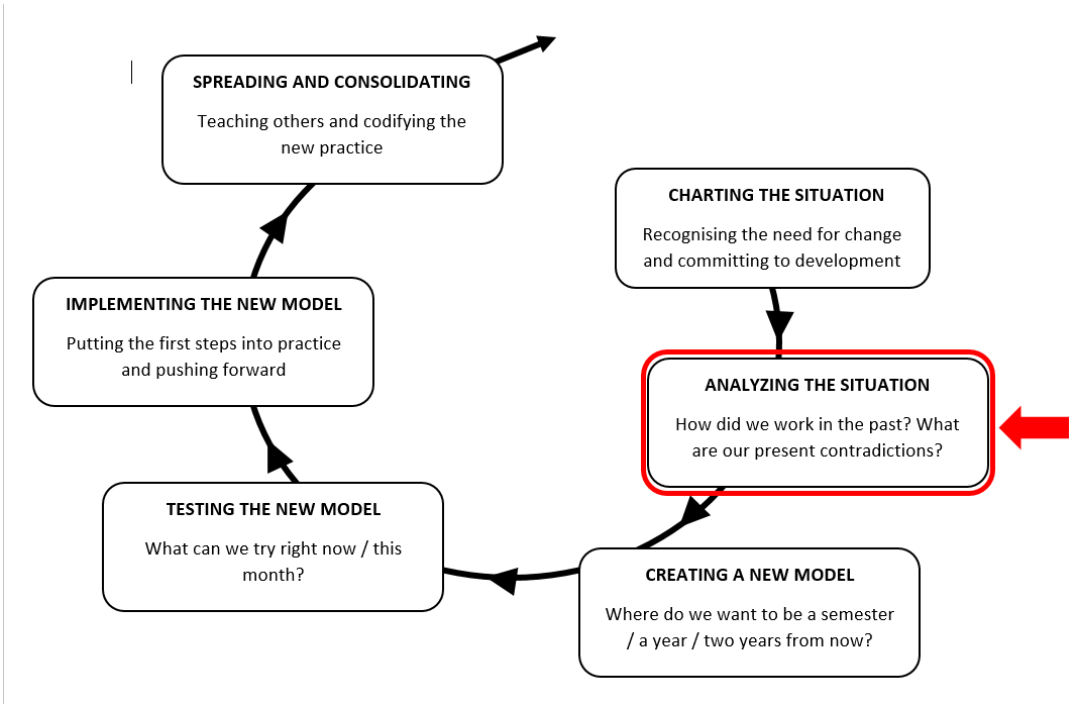
Figure 4.6: Session 1 venue layout



The scribe was also tasked with recording ideas onto the surfaces themselves. In practice this took place at the end of the session, and involved some discussion as typing skills within the group varied. Initially the discussion took time to gather momentum, but once the participants understood the task discussion flowed freely. A considerable amount of ideas were generated and recorded onto the surfaces. Post-session the meeting was transcribed and initial coding of the results took place using nVivo. Language was first coded to the elements of the activity system, and given a sub-heading within that element. This initial coding formed the basis of analysis for planning the subsequent meeting. These steps of transcription, coding and planning took place after each session.

Session 2: Analysing the situation

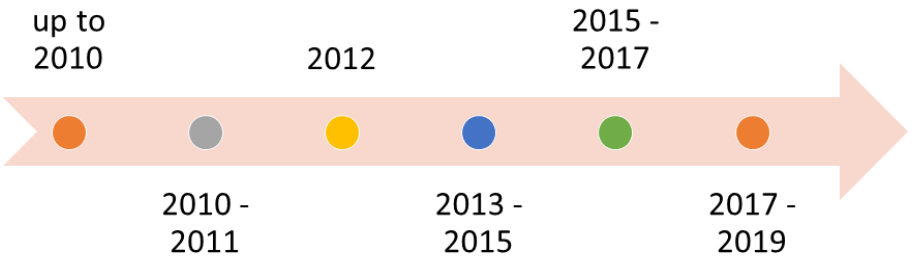
Figure 4.7: Analysing the situation



Session 2 took place on September 17th 2019. All 8 participants were present. The purpose of this session was to look at the historical background to the current activity system. By identifying moments of change that may have caused contradictions, the participants should be able to position the current work activity in a historical context – how did we get to where we are today? How has the past shaped our present work activity?

A timeline was presented as the primary stimulus. See Figure 4.8. The notes from Session 1 were also displayed on the surfaces, with the activity triangle as the second stimulus.

Figure 4.8: Timeline stimulus for participants



In practice, the group referred more to the Session 1 notes as second stimulus. They were perhaps more comfortable with their own language than the concepts represented by the activity system diagram. The surfaces as presented to the participants can be seen in Table 4.6.

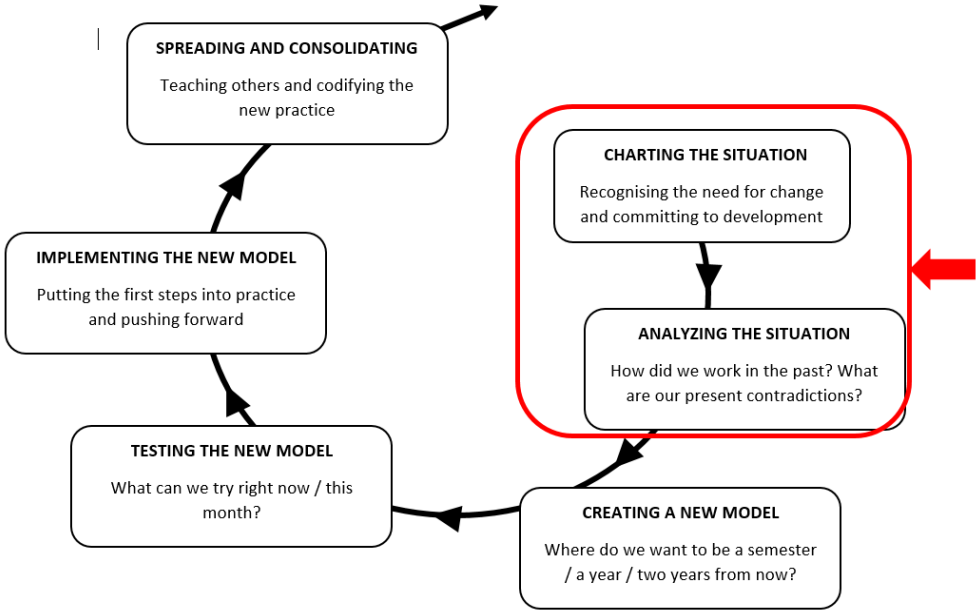
Table 4.6: Session 2 surfaces

Future			
Present		**Session 1 Notes** Ideas, solutions, discussion from session one	**Session 1 First stimulus** Mirror Data
Past	**Second stimulus** 	**Session 2 Working Area**	**First stimulus** 

The participants have considerable experience in the institution, with an average of 8.5 years teaching experience in the preparatory course. This meant they had direct experience of the events discussed and were able to recall events and their own interpretations and memories of them. This led to animated discussion. A considerable amount of data was recorded for later transcription and analysis. As researcher/interventionist, it seemed that certain key themes were beginning to emerge around contradictions with the object and also tools in use for the work activity.

Session 3: Continuing to analyse and chart the situation

Figure 4.9: Continuing to analyse and chart the situation



Session 3 took place on October 1st with all 8 participants. The aim of this session was to create a model of the current practice, building on the previous two meetings. The mirror data for the session drew from two sources. One, Session 1 had been coded to the activity system nodes and displayed as a hierarchy chart, shown in Figure 4.10, and secondly a historical activity system diagram created by the researcher/interventionist during analysis of Session 2, shown in Figure 4.11.

Figure 4.10: Meeting one coding hierarchy chart

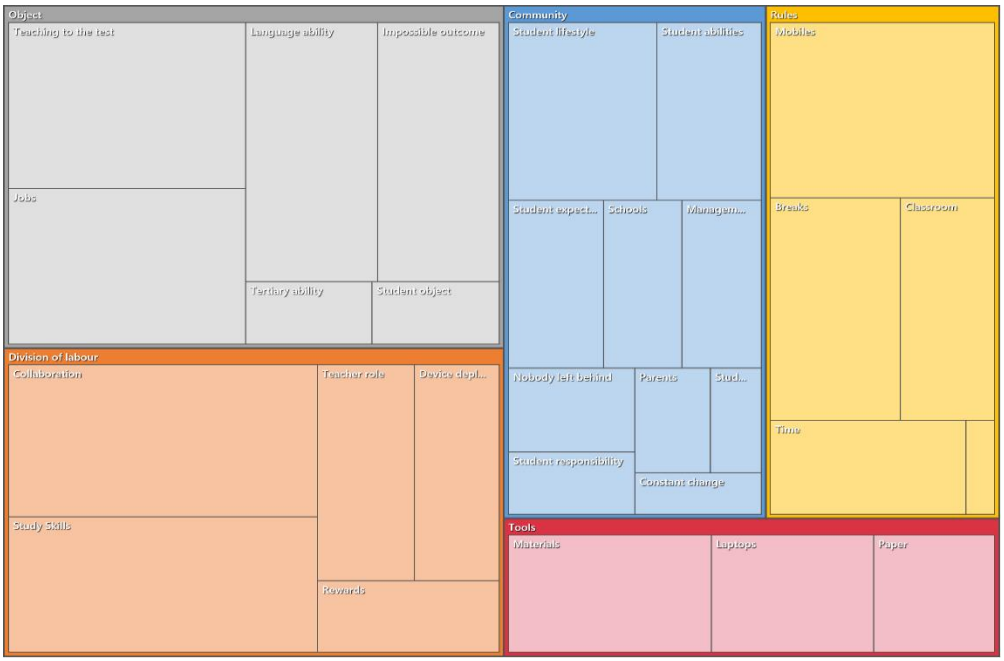
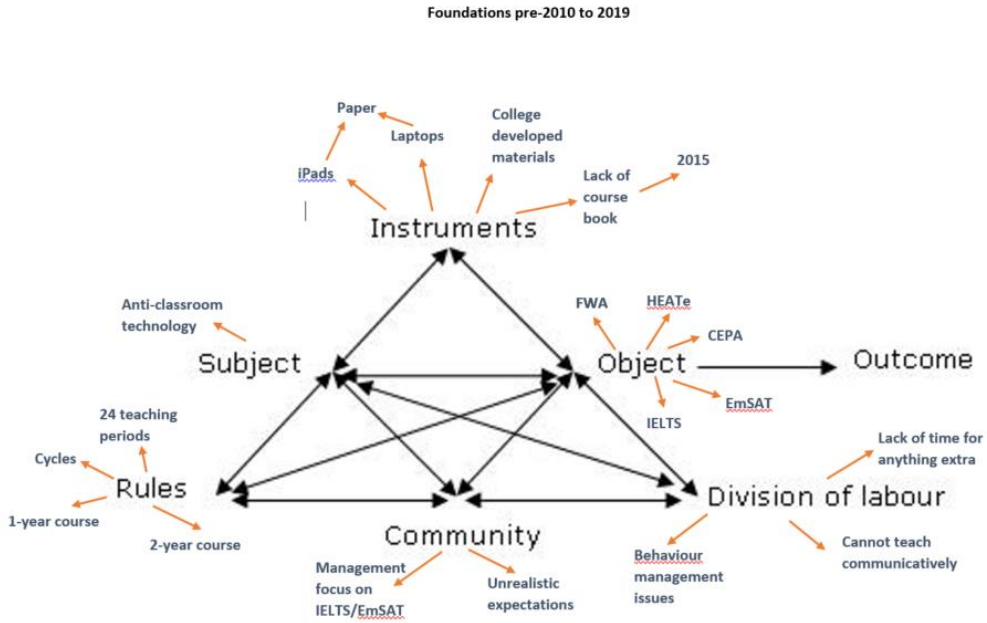
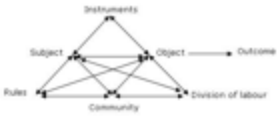
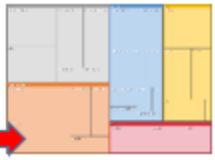


Figure 4.11: Historical activity system



As can be seen in Table 4.7, the surfaces give a clear record and guide as the meetings progress.

Table 4.7: Surfaces for session 3

Future			
Present	**Second stimulus** 	**Session 1 Notes** Ideas, solutions, discussion from session one	**Session 1 Hierarchy chart** 
Past	**Session 2 activity system** 	**Session 2 Working Area**	

The arrows indicate how the group moved through the surfaces. Current and past issues were discussed and highlighted, with the aim of consolidating these in this third session with the second stimulus of the activity system diagram. As previously mentioned, expansive learning and the Change Laboratory process is not linear, and movement between the surfaces representing past, present and future is expected to be multi-directional.

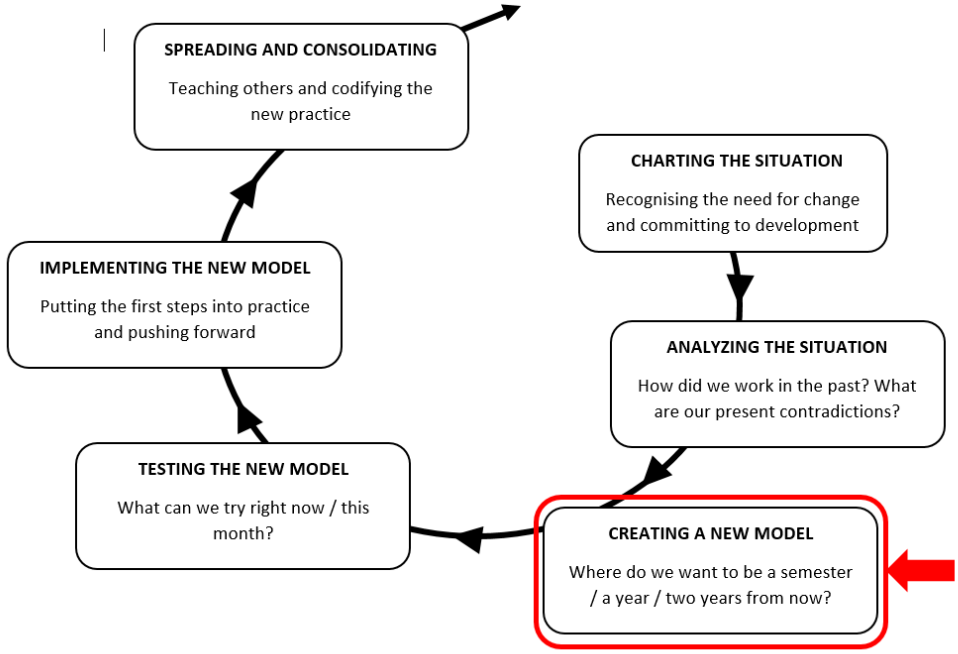
Session 3 proved more problematic. The participants struggled with the concepts of activity theory and the creation of a new diagram.

It should also be noted that I abandoned the role of scribe at this point. I had concerns that the participant taking on this role was then merely taking notes / minutes, and was

not participating fully in the discussions. As the session was recorded and transcribed I decided participation was more important than minutes, and moved ahead without them.

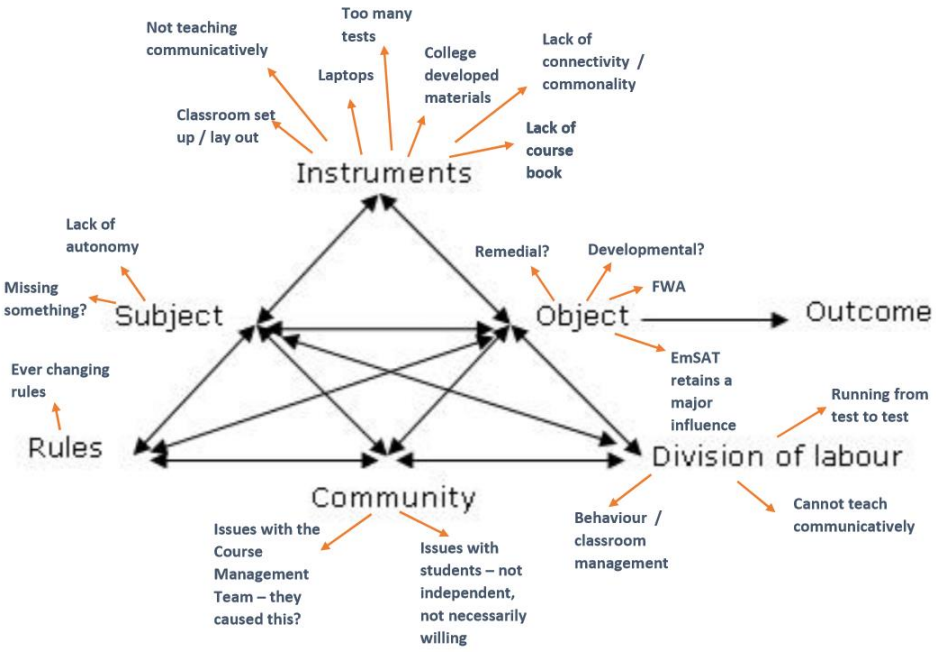
Session 4: Creating a new model

Figure 4.12: Creating a new model



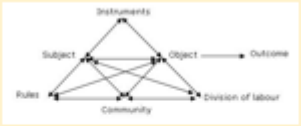
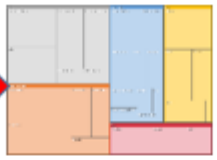
Session 4 took place on October 15th 2019. The purpose of the 4th session was to begin to create a new model. In other words, to begin to seek and discuss possible solutions. Data from the previous sessions formed the mirror. As researcher/interventionist, I had created an activity system diagram to represent current practice. See Figure 4.13.

Figure 4.13: Current activity system



For the surfaces, we used these activity systems diagrams as the first stimulus, moving now into considering the future. See Table 4.8.

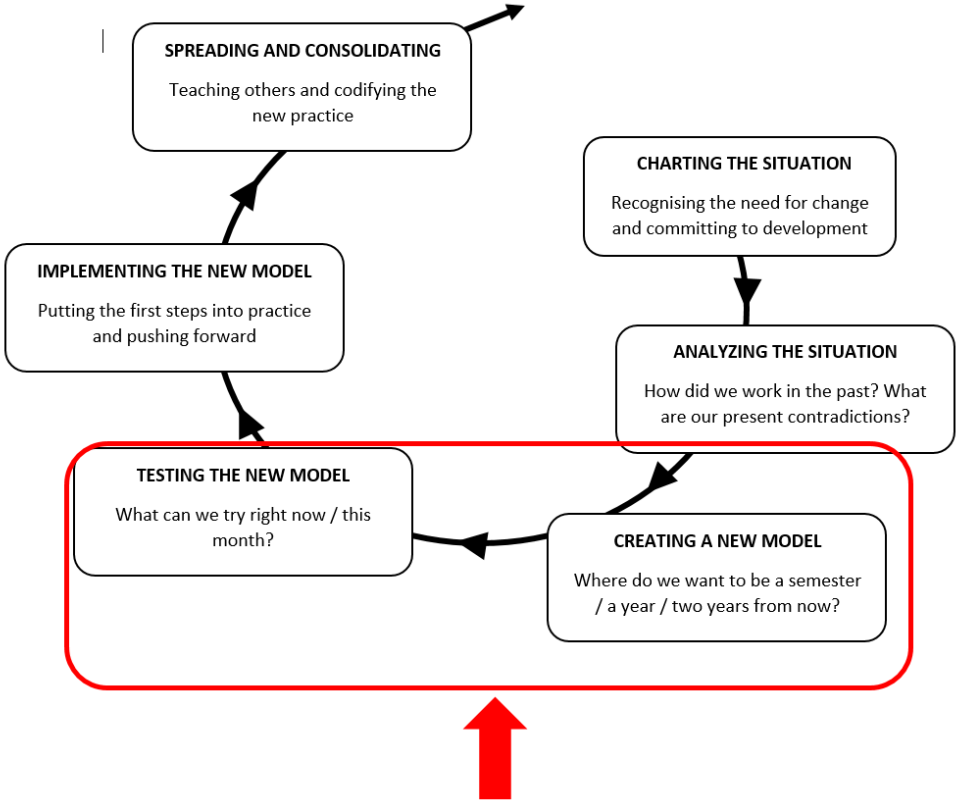
Table 4.8: Surfaces for session 4

Future	**Second stimulus** 		
Present	**First stimulus: current activity system** 	**Session 1 Notes** Ideas, solutions, discussion from session one	**Hierarchy charts from previous sessions** 
Past	**First stimulus: historical activity system** 	**Session 2 Working Area**	

The participants took part enthusiastically, although preferred to use their own language rather than that of the activity systems in the main. Several solutions were suggested and plans made to experiment in subsequent classes before the next session.

Session 5: Creating and testing the new model

Figure 4.14: Creating and testing the new model



Session 5 took place on October 29th 2019. Here the task was to begin to make concrete some of the solutions the group had been discussing and already experimenting with in class.

To this end, I had prepared two activity systems diagrams. One representing the ideal future activity system for the participants, and another for the institution. For the second stimulus, rather than struggle with an activity systems diagram I used a graphic to represent different language points. The activity systems and this diagram can be seen below in Figures 4.15, 4.16 and 4.17.

Figure 4.15: Future activity system locally

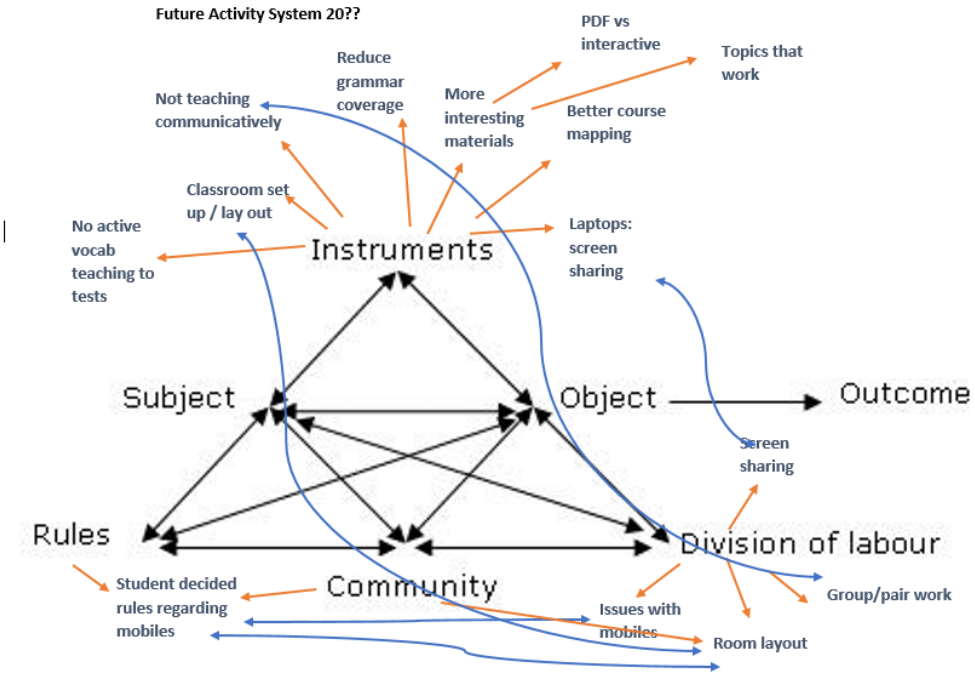


Figure 4.16: Future activity system for the institution

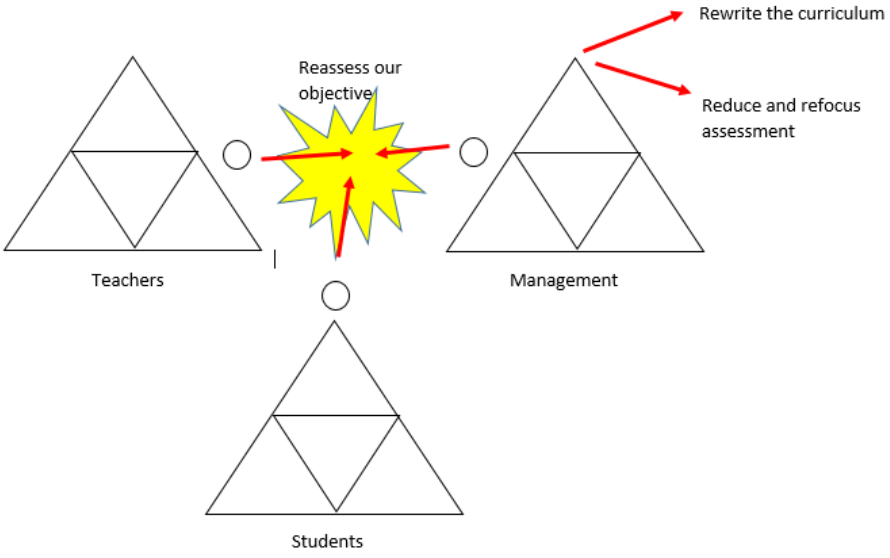
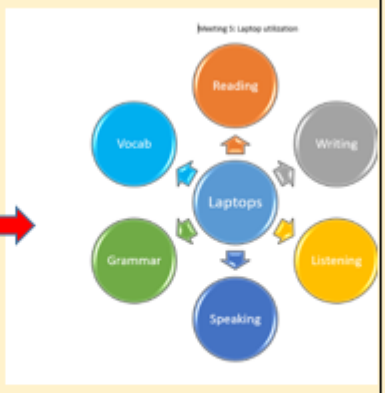
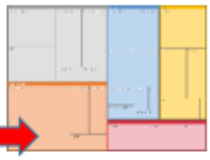


Figure 4.17: Graphic of language points for second stimulus

Participants were able to describe several practices they had experimented with and there was enthusiasm around the ideas tabled. See Table 4.9 for the surfaces used at the meeting.

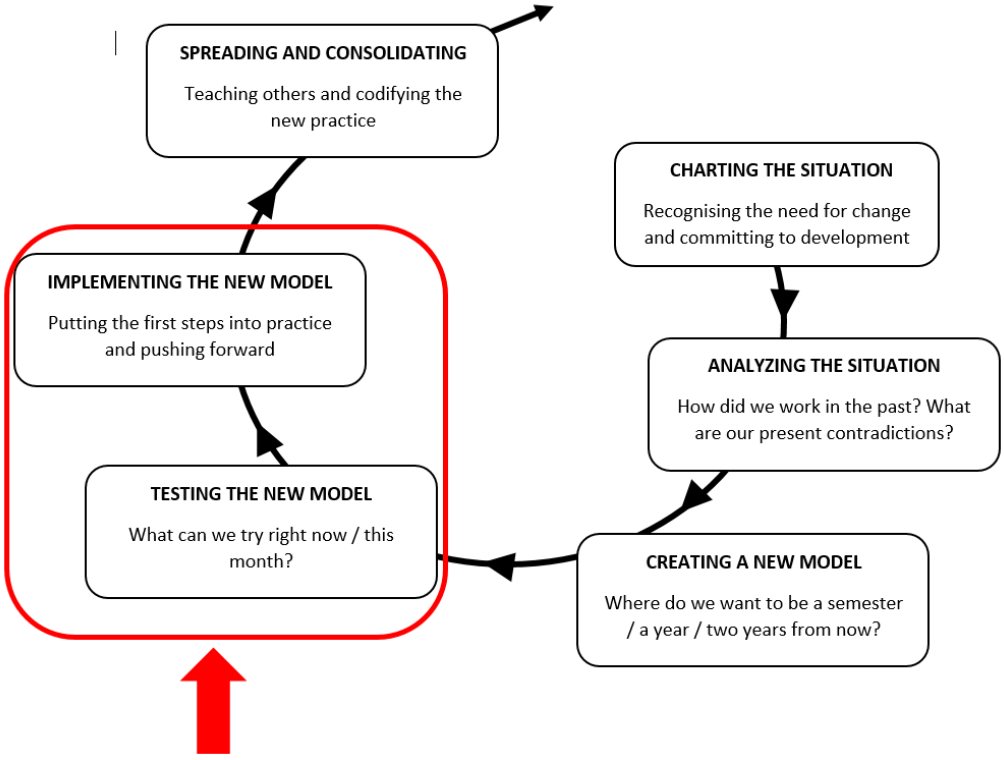
Table 4.9: Session 5 surfaces

Future	First stimulus  	Second stimulus 	
Present	current activity system 	Session 1 Notes Ideas, solutions, discussion from session one	Hierarchy charts from previous sessions 
Past	First stimulus: historical activity system 	Session 2 Working Area	

As previously mentioned, participants struggled with the language of the activity system, but were able to express clearly their ideas without this. There was agreement to continue to experiment.

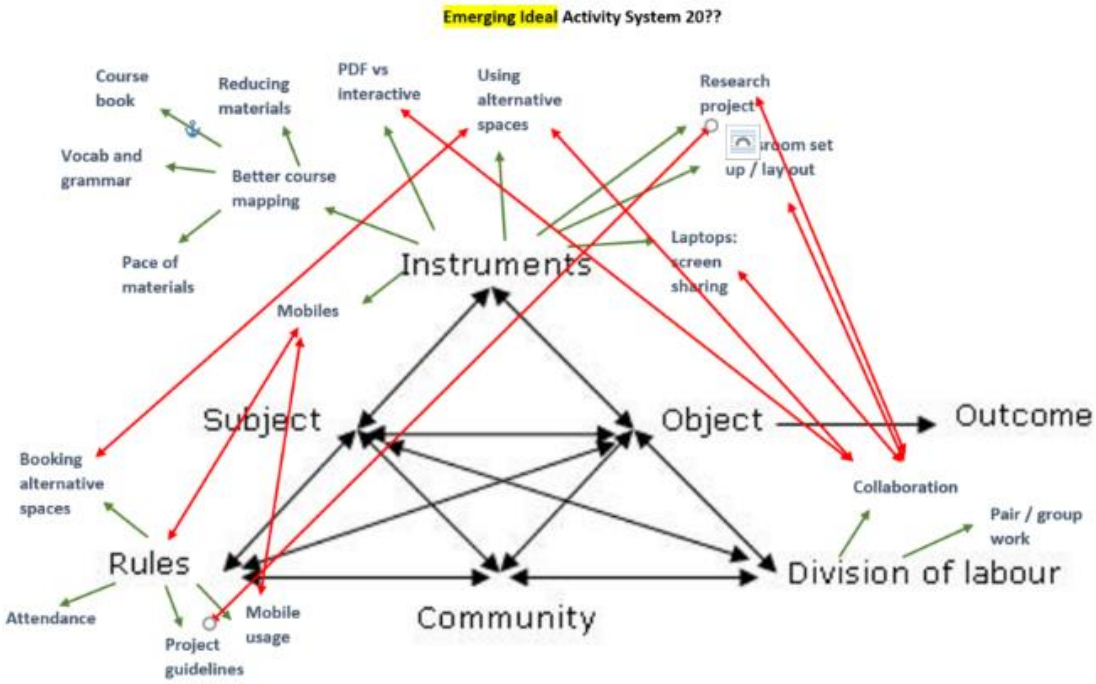
Session 6: Testing and implementing the new model

Figure 4.18: Testing and implementing the new model



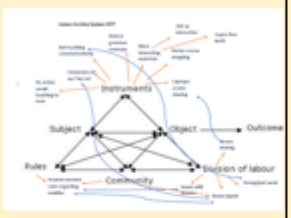
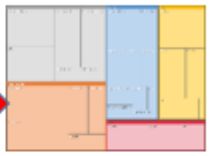
Session 6 took place on November 12th 2019. Ideally, the purpose of this session would be to create a model that can be implemented, but the reality of time restraints meant that this was more a continuation of Meeting 5 although ideas were becoming more solid. An emerging ideal activity system had been created, and this was discussed again in relation to the graphic of language points with the idea of deciding best practice. This emerging activity system can be seen in Figure 4.19.

Figure 4.19: Emerging activity system



The surfaces for session 6 can be seen in Table 4.10.

Table 4.10: Session 6 surfaces

Future	Future activity system  	First stimulus 	Second stimulus 
Present	current activity system 	Session 1 Notes Ideas, solutions, discussion from session one	Hierarchy charts from previous sessions 
Past	First stimulus: historical activity system 	Session 2 Working Area	

Session 7: The new model and continued challenges

The final session took place on November 26th 2019. One participant was unable to attend. The fact that attendance had been 100% until now showed the commitment of the group to the process. This final session concentrated on continued challenges and issues, common themes that were emergent in Session 1 that consistently manifested themselves throughout the sessions. There were no specific first and second stimuli

beyond the participants own discussions. It was clear that a number of challenges remain. These challenges continue to manifest as contradictions and are discussed in detail in *5. Findings*.

Summary

The seven sessions are summarised in Table 4.11, with details of the first and second stimuli used in each session. These can also be seen in Appendices 11.1 to 11.5.

Table 4.11: Summary of first and second stimuli

Session	First stimulus	Second stimulus
1. Charting the situation	Mirror data gathered from • Institutional pass rates • Student survey • Teacher interviews and focus groups *See Appendix 10.1 – 10.9*	Activity system model
2. Analysing the situation	Timeline of English preparatory course *See Appendix 11.1*	Activity system model *See Appendix 11.1*
3. Continuing to chart and analyse the situation	Meeting 1 coding hierarchy chart Meeting 2 historical activity system model *See Appendix 11.2*	Activity system model *See Appendix 11.2*

4. Creating a new model	Current activity system model *See Appendix 11.3*	Activity system model *See Appendix 11.3*
5. Creating and testing the new model	Local future activity system model Institutional future activity system model *See Appendix 11.4*	Graphic of language points *See Appendix 11.4*
6. Testing and implementing the new model	Emerging ideal activity system model *See Appendix 11.5*	Graphic of language points *See Appendix 11.5*
7. The new model and continued challenges	Continued discussion of emerging ideal activity system model	Graphic of language points

Following up on the sessions

Following the project, all participants were asked to complete a short survey approximately 4 months after the project had concluded. The survey can be seen in Appendix 11.6. Classroom observations were planned, but the move to online teaching necessitated by the COVID19 pandemic prevented these taking place.

4.6 Data Collection and Analysis

As mentioned in the session descriptions, each session was recorded and then transcribed. Transcription was initially carried out through computer software, and then checked and where necessary corrected by the researcher/interventionist. Firstly, potential discursive manifestations of contradictions such as 'but, 'no' and so forth were highlighted using nVivo software's search program and also through careful reading, in an echo of Engeström & Sannino's approach (2011). Exchanges were then coded to broad elements of the activity system, and then further analysed to provide finer descriptions and categories within these elements. For example, an exchange might be broadly classified as 'Tools', and then divided into 'hard copy', 'devices' and 'online materials'. Discursive manifestations within that coding could then be examined. Besides nVivo, Microsoft Excel and also paper copies of transcripts were employed. The approach to analysis is perhaps, therefore, best described as blended. It seems true that 'Change Laboratory interventions generate voluminous data' (Bligh & Flood, 2015, p. 158). The collection of mirror data, both that gathered prior to the sessions and then generated during the intervention, combined with the transcripts has indeed created a deep pool of data for the researcher/interventionist that is not only voluminous but also high-yielding. The insights yielded are discussed in *5. Findings.* Examples of the transcription and classification of data can be seen in Appendices 12.1, 12.2 and 12.3.

4.7 Issues

Change is not an easy process. The Change Laboratory is a major commitment, both for the participants and the researcher/interventionist. Besides ethical considerations, two further issues quickly became evident during the process of carrying out the intervention.

Ethical Considerations

All participant data has been anonymized during the data gathering. Participants have been assigned labels (teacher 1, teacher 2 etc.) rather than pseudonyms in order to avoid potential issues of identification relating to gender and nationality. This was doubly important given that the research takes place in the participants' workplace and is potentially critical of both management and the institution.

There is also the question of insider research. Insider research can be defined as 'research by complete members of organizational systems and communities in and on their own organizations' (Brannick & Coghlan, 2007). As a member of the work unit under investigation, I am very much an insider to the research site. While critics of insider academic research maintain that the 'dual roles of investigator and employee are incompatible' (Morse, 1998, in Brannick & Coghlan, 2007), there are a number of inarguable benefits. Chief among these is the knowledge of the organization under investigation that the insider brings to the table. The insider is immersed in the organization and its culture and has built up a level of knowledge from 'being an actor in the processes being studied' (Brannick & Coghlan, 2007) that an outsider could not hope to replicate. The insider arrives at the moment of research with a level of pre-understanding that would take an outsider a potentially prohibitive amount of time to acquire (Smyth & Holian, 2008 in Unluer, 2012). In this sense the insider academic

researcher is well-placed to begin any research project from a position of strength in terms of understanding and knowledge of the research site and its culture and dynamics.

At the same time, the insider researcher does need to be aware of potential drawbacks. Insider knowledge could lead to a tendency for over-assumption and consequently failure to probe during interviews and observations. One may assume one knows why someone does something purely because we do a similar task ourselves, where an outsider researcher may not make this assumption and would dig deeper. There is also the question of role duality. Insider researchers have duties as employees, and their institutional position within a team may have bearings on the dynamics of their effective role as a researcher. Duties to the institution and relationships with colleagues need to be balanced with the duties of research. Such considerations are not inconsiderable.

However, the advantages are clear and outweigh the disadvantages, as long as the insider-researcher is aware of the potential pitfalls. Indeed, it should be possible for the researcher to be both an insider and outsider. Being a member of a group does not denote complete sameness, nor does being an outsider mean one is completely different – there is a space in between that the qualitative researcher is 'uniquely equipped' to occupy (Dwyer & Buckle, 2009, p. 62). In terms of the project's theoretical underpinnings, the insider-Change Laboratory scenario has been 'poorly documented in the literature' (Bligh & Flood, 2015, p. 155), and in this sense this intervention provides a welcome opportunity to contribute to research specific to this dynamic.

Issues with theory and time

Beyond ethical considerations, an issue became apparent with the theory underpinning the intervention. The participants did not readily embrace activity theory or expansive learning as concepts. Although they were happy to accept the activity systems diagrams

they were more comfortable using their own language – that of English teachers – to describe their working practice and the possible contradictions and solutions. I do not see this as a major issue, however. Medgyes (2017) makes the argument that English teachers fail to see the relevance of academic research, preferring instead practical attempts to modify teaching practice. In this Change Laboratory teachers have been doing just that. It is perhaps enough for the researcher/interventionist to use the language of the theory if the participants are actually making the practical efforts and having the important discussions that could lead to concrete change.

A second major issue has been time. This has been a massive undertaking. To transcribe and plan sessions in a short two-week window, with many other commitments beyond the project, has been a major challenge. However, the findings, and the potential concrete changes that may result, have made the hard work and commitment worthwhile. These findings are now discussed in the following chapters.

5 Findings 1: Contradictions in the Historical and Current Activity Systems

Findings have been divided into two chapters. *Findings 1: Contradictions in the Historical and Current Activity Systems* is, as the name suggests, concerned with describing the contradictions manifesting in the historical and current activity systems.

The second findings chapter, *Findings 2: The Future Model of the Activity System*, is focused on presenting the solutions that emerged from the Change Laboratory as a reaction to the identified contradictions.

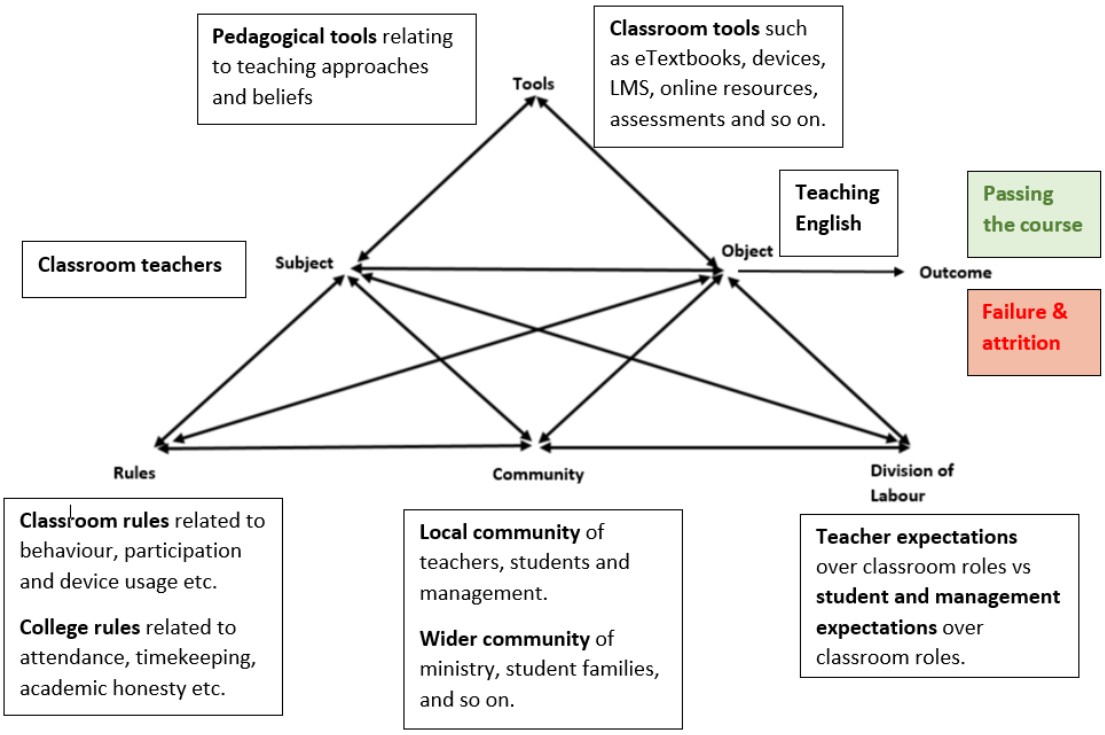
This first chapter will begin by presenting a basic representation of the current activity system. It will then examine the historical activity system and its impact on the present, and finally investigate the contradictions manifesting in the current activity system that are potentially contributing to the unintended outcomes of student failure and attrition. Findings are initially presented in general terms and are then mapped onto the activity system as contradictions and their discursive manifestations.

5.1 The Current Activity System: A Basic Summary

Before looking at the historical underpinning of the preparatory English program, it is necessary to first outline the basic structure of the current activity system in its present state as a point of reference. The *subjects* are a group of highly experienced and qualified English language professionals. The *subjects* use *tools* to achieve the *object*. The *tools* can be divided into two main areas: i) *pedagogical tools* that relate to teaching approaches, techniques and the beliefs that the subjects bring to their classroom practice

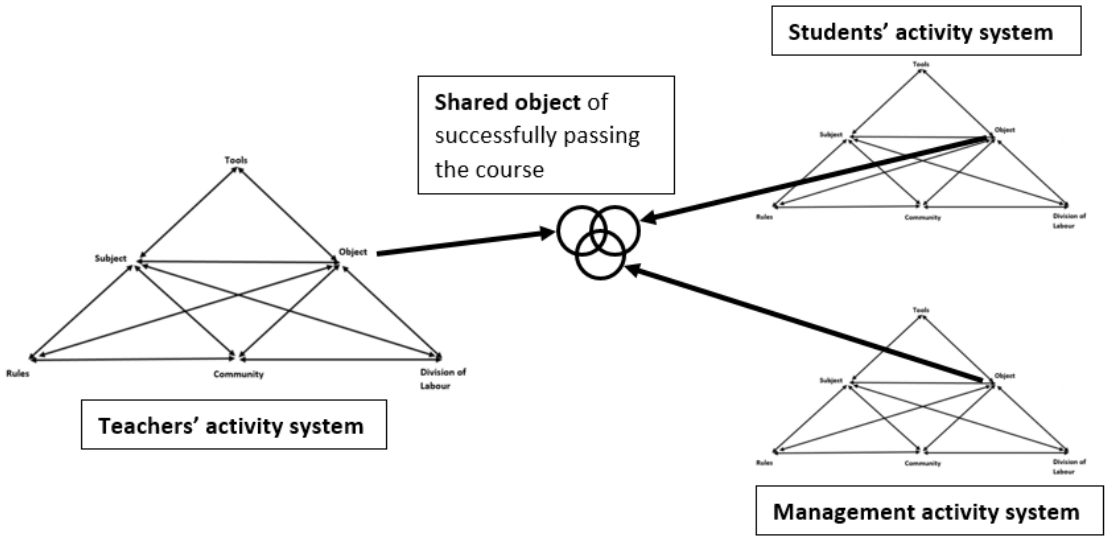
and ii) *classroom tools* that are made up of tangible materials including classroom devices, learning management systems (LMS), eTextbooks, materials (online and physical) and assessments. The *object* of the teachers' activity is, simply put, to teach English. The *intended outcome* of this activity sees students pass the course and enter degree programs. The *unintended outcome* is student failure and attrition. This activity system also has a *community*, consisting locally of students, peers (teachers) and local management. More widely, there is also a broader community of institutional management and education ministry, student families and so on. *Rules* exist within the classroom, relating to behaviour, device usage and so forth, while in the college as a whole there are rules governing attendance, tardiness and academic honesty that are likely common in educational institutions worldwide. Regarding the *division of labour*, this is split between the expectations of the teachers and those of the students and management. This activity system is represented in Figure 5.1.

Figure 5.1: The current activity system



It must be remembered, as we have seen in the *Theoretical Framework*, that activity systems do not exist in isolation, and are instead themselves elements or nodes in a larger network of interrelated activity systems. This is true of the teachers' activity system, which shares at least partially the object of students successfully passing the course with management and student activity systems. This can be seen in Figure 5.2.

Figure 5.2: Interrelated network of teachers, students and management



5.2 The Impact of History: The Battle Cries and Costumes of our Ancestors

Activity systems are in a state of almost constant evolution. As contradictions occur, subjects attempt to overcome them. This leads to the adoption of new tools, new rules and so on, and activity systems evolve. In this sense 'all activity systems are the offspring of historical systems, a culturally more advanced version of the previous system' (Miles, 2020, p. 69). The past, history, has direct influence on the present, and while we may well make our own history and try to direct our present, we do so 'under circumstances directly encountered, given and transmitted from the past' (Marx, 1852/1979, pp. 103-104). Contradictions themselves are 'historically accumulating structural tensions within and between activity systems' (Engeström, 2001, p. 137). These tensions develop over time and have direct impact on the present activity. In other words, in order to understand where we are *now* we need to study where we have come *from.* We cannot separate the influence of the past, the history, on the present state of an activity. This is particularly true of the preparatory English course. The participants bring their personal histories and experiences to the Change Laboratory, histories that

have been shaped in part by their experiences within the work practice that this intervention seeks to change. The history of the preparatory program is briefly analysed in the following section.

A Brief History of the Preparatory English Course

Preparatory English courses have existed in the UAE as long as degrees taught in English have existed. This is a constant – students wishing to enrol on degree courses have had to meet an English requirement, whether internal to the institution, through a nationally administered proficiency test or through an international exam such as IELTS. However, while the nominal aim if the program has been constant, the course itself has been subject to a number of changes over the last decade. These changes have been institutional and mandated through senior management or the Ministry of Education. The changes summarized below in Table 5.1.

Table 5.1: Key events in the preparatory English course

Year	**Key Events / description**	**Course length/contact hours (per week)**	**Exit/entry requirements**
Prior to 2010	Students study English and study skills	One year, 10 – 20 hours, depending on proficiency level and need	Internal institutional exam
2010	Introduction of laptops	Two years, 20 hours	Changed from internal to external national, then

	Introduction of 'strand' system (separate courses for each language skill e.g. Reading, Writing etc.)		external international
2012	Introduction of iPads and the paperless classroom	Two years, 20 hours	External national exam
2013 – 2015	Focus on IELTS	Two - three years, 20 hours	External international exam
2015	Institutional leadership change Introduction of cycles Teaching hours raised from 20 to 24	One year, 24 – 28 hours	External international exam
2016	Focus on new national exam	One year, 24 – 28 hours	External national exam
2017	Re-introduction of laptops, iPads dropped	One year, 24 – 28 hours	External national exam
2019	Introduction of new English Communications courses	One year, 10 – 15 hours	Internal institutional exam

Clearly there have been a number of major changes to the course and the requirements for students and teachers over the last decade, changes that have at least in part contributed to a number of contradictions and their discursive manifestations. These contradictions fall into four clear groups: issues with tools (materials, devices etc.), issues with the nature of the course itself, issues with the subjects (teachers) and finally issues with other stakeholders.

Historical Issues with the Tools in Use

The first group of contradictions centres clearly around issues concerned with the tools in use – the materials, devices, course work and so on that teachers are using in the classroom.

i. Published vs Home-grown Materials

Firstly, published materials are generally deemed to have been poor or at best only usable some of the time, and thus their use became optional. For example,

> *Teacher 3: it kind of got a little bit better. And it but not all throughout the whole week. We should use it the when the books became interactive…That was the only time I used the book.*

The participants recognized that creating their own material was time-consuming, but preferable,

> *Teacher 6: Yeah, they did. But because, yeah, because we didn't use it [the course book] very much. And we, I mean, we, we told him, you know, part of the whole orientation week was like, tell them to get binders because they would give them a lot of paper…So there was a lot of paper. But*

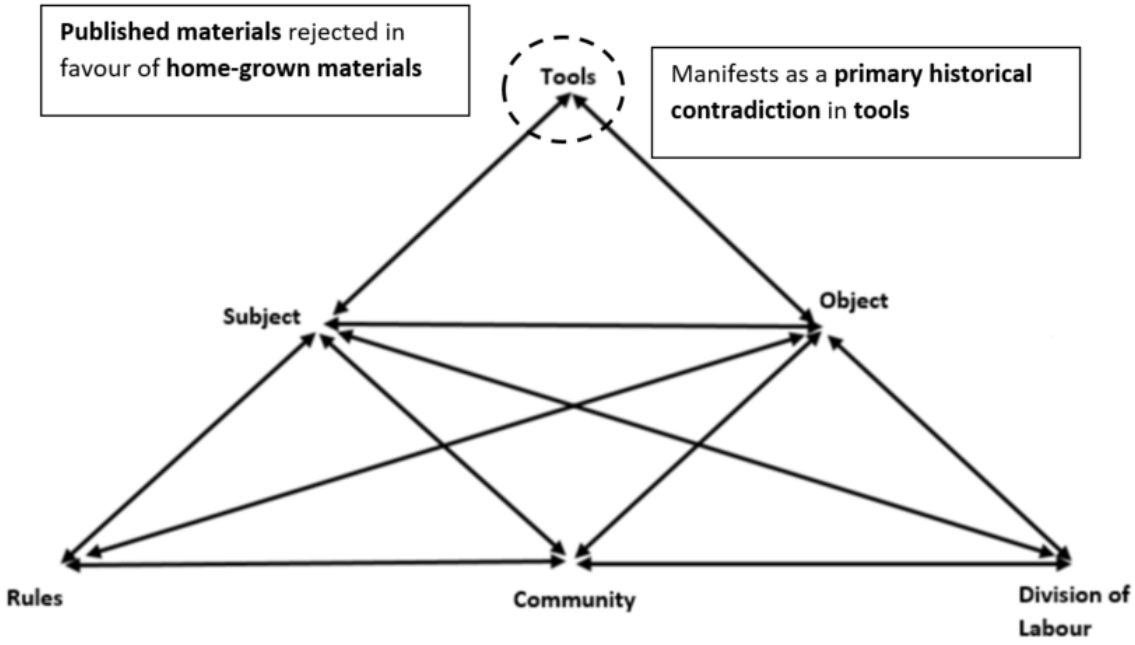
> *yeah, I think from a, I guess, was fairly early point here. That even though we were handing out textbooks, we just created our own stuff [materials to use in class]*.

Note the repeated examples of 'but' and 'but yeah' in the examples indicating hedging and hesitation. Furthermore, classroom devices were as optional as published materials. For example,

> *Teacher 5: I think I remember in 2009, the students had them [laptops], but we didn't necessarily have to use them. There were a lot of teacher created materials. But yeah…that took quite a while…*

Teachers were free to choose to use their own materials, and deliver them with or without laptops. Published material was rejected in favour of home-grown resources, and device usage was optional. This can be mapped to the activity system as a *primary contradiction* in the tools manifested discursively as a *Historical Dilemma with Materials* in Figure 5.3.

Figure 5.3: Historical Dilemma with Materials



ii. The Introduction of the iPad

Secondly, the introduction of iPads as the primary classroom device in 2012 had a major impact on the historical activity system. While this top-down intervention was presented as a revolution in teaching and learning, the reality for teachers was much less positive. Teachers were expected to deliver paperless classes using iPads and given very little time or training to prepare for this. The participants give examples using strong narrative related to not knowing how to use the device, and the subsequent lack of control they felt this caused. For example,

> *Teacher 3: It was just a screen with words in it that they cannot do anything with it*
>
> *Teacher 8: It was I found it really tough coming in and teaching the iPads in [name of college]. Huge classes. And this is before military service, wasn't it? So the behaviour I like, yeah, it was quite a shock.*

Teacher 6: Actually, weren't actually shown how we could use it in the classroom. We had to figure it out by ourselves

And

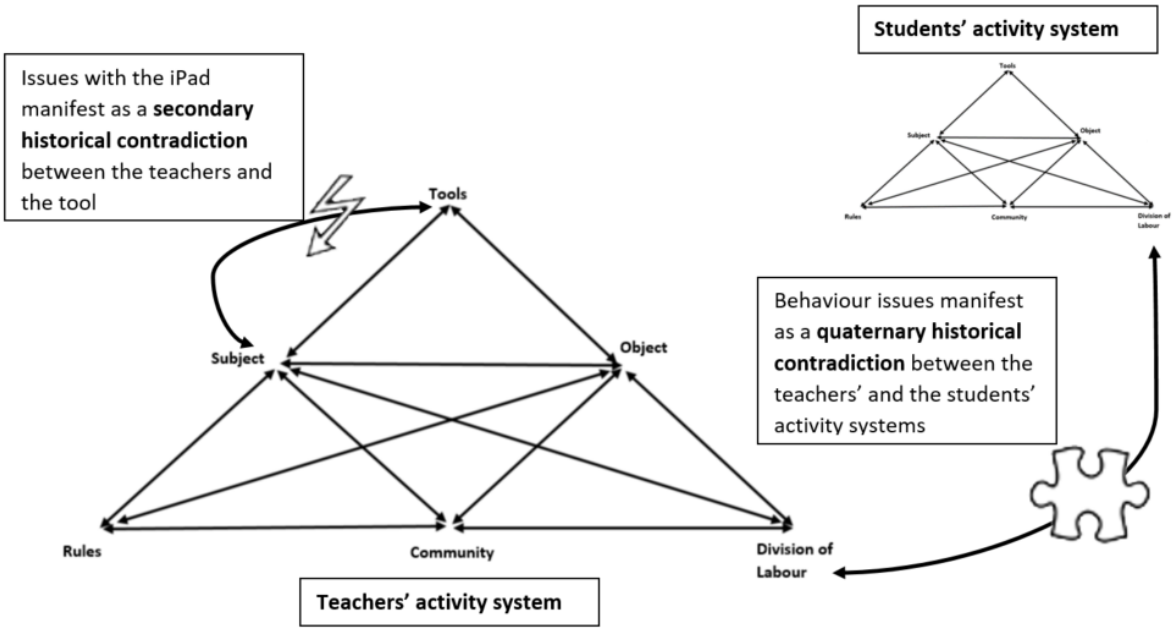
Teacher 3: To be honest, I never understood what they're doing. It's just like a rollercoaster ride.

Note that apart from a feeling of not knowing how to use the devices teachers also report major issues with student behaviour, issues they are linking firmly to the iPad.

Teacher 8: I found it really hard. I just didn't know how to integrate it into the classroom without losing absolute control I was barely controlling them anyway, you know, and these are the some of these are girls. Boys was something different. It was [Yeah.] I found it really tough.
Teacher 5: It was like giving them a giant mobile
Teacher 8: I don't even know how to use this within the lesson meaningfully without losing control of them. You know, because I literally was like, they would be jumping on the table. It was just crazy.

There is a clear sense of consensus among the participants. The introduction of the iPads is remembered in very negative, critical terms as a major disruption to teaching and their own professional competency, and participants also recall significant issues with student behaviour as a result of the introduction of iPads to classrooms. These combined issues can be represented on the activity system as a *secondary contradiction* between the subject and tools, manifested discursively as a *Historical Critical Conflict with the iPad* and a *quaternary contradiction* between the teachers and students' activity systems regarding classroom behaviour, a *Historical Critical Conflict with Classroom Behaviour*, Figure 5.4.

Figure 5.4: Historical Critical Conflict with iPads and Student Behaviour



iii. The Paperless Environment

There was a clear expectation from management that the introduction of the iPad would cause a paperless classroom, and teachers were actively discouraged from using hard copy resources. However, the introduction of the iPad coincided with the adoption of the IELTS as the exit test for the preparatory English course. At this time, the IELTS was only delivered as a paper-based assessment. The preparatory course, however, was delivered 100% through iPads, photocopiers and access to paper was removed and some teachers even felt that they 'were threatened not to use paper' (Teacher 3). There was a clear contradiction in preparing students using online platforms, apps and touch screens for an assessment that was 100% paper-based.

> *Teacher 6: Well, it's a paper-based test. And we were using iPads. So I mean, in level four, all our tests were on paper, and we wanted them to write on paper. And yet they were still using an iPad. And so obviously,*

you know, most of the IELTS resources were paper based. Yeah. Were in books and things so

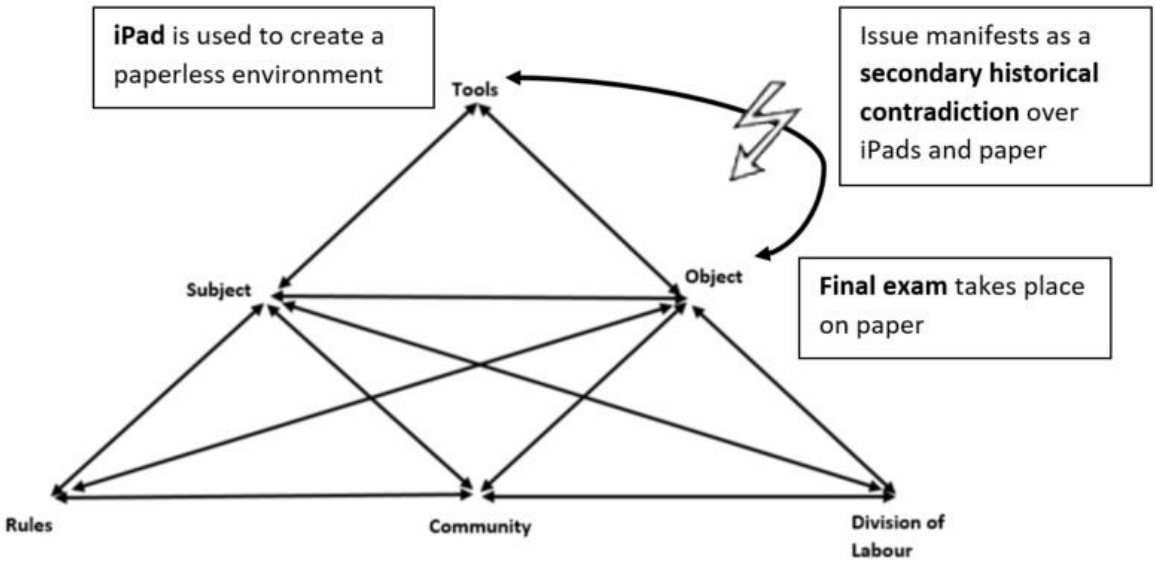
Teacher 3: And it didn't make sense us teaching them reading skills when they were doing it on the iPad and skills. They need paper. They can't do it on the computer. Just kind of it was ridiculous anyway.

Teacher 6: And also taking Yeah, yeah. I mean, yeah, trying to do long readings on

Teacher 5: It was so cumbersome. They were begging for paper

There is a clear issue here expressed through strong language. This is not just preference for paper on the part of the teachers, who are admittedly struggling to use the new devices. There is a major contradiction in using iPads in an online environment to prepare students for a traditional paper-based test. This can be mapped onto the activity system as a *secondary contradiction* between the tools and the object expressed in discussion as a *Historical Critical with Paper vs iPads* shown in Figure 5.5.

Figure 5.5: Historical Critical Conflict with Paper vs iPads



Historical Issues with the Nature and Object of the Course

The next set of contradictions clusters around the nature and object of the course itself.

i. Time and Relationships

The first issue concerns participants' perception of time prior to the current activity system. Teachers felt that in the past they had more time to actually develop relationships with their students, stating

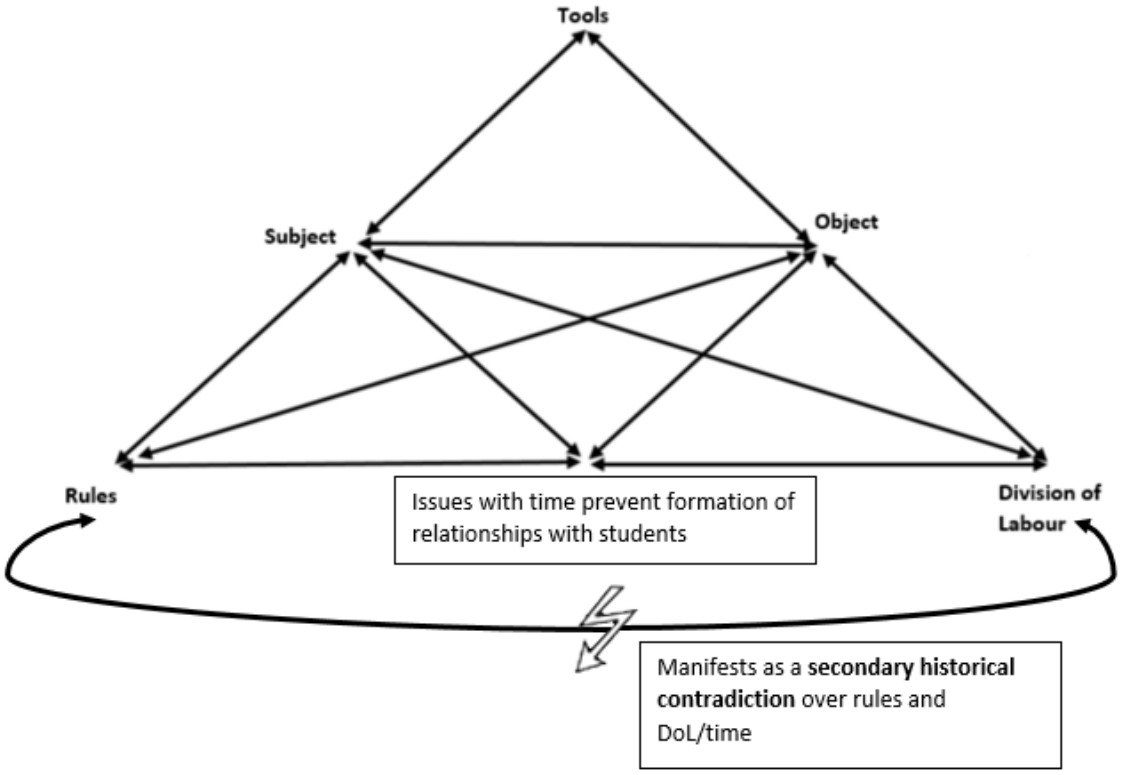
> *Teacher 6: And it could also mean, compared to the obviously the cycles, and you could really see progress students make, especially if you did have them over a year. [Yeah.] Yeah, and you had a better relationship with the students. And you could take him on trips where you could go with your, your section and stuff…*

> *Teacher 5: even outside of class we would go to the desert, I mean, just as a bonding thing. And there wasn't like this, like distance between all you*

have to make appointments to see your teacher and stuff. And I don't remember a lot of students like the attrition, I don't remember it being that high my class, you know, we gel well together

There is a view that historically teachers and students had better, closer relationships. There was room for out of class activities, and attrition was perceived to be lower. Although there are no explicit 'but's they are implied in the language and tone of the participants. There is the sense among participants that the past was better. There is an unspoken 'but' concerning the inability to form such relationships and counter attrition today. This can be mapped to the activity system as a *secondary contradiction* between the division of labour and the rules, manifested discursively as a *Historical Dilemma with Time and Teacher/Student Relationships* in Figure 5.6.

Figure 5.6: Historical Dilemma with Time and Teacher/Student Relationships



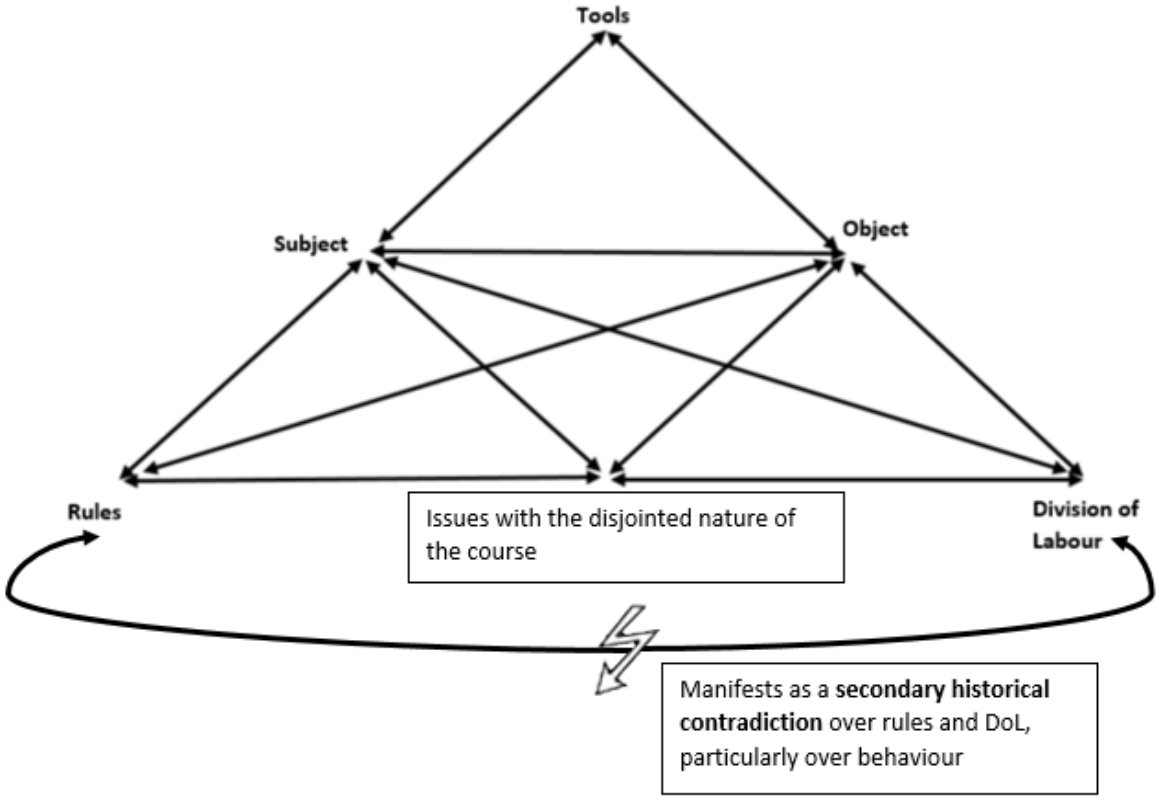
ii. The Strand System

The first major change to the nature of the preparatory English course occurred in 2010 with the introduction of the 'strand' system, a system that had a serious impact on the nature of the course. Prior to this, the course was taught as an integrated language program. The new system separated the skills and functions of language into separate 'strands'. This led to teachers feeling isolated and disconnected, a state of affairs that contributed to classroom management issues.

> *Teacher 5: This…very bitsy skills based thing…And in terms of constant behaviour management, became terrible, because we have all these different teachers and…they just had all these different teachers and their behaviour would become like, you know, not very focused, you know? Yeah. Plus, you have this, like a vocab book and a grammar book. And, you know, and the guys never bring their books. So they would just leave it in the class and strange. It was so like, haphazard,*

The course became disjointed and unfocussed, which translated into poor student behaviour. In terms of the activity system, this is a *secondary contradiction* between the division of labour and rules, a *Historical Conflict C with the Nature of the Course*, shown in Figure 5.7.

Figure 5.7: Historical Conflict with the Nature of the Course



Beyond classroom management, the introduction of the strand system had a strong impact on the participants themselves. Note the strong language employed,

> *Teacher 6: It was nonsense. You separate all the language. Because it's not connected in any way*

And metaphor

> *Teacher 5: …then you went to the other side of the pendulum, it was just too like skills focused. It was so separate*

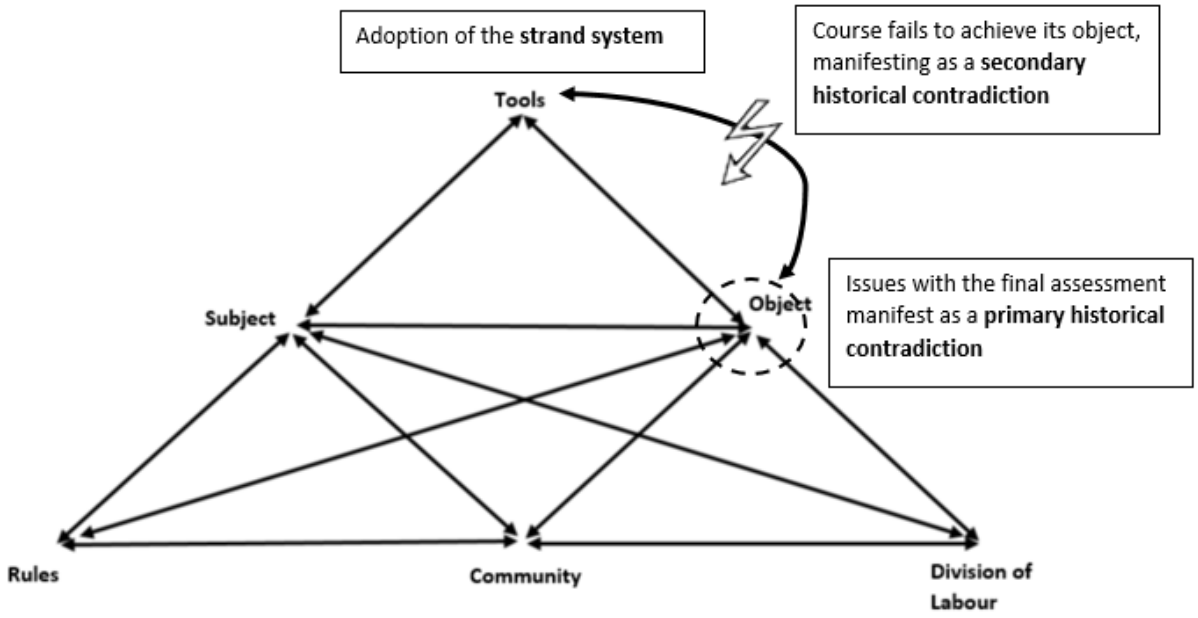
Both statements met with general agreement among the group during the meeting. The separation of the course into five separate components also coincided with several changes to the object – the final exam – in a relatively short period of time. Initially there was an internal exam, then a new international exam, then a national exam, before finally settling on an established international language test.

> *Teacher 6: Well they took three exams. Yeah, it was...HEATe, CEPA and IELTS*

Teachers – and consequently students – were unable to settle as these changes all occurred within one academic semester. Teachers were unsure what and how they were actually teaching, and to what final aim they were teaching towards.

These issues manifest discursively in the activity system as two critical conflicts. The first, a *Historical Critical Conflict in the Course Achieving its Object* is a *secondary contradiction* between the tools and the object, and the second, a *Historical Critical Conflict in the Final Exam* is a *primary contradiction* in the object itself. See Figure 5.8.

Figure 5.8: Historical Critical Conflicts in the Course Achieving its Object and in the Final Exam



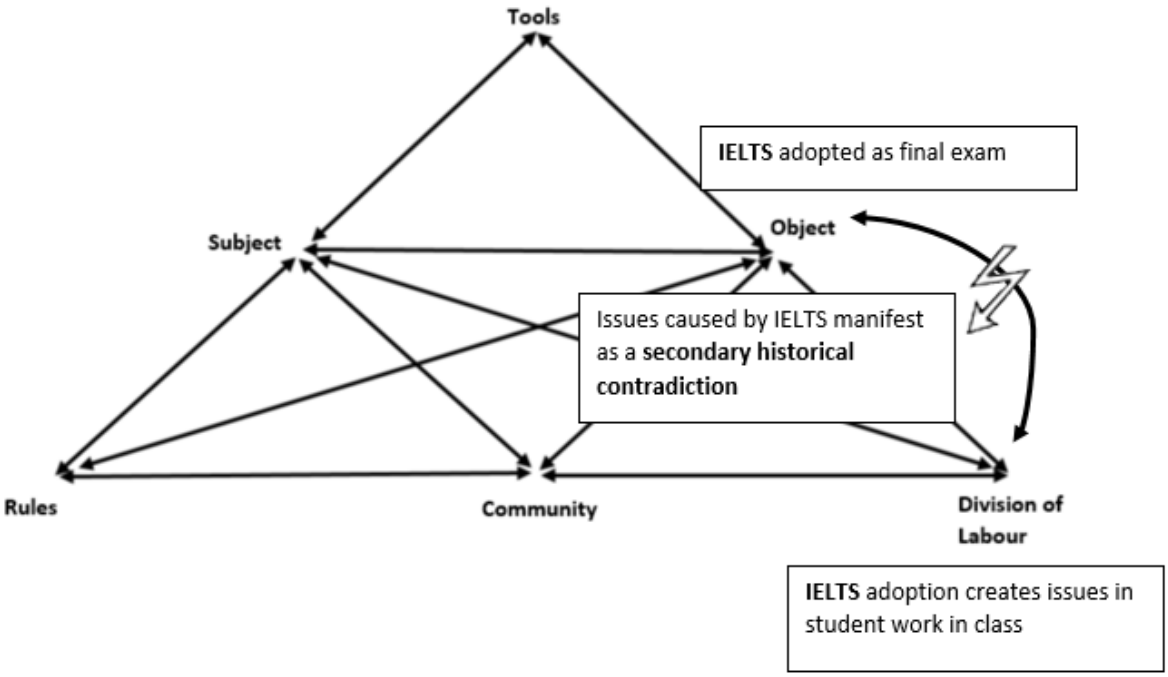
iii. The Adoption of IELTS and Over-focus on Assessments

The strand system finally settled on the IELTS as the exit requirement for the preparatory course. This not only resulted in a major contradiction in terms of tool usage in the classroom but also had a significant impact on the attitude of students to the course. For the students, the IELTS exam became the primary, indeed sole, focus of their attention. For students, passing the IELTS became a matter of a) repeated test taking and b) luck. For the participants, the course became a holding room for IELTS takers, while for students the course became secondary to the IELTS lottery

> *Teacher 8: Did you also find that also that it was like a holding room because they just…if they didn't get the IELTS with you. They knew they could go out and get it...*
>
> *Teacher 5: Just by luck.*

This is can be mapped onto the activity system as a *secondary contradiction* between the division of labour and object manifested as a *Historical Dilemma in the Impact of IELTS* in Figure 5.9.

Figure 5.9: Historical Dilemma in the Impact of IELTS

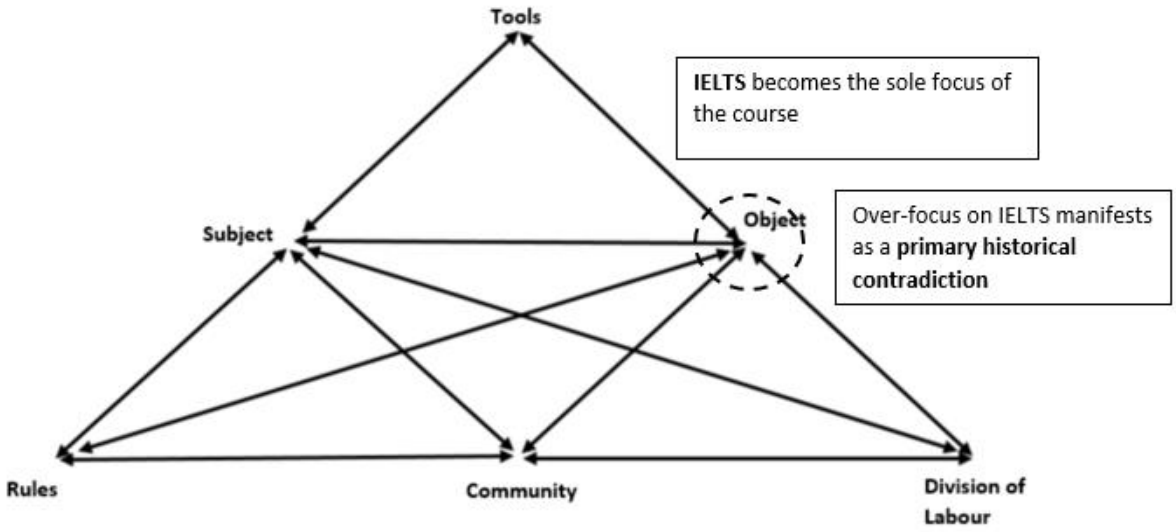


This over-focus on the IELTS by students contributed to the course becoming governed solely by assessments. This had not been the case previously. For example,

> *Teacher 6: Yeah, I mean, we, we weren't so much governed by assessments and the weekly assessments like we have now. And we weren't expected to try and cram in like, 30 grammar points over a semester.*

Although linguistic clues like 'no' are lacking, the stronger language of 'governed' and 'cram in' shows the teacher's inner conflict. This maps to the activity system as a *primary contradiction* in the object manifested as a *Historical Conflict with Over-focus on Assessment* in Figure 5.10.

Figure 5.10: Historical Conflict with Over-focus on Assessment



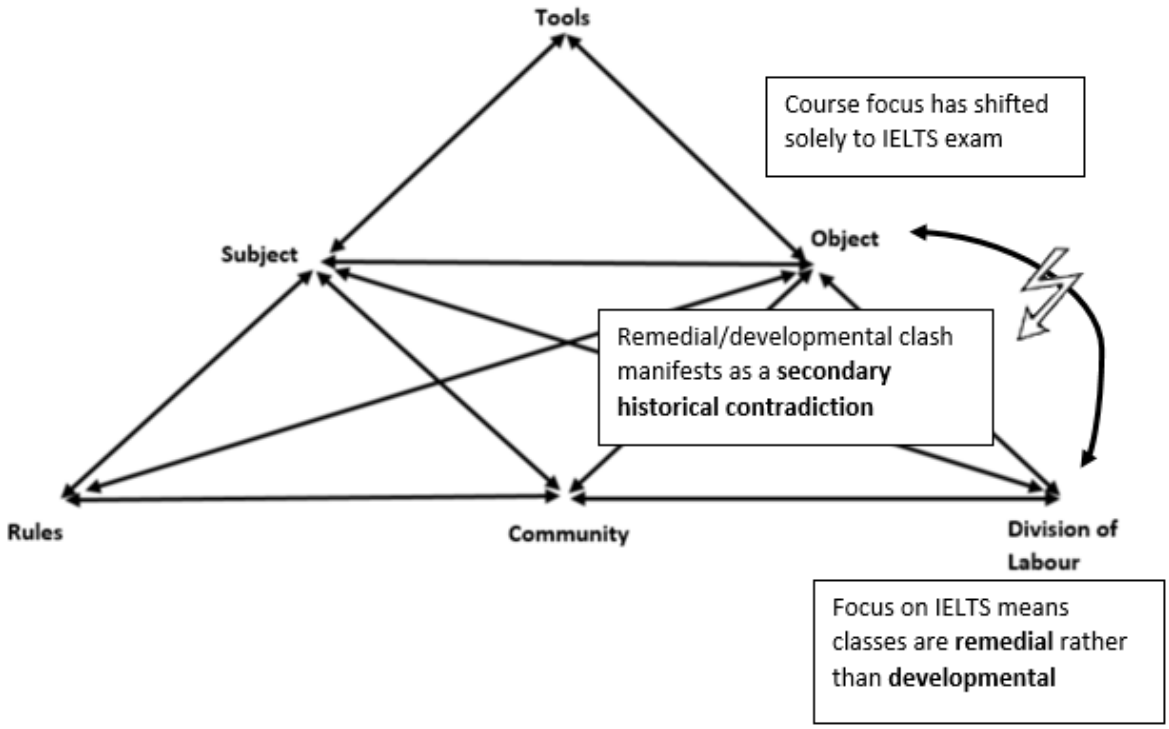
Similarly, there is a feeling that previously the preparatory course was developmental, rather than a remedial course focussing on, for example, IELTS preparation.

> *Teacher 6: And it really was more like a foundations course. Preparing the students.*

> *Teacher 1: But also, you know, you obviously taught to their needs, you knew what their needs were [Yeah,] because you had control.*

When the preparatory course was developmental, teachers had the control and power necessary to teach to students' needs. This is a *secondary contradiction*, between the object and the division of labour, seen as a *Historical Conflict B in the Developmental vs Remedial Nature of the Course* in Figure 5.11. The issue of control is one we shall return to.

Figure 5.11: Historical Conflict B in the Developmental vs Remedial Nature of the Course



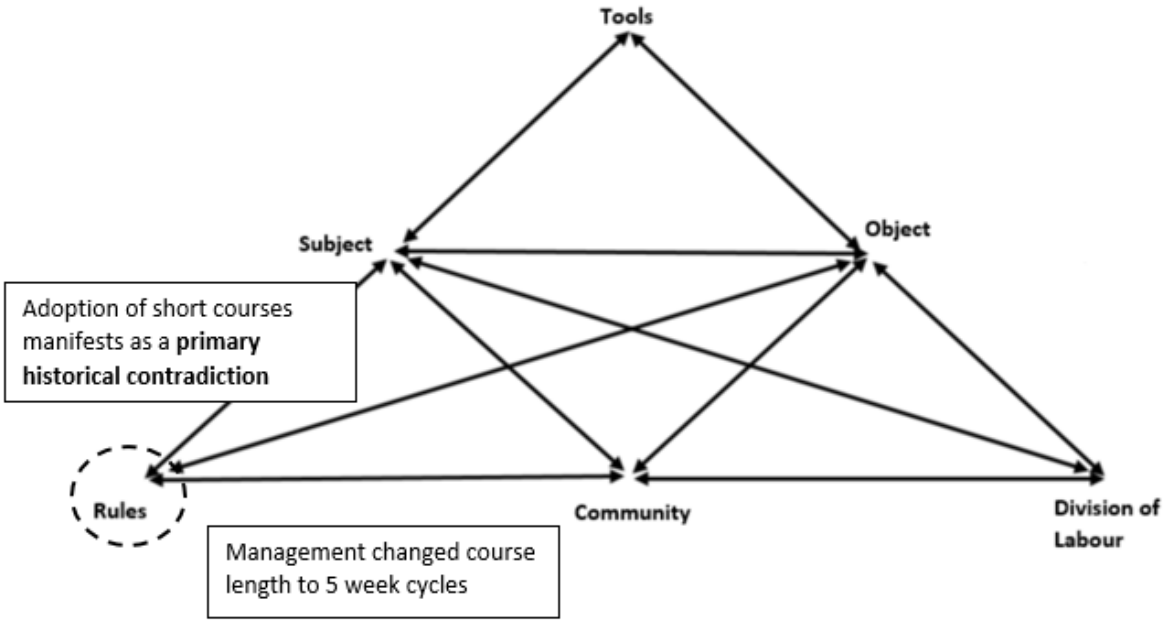
iv. The Intensive Preparatory Course

In 2015 a change in institutional leadership led to another shift in the preparatory program. Prior to 2015 the course was semester long and students could take up to three years to complete the program. This changed drastically. The new 'intensive' program was delivered in 7 to 8-week cycles, and the overall length of the course was reduced to one year. This was a major change, and one that the participants struggled to accept or understand. As Teacher 8 mentions,

> *The cycles to me just made no sense. Very difficult. To go from three years with these guys, [yeah] to one year and five weeks. Really?*

The language here – 'made no sense' and the incredulous 'really?' demonstrate this participant's frustration, a conflict bordering on critical. This maps to the activity system as a *primary contradiction* in the rules manifested discursively as a *Historical Conflict with Teaching in Short Cycles*, Figure 5.12.

Figure 5.12: Historical Conflict with Teaching in Short Cycles



Historical Issues concerning the Subjects

The third cluster of issues concerns the participants themselves, the subjects of the activity system.

i. Issues with Technology

Despite – or perhaps because of – the mandated technological interventions in the preparatory English course some of the participants have a clearly negative attitude to classroom technology and expressed a clear preference for paper. For example,

Teacher 8: All the copiers the printers, everything was away, it was taken away. And you felt like…my validity's the paper, you know,

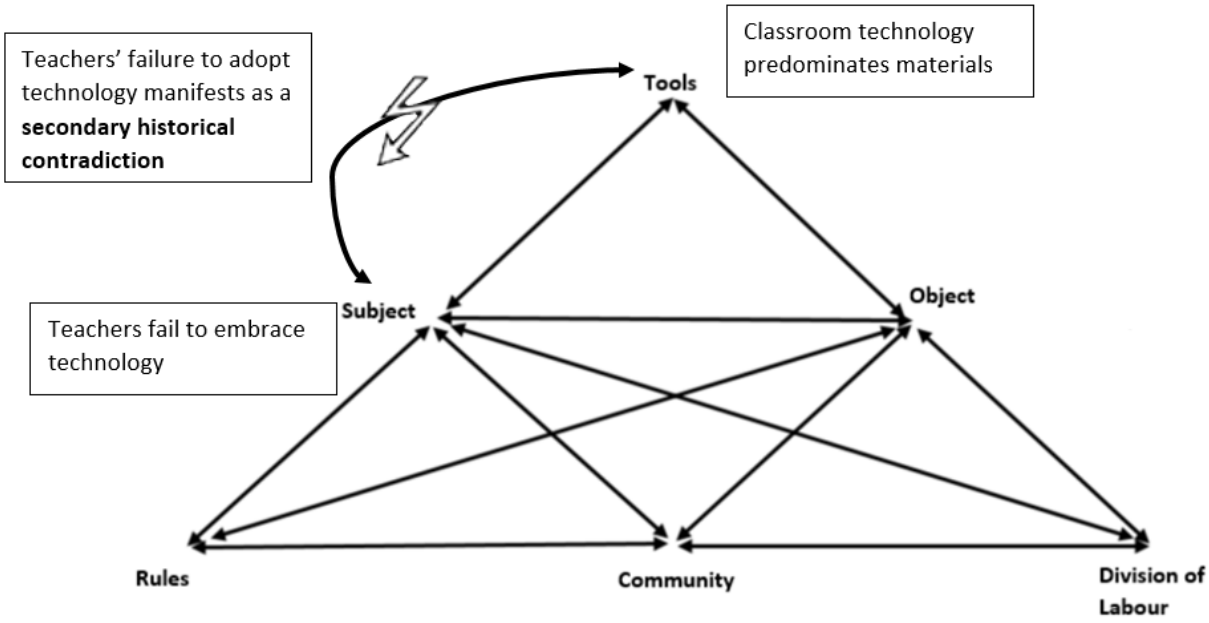
There is also disagreement between the participants and a marked degree of difference in proficiency where technology is concerned. For example, one teacher thought students were unable to edit PDFs, much to her colleague's surprise,

Teacher 3: PDF, but we still could not do anything with the PDF [on iPad]. We couldn't annotate in it.

Teacher 6: Yeah, we could!

Teacher 6's tone implied a certain surprise and disbelief. Classroom technology has pushed teachers outside paper-based comfort zones, and differences in proficiency as demonstrated by the PDF comment above are causes of conflict. Some teachers, it would seem, have failed to embrace classroom technology. This can be mapped onto the activity system as a *secondary contradiction* between the subjects and tools, a *Historical Conflict between Teachers and Technology*, represented in Figure 5.13.

Figure 5.13: Historical Conflict between Teachers and Technology



ii. Issues with Autonomy and Power

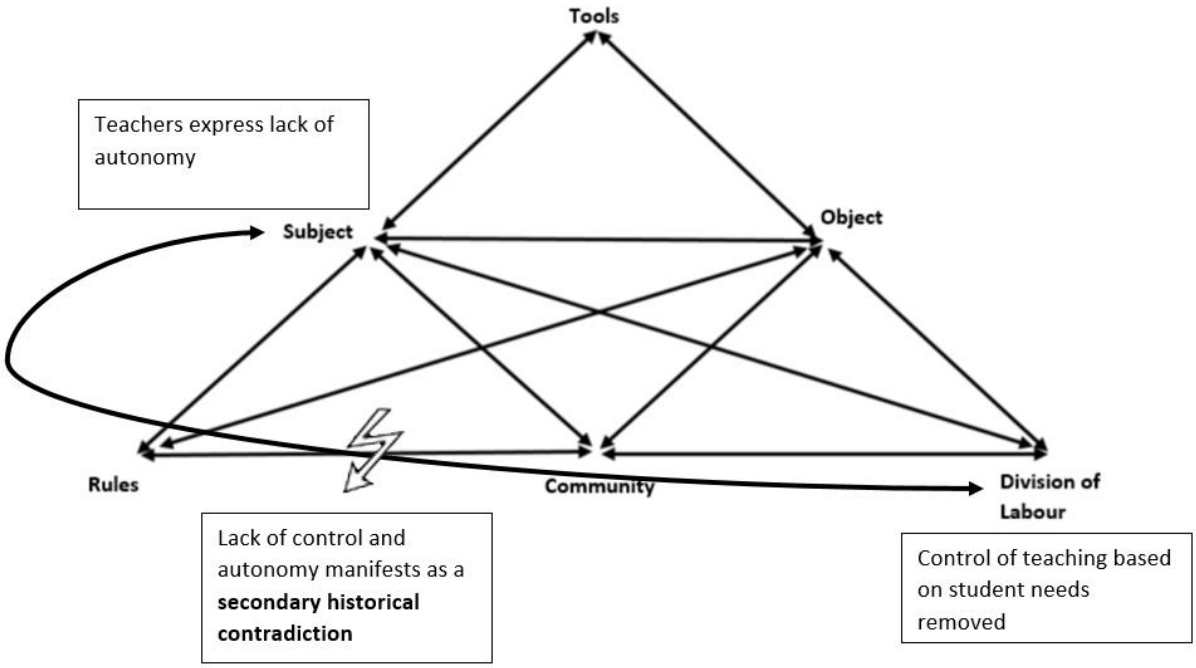
A key theme emerging through the first meetings relates to issues of autonomy and power. Technological interventions and top-down mandated changes to the nature of the course have led to feelings of alienation and disconnection. For example,

> *Teacher 6: So you know, we were a lot more in control.*
>
> *Teacher 1: … you knew what their needs were [Yeah,] because you had control.*
>
> *Teacher 3: We had kind of more control because we were doing our test. We were doing our midterms and finals. So we were kind of trusted…*

The subjects feel this control over teaching and student needs has been taken away. It should also be noted that the participants are suggesting that they are no longer trusted. Trusted by whom? This is a point we return to. This is a *secondary contradiction*

between the subject and the division of labour, manifested as a *Historical Conflict with Autonomy and Power*, Figure 5.14.

Figure 5.14: Historical Conflict with Autonomy and Power



Historical Issues between Neighbouring Activity Systems

The final set of contradictions relates to the relationship between the activity systems of the participants and neighbouring systems, in particular that of the management.

i) The Mysterious They

We have seen issues raised as a result of top-down mandated interventions and changes, and feelings among participants that suggest trust is lacking and that autonomy and power have been taken away. While the actual term management is used infrequently, it is implied through a mysterious 'they' or 'he' that have made the decisions, in particular to introduce iPads, change the course format, introduce strands, change assessments and hours of delivery. At this point there was a clear advantage of being an insider-research/interventionist. All participants - myself included – knew exactly who

the pronouns *they*, and in particular *he*, referred to; college management, whether as a group or as an individual. One teacher gives an example where they remember being reprimanded as a group by the 'he' from management in relation to using IELTS as the exit assessment,

> *Teacher 2: Well He told us off didn't He? He told us all for giving them IELTS at the end of the course not that we were, cos we were foundations but He said 'Why are you doing this at the end why are you doing [this]?' You can see everybody sitting there thinking…'Because you told us to' and that's when they changed it to…it being you have to [have IELTS] to get out of foundations. 'Why are they doing at the end? They should be doing it at the beginning'… Well it was the exit from the college wasn't it? Whereas He wanted that… [it] was apparently all our mistake, our foolishness.*

While this is primarily one teacher recounting the issues, there is non-verbal agreement throughout the group during these passages. It should also be noted that there is emphasis on the word 'he' each time it is mentioned. I have capitalised it in order to reflect this. Teacher 2 continues, remembering when teaching hours were increased. While other departments remained on 20 contact hours per week, teachers on the preparatory course saw contact hours raised from 20 to 24,

> *Teacher 2: … because He hated us. Don't know why, I know He told us all off at the first conference I remember saying to someone, this man hates us. Why?*

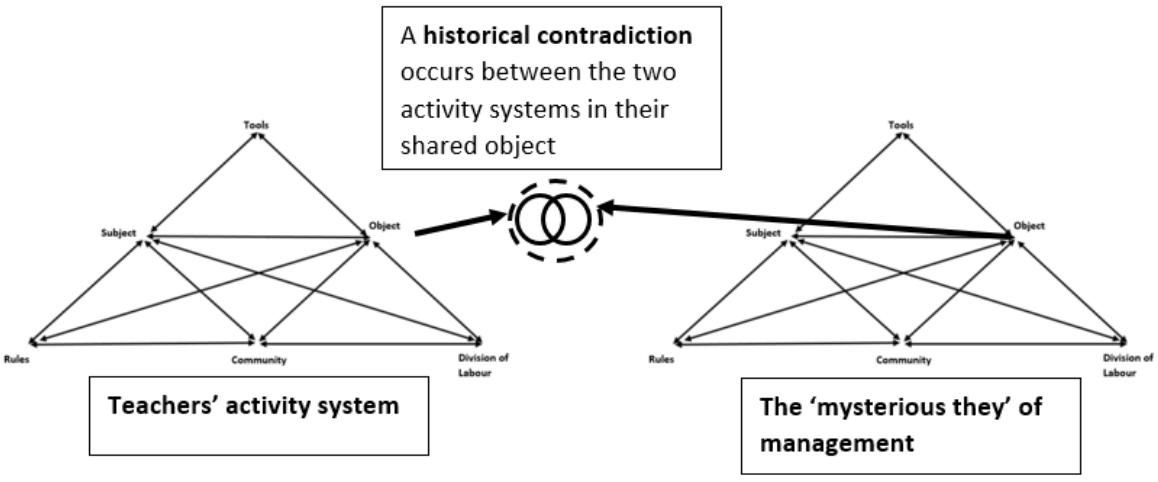
The teacher uses very strong language – this man *hates* us – clearly expressing conflict and turmoil. Other teachers then take up the mantle, using the example of the recent

removal of the college library, which 'they' then replaced with an 'innovation centre'. For example,

> *Teacher 3: Yeah. It's just like, you know…then suddenly they just destroyed the whole thing they did something else… If you look at the library, you would realize that people just don't know what they're doing, to be honest.*
>
> *Teacher 2: It's grey depressing place [the library's replacement]*

Such antipathy towards the management, while not uncommon in workplaces, cannot be healthy. This maps as a contradiction *between* activity systems. The contradiction is between the shared object of the management, the mysterious and unspecified 'they', and that of the teachers, and manifests as a *Historical Critical Conflict with the Mysterious They*, shown in Figure 5.15.

Figure 5.15: Historical Critical Conflict with the Mysterious They



A Summary of the Historical Impact

The Change Laboratory participants have worked through and experienced several critical changes to the preparatory program, be they changes to the course itself, the

mode of delivery or the exit requirement. Some participants have experienced all the changes first-hand, while others are subject to their second-hand impacts. These changes have been top down and have resulted in a number of contradictions ranging from dilemmas to critical conflicts. The historical activity system is thus riven with issues that are feeding into the current state of the work activity in the preparatory English course. I will now go on to examine the current activity system.

5.3 Contradictions in the Current Activity System

As we have seen, the present is very much a product of the past. The historical activity system has undergone several key points of change giving rise to a number of contradictions. Some contradictions will have been resolved, either through the direct action of the subjects or external forces. For example, contradictions relating to iPads should no longer be manifesting today as the iPad is no longer the classroom device. At the same time, other contradictions may continue to manifest and cause unintended outcomes in the present. In addition to this, there may well be current contradictions that have surfaced more recently. Following on from their historical counterparts, these contradictions fall into the same four groups: issues concerning the tools (materials, devices etc.), issues with the nature of the course itself, issues with the subjects (teachers) and finally issues with other stakeholders. However, while the issues fall within the same four groups, the actual distribution changes. There are more concerns raised over materials than emerged historically, for example. There are also more problems manifesting within and between the subjects themselves. For example, contradictions that manifested historically in the tools may now be manifesting as disagreement between the teachers. We will now examine the current activity system, identifying the various contradictions and their discursive manifestations.

Current Issues with the Tools in Use

The first set of current issues relate to the tools in use in the classroom, both physical (materials, devices etc.) and pedagogical (approaches to teaching and so on). These contradictions are largely continuations of historical manifestations, or contradictions that have developed as a result of the historical issues with the activity system.

i) Continued Issues with Materials

The historical contradictions around materials have not resolved in the current activity system. The participants recognise that although there is a course book, it is not used, and that a published course book is not necessarily the answer. For example,

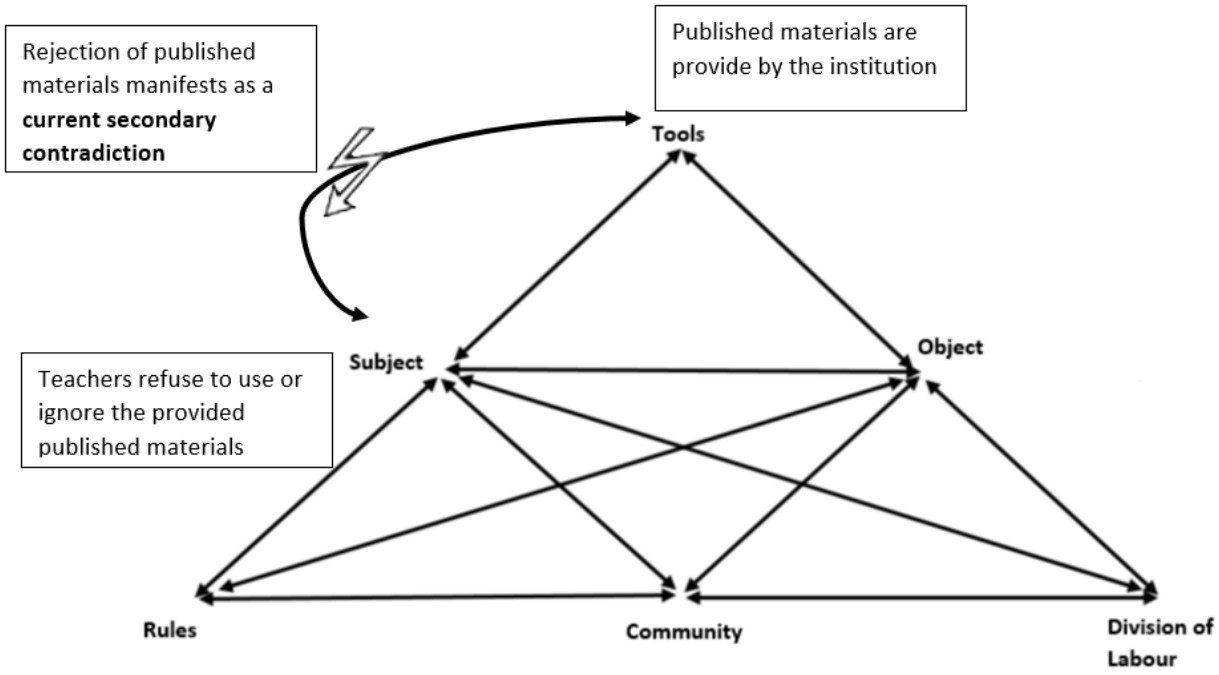
> *Teacher 7: The trouble with books though is the level isn't it? Who chooses the book?... Yeah, but even you know a book can have some things that are the right level. And some things which are completely useless. And irrelevant*

And

> *Teacher 2: Why don't we use the eBook we've got? I don't use it, why don't we use it?*
>
> *Teacher 5: It's very bitsy*

There are ‘buts’ here, both explicit and implied, but the participants are generally rejecting the need for a published solution to materials, suggesting a dilemma that does not require resolution. This can be mapped onto the activity system as a *secondary contradiction* between the subjects and tools manifesting as a *Current Dilemma with Published Materials*, shown in Figure 5.16.

Figure 5.16: Current Dilemma with Published Materials



Further issues with published material concern interactivity. eCoursebooks typically have high levels of interactivity and 'self-check' activities. Participants report that students tend to mindlessly click through these activities until they get 100% without actively engaging in the task. They then have no interest whatsoever in what is the correct answer as the activity has already shown them. For example,

> *Teacher 6: [with interactive materials] then it's you know if it's multiple choices, you know, click, click, click, click click, tell me the password.*

Similarly platforms that allow teachers to design their own interactive online materials may look good and be popular with teachers, but are not shown the same enthusiasm by students.

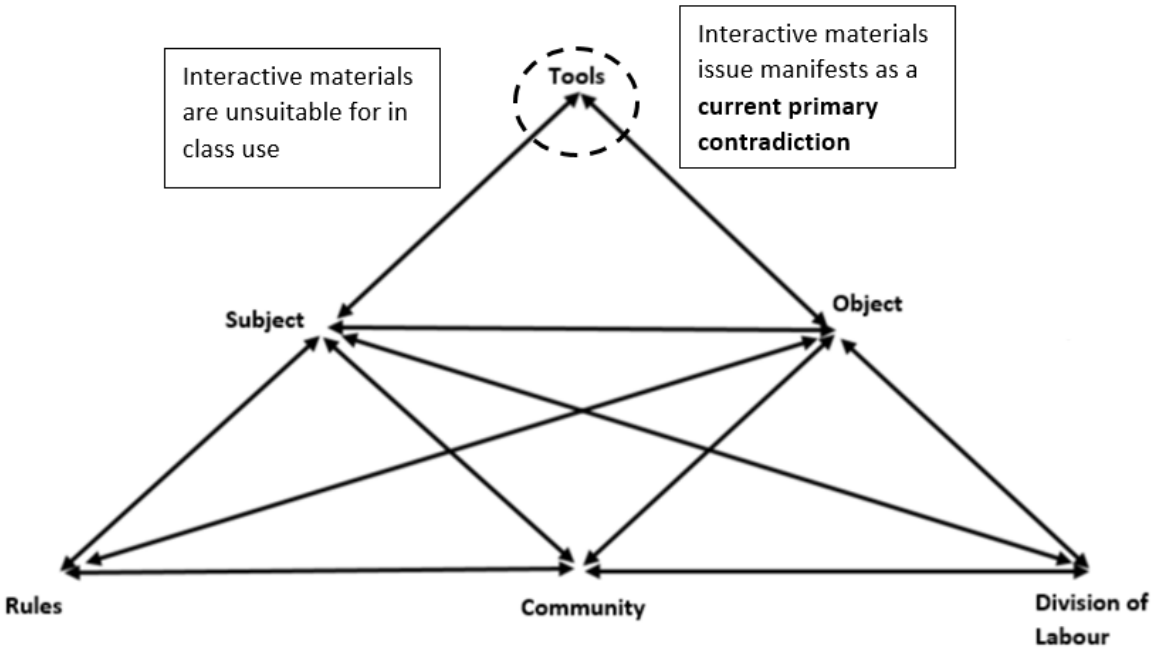
Teacher 1: Yeah, I don't think they like the book widgets [8]really. They look great to us, but I don't think they like them

Teacher 6:If it's a book widget no, because their interest is gone because they but whereas with a Word document at least we can go over each question together rather than seeing that they've been given the answers to everything straight away [Yeah.]

Simple documents allow teachers to actually check answers and, as student cannot simply click and guess, may force them to try and engage with the task at hand. The state of the art may be online and interactive, but the state of the effective is the humble document. This manifests as a *Current Dilemma with Interactive Materials* and is mapped to the activity system as a primary contradiction in the tools in Figure 5.17.

[8] An online self-authoring platform for creating interactive materials

Figure 5.17: Current Dilemma with Interactive Materials



ii) Issues with Curriculum

Besides the actual materials, there are issues with the sheer amount of items included in the curriculum. In 2019 the preparatory course moved from 8 week cycles to full academic semesters, and two separate courses were effectively merged into one. While the overall length of the course increased from 8 to 16 weeks, the number of contact hours per week reduced from 24 to 10 or 15. As a result there are simply too many items, and their corresponding materials, in the current course.

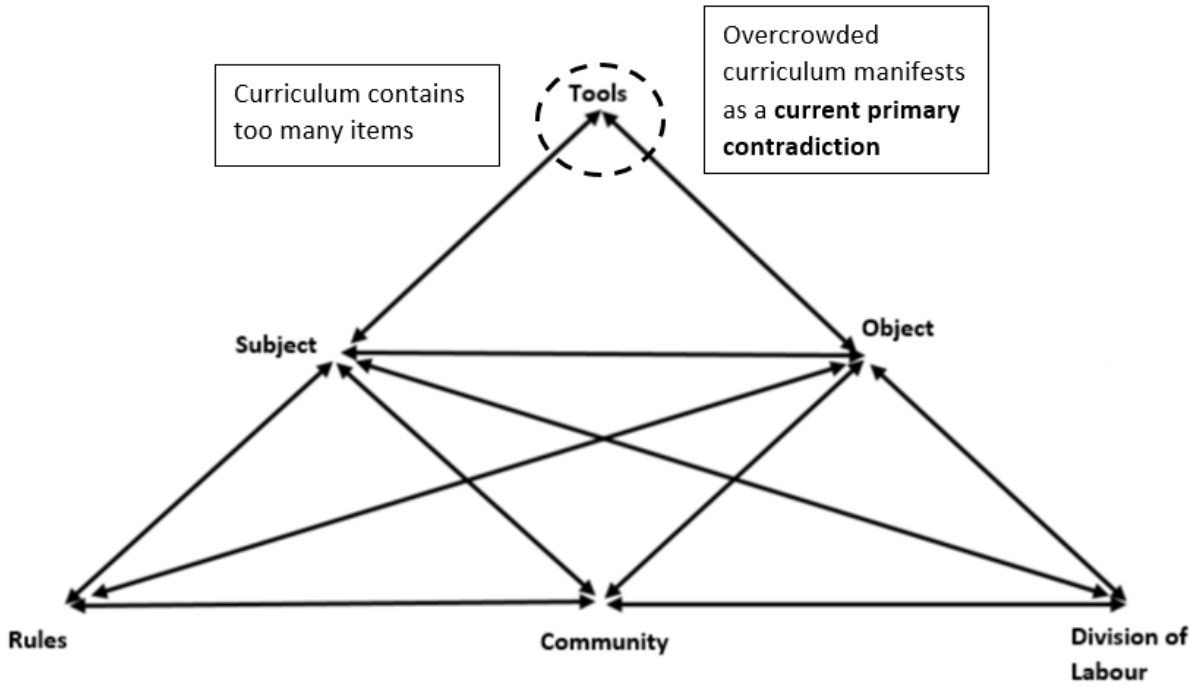
> *Teacher 6: So I you know, we do have a lot of material. And but that was, you know, level three material level four material that what we should be doing is finding the best material for a course that's actually going to be over a semester, rather than trying to cram too many things in.*

and

> *Teacher 6: But I think that's not our fault. That's the fault of the planning the course they have just stuck, level three and level four together. So it's two courses rather than being one course. So it's not our fault, they should, if they're going to change the courses, then they actually need to change the courses. [Yeah], and they should have spent a lot more time you know, designing the courses that we need, rather than just trying to fit what we had into a semester*

Note that again we have mention of the mysterious 'they' representing management non-specifically. Rather than reduce the number of materials, the teachers now feel there is actually too much – we have crammed what we *have* into the time available, rather than what we *need* or *can* cover. While there is agreement the participants are perhaps resigned to not resolve this issue. As such, this is a *primary contradiction* in the tools manifested discursively as a *Current Dilemma with the Size of the Curriculum*. See Figure 5.18.

Figure 5.18: Current Dilemma with the Size of the Curriculum



iii) Issues with the Coursework

The unwieldy nature of the curriculum feeds into the next contradiction. The participants express serious concerns over both the amount and quality of coursework assessments in the current course. Put simply, one teacher states,

> *Teacher 2: And there's too much assessment.*

While the main issue is with the materials – the coursework – there is potentially disagreement between the participants over this. Teacher 2 is actually positive about some of the assessment in the course, but recognises this is a potential cause of conflict with colleagues,

> *Teacher 2: I like some of the new assessments, and then I don't want you to kick me to death I want to come out the room alive. But I can actually*

see, I can see the idea of the independent reading, I can see the idea that when you study something, you're supposed to take knowledge, and then you're tested on that knowledge and I can see that that's perhaps what they thought they were doing with that assessment.

This is immediately questioned

Teacher 3: yeah but really can you?

The tone of this question is disbelieving and almost incredulous. Teacher 2 realises they are going on a limb, while Teacher 3 is reflecting a group belief on the inefficacy of current assessments. For example,

Teacher 8: You know, there's no learning is there [yeah] it's just a…you've got to just remember this article but outside of the article they haven't really learned anything have they.

Teacher 7: It has no value at all

The sheer number of course work assessments also means that there is no time to teach properly as teachers rush from test to test.

Teacher 2: we're doing something here that isn't teaching English, we are teaching some study skills for content, which, you know, a foundations bridging sort of program is supposed to do. But it's at odds with all this other stuff as well. That's just, they've kept everything, not swept anything away, but brought in all this other stuff, and some of the others which I quite like I see the point. But we're not given the opportunity to do any of

> *it properly. It's all like, run around, because we've cut everything else as well and given you half the amount of time*

And

> *Teacher 6: Yeah, and we are, I mean, I'm hoping that next semester is going to be better, but it just seems like we are this semester just trying to catch up with everything, you know, got the independent reading out of the way, and then we've got the guided writing and once that's out of the way then we're going to look at the project*

For the group, the assessments have ‘no’ meaning and ‘no’ value, and leave no time to teach effectively. As well as having no time to teach due to assessments, teachers use what time they do have putting materials together in order to provide practice for upcoming assessments. For example,

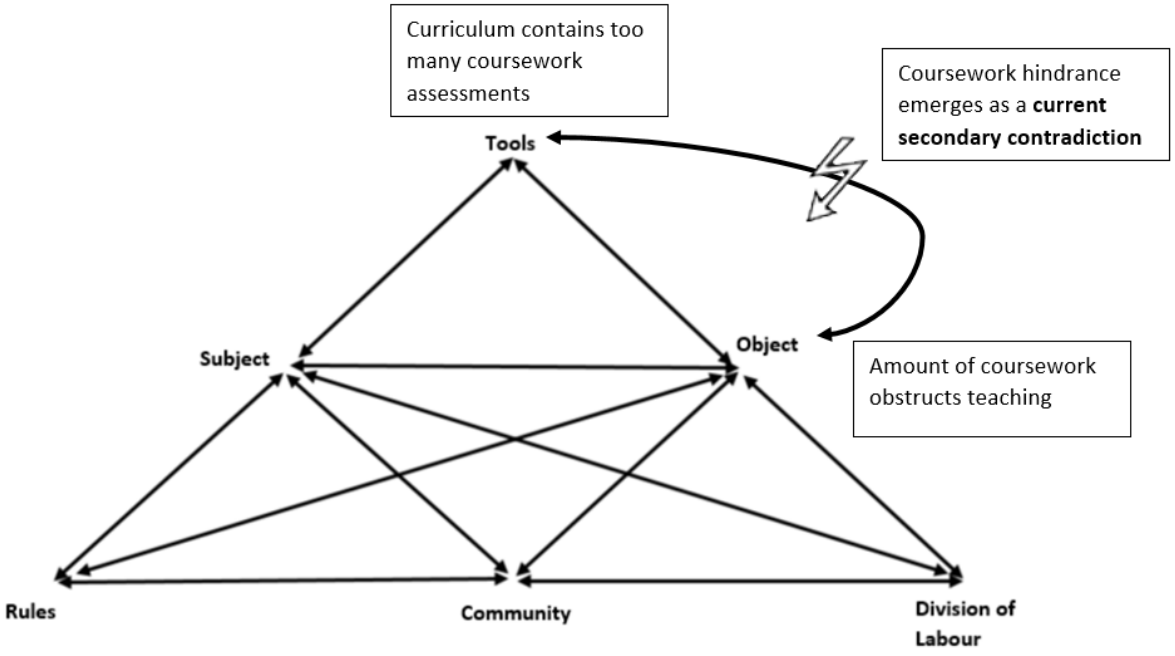
> *Teacher 2: Well we're making them up. As we go along. And it's very time consuming. I'm spending more time doing that [making materials] than teaching. I think [yeah. exactly]*

> *Teacher 7: and It's like you've got so many assessments, that you know it's that they've invented the assessments first, [exactly] and then we're making the course fit the assessments, and it shouldn't it be the other way around. [Yeah,]*

There are too many course work assessments, and teachers are either rushing around making materials in preparation for coursework, or are spending time administering coursework assessments, assessments they largely do not believe in, at the expense of teaching. This is mapped onto the activity system as a *secondary contradiction* between

the tools and object, manifested as a *Current Conflict with Course Work*, and shown in Figure 5.19. The tools, in this case coursework assessments, are actually hindering the achievement of the activity, and the object of learning English and passing the course.

Figure 5.19: Current Conflict with Course Work



v) Issues with Collaboration and Communicative Learning

As language teachers, the participants recognize the important and value of pair and group work in the communicative English classroom. However, time pressures from an overstuffed curriculum and over focus on coursework mean that teachers are struggling to employ collaboration in their daily classes. They recognize the need for it, yet also recognize the lack of it in their daily teaching. For example,

> *Teacher 8: I really reflected upon it last week, and I thought I'd really have done no group work or pair work this week, because all those focus on was trying to get them to put capital letters and full stops for the writing quiz. And I thought what a terrible week! So this this week, I've*

tried to get back to what I was doing before. But it's so hard because I'm just at my desk doing this doing all the prep, and then go class and then do that and then go to the next class. And it wasn't a good week.

Furthermore, the situation is exacerbated as the students themselves are not familiar with group or pair work as concepts. Teachers are setting up group tasks, but students mostly fulfil these individually either due to unfamiliarity or disinterest.

Teacher 3: And we assume that they know how to work as a group. And we assume that they can sit together and divide the work together. But even if we give each and every one a task, they will do it individually, they still don't know how to [work together]

Teacher 4: Even if you're playing games in a group, one of the students would be on the phone. And the other two or three would be doing nothing

Even teachers themselves may struggle with the concept of collaboration,

Teacher 8: What do they mean by collaboration? Do they mean group work or do they mean like a collaborative teaching where they are pushing their way through and working out what they want to learn?

Teachers may also struggle with how to teach collaboratively in a laptop-mediated classroom, or even why to attempt to. For example,

Teacher 2: So perhaps that's true then that teachers are not deploying laptops...in a way that promotes collaboration

Teacher 8: I'm not. I don't know how to do I don't know how I would do it. How would you get laptops? When a laptop? It is one of the biggest

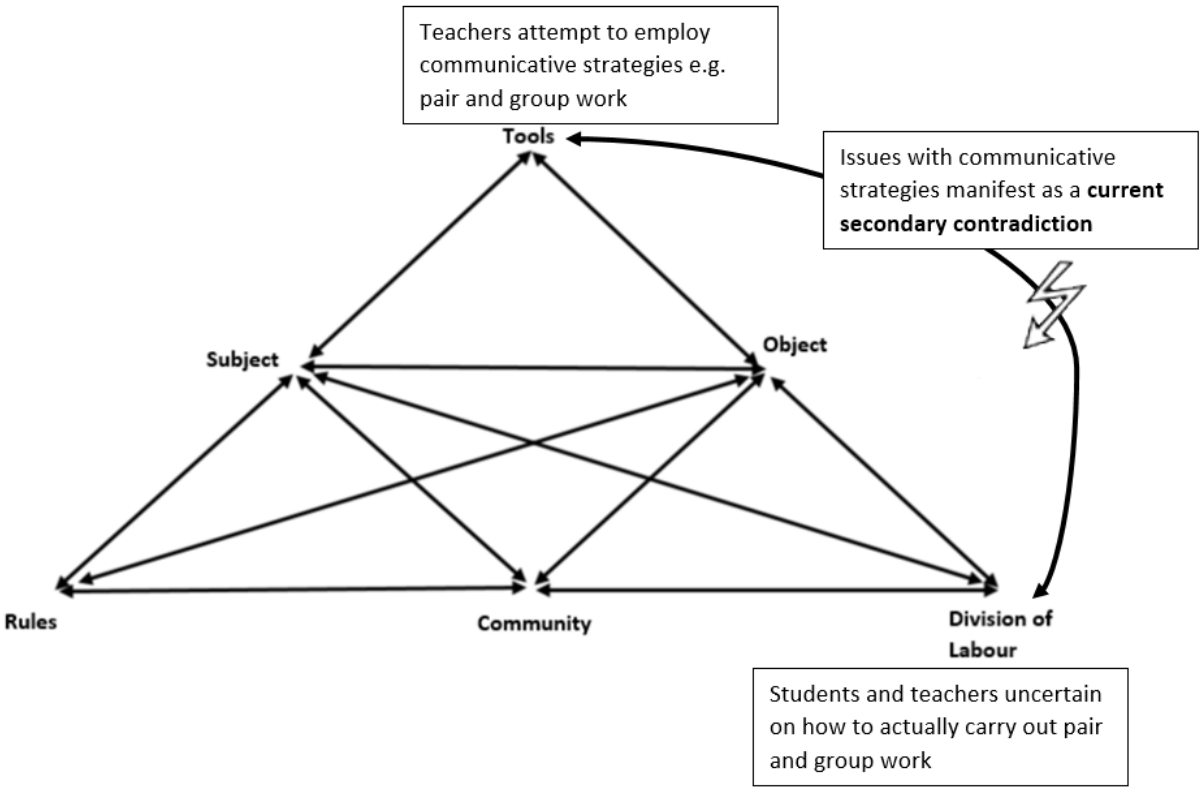
problems…I could do it with paper and get them to do collaborative work but…

Teacher 7: There's a point there's no point in using a laptop to collaborate in class. I mean if they're at home. In different areas? Yeah. But in class? It doesn't really…

Attempts to employ pair and group work in communicative strategies are often unsuccessful. Students, and some teachers it would seem, are either unsure how to collaborate, do not know how to employ laptops to do so, or do not see the value of even attempting this. The language of the participants is somewhat resigned, suggesting this is a dilemma to be reproduced rather than a conflict to be resolved at this stage. This is exacerbated by the pressures of an over-ambitious curriculum.

This issue can be mapped to the activity system as a *secondary contradiction* between the division of labour and tools manifesting as a *Current Dilemma with Classroom Collaboration*, shown in Figure 5.20.

Figure 5.20: Current Dilemma with Classroom Collaboration



iv) Issues with Classroom Layout

Participants report issues that relate to the physical layout of the classroom. Currently, classrooms are set up in traditional rows, facing the Smart board at the front of the class. This is not ideal for communicative language teaching and student collaboration. Teacher 7 recognises this and suggest having their own, permanent classrooms would allow them to set up rooms as they wish. For example,

> *Teacher 7: Like one thing was because we haven't got our own classrooms. They're always set up like this, you can't really change the setup, because you're only here for two hours a day, and then they'll be in a different classroom. Well, it would be better if we had our own classroom. So we could set it up like this and you know we could make the*

classroom more. Yes, had that in [another campus]. We used to we'd have four tables together [common rooms] and they used to sit in groups

Teacher 8: Be nice, wouldn't it?

However, the difficulty in implementing this is expressed as a dilemma

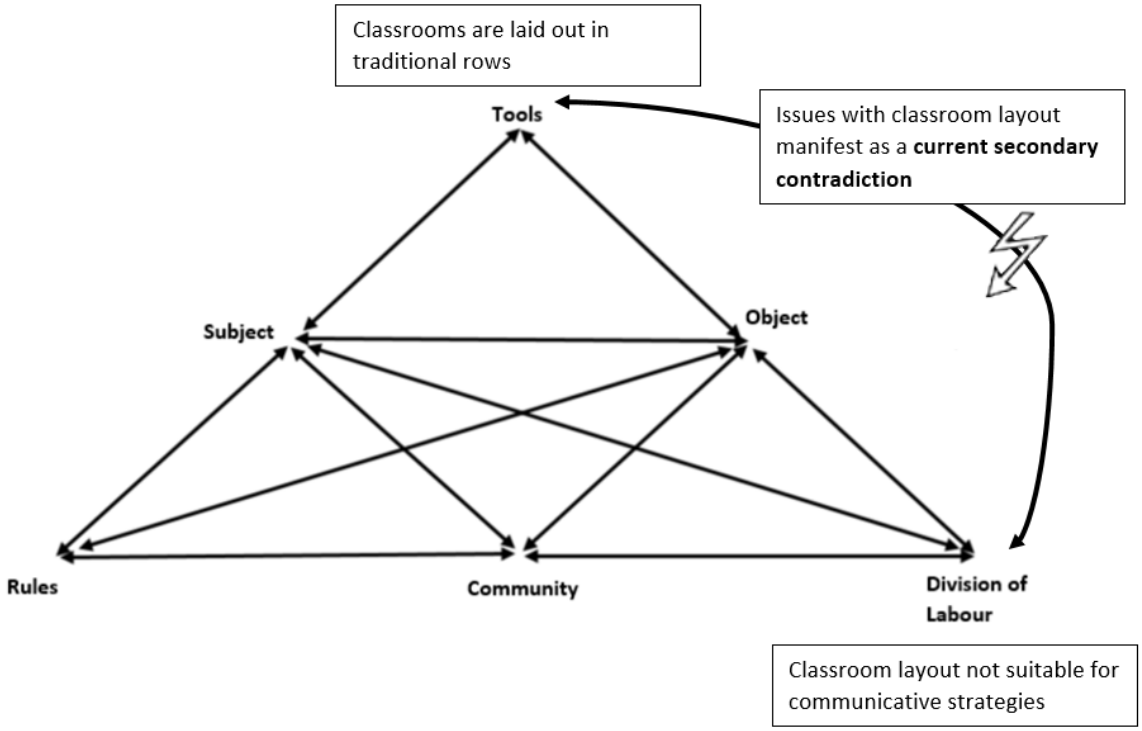
Teacher 7: but you can't really do that if you're there for two hours. And then you're in a different classroom. [Yeah.] Shifting all the tables back. That's a problem. We haven't got our classrooms. [Yeah. Yeah.]

Again, a solution starts to emerge.

Teacher 4: But now, like my students, three here and three at the back, so I just tell them to turn around you have got a partner from the opposite side. Yeah. So you're working in pairs with the opposite. So in that way, I'm just roaming around, they're using one laptop, and it's easy to check easy to move

The participants recognise that the current room layouts are not conducive to communicative language teaching, and have attempted to remedy this. However, college policy means that classroom are rearranged into rows between classes. Despite this, the participants are suggesting a solution to the issue they have identified. The problem can be mapped to the activity system as a *secondary contradiction* between the division of labour and the tools, seen as a *Current Dilemma with Classroom Layout* in Figure 5.21.

Figure 5.21: Current Dilemma with Classroom Layout



The issue of physical spaces is one we shall return to in the following chapter.

Current issues with the nature and object of the course

Historically, four issues were directly concerned with the course itself. Interestingly, far fewer contradictions manifested in the current activity system regarding the nature and object of the course. It may be that in the current activity system the teachers have accepted the form of the course, or at least resigned to it. It may also be that they are focusing more on other areas that could be connected to the object. For example, issues with the curriculum and coursework are related to the nature of the course itself, but identify more strongly with materials as they affect the current day to day teaching within the activity system.

i) Issues with the Final Assessment

If the object of the current activity system is teaching English, and the intended outcome of this activity is that students successfully pass the course and move onto their chosen degree programs, then the final assessment is the main means by which this object is achieved and measured.

In the UAE, English proficiency for high school students is measured by the EmSAT test. This is nationally administered, and has been benchmarked to internationally recognized tests such as the IELTS. From 2017 to 2019, the EmSAT was also administered to students on the preparatory English course as the final assessment, but in 2019 this changed and in the current version of the preparatory course the final exam has been designed in-house. While the EmSAT is a proficiency exam, based on CEFR Levels, the Oxford 3000 vocabulary list and also the 500 word Academic Word List. The in-house exam, however, is also linked to these three resources but should also be more achievement based. Where the EmSAT tests proficiency from a wide source of resources, the in-house exam should test a more limited range of items based on what is actually taught in the curriculum. The participants do not pay the EmSAT the same respect as the international exams it benchmarks itself against. Furthermore, they are concerned that this new exam is simply EmSAT by a different name. For example,

Teacher 1: Why aren't we still doing EmSAT?

Teacher 2: Why did we change it? If they're so set on it

Teacher 5: because of the pass rate

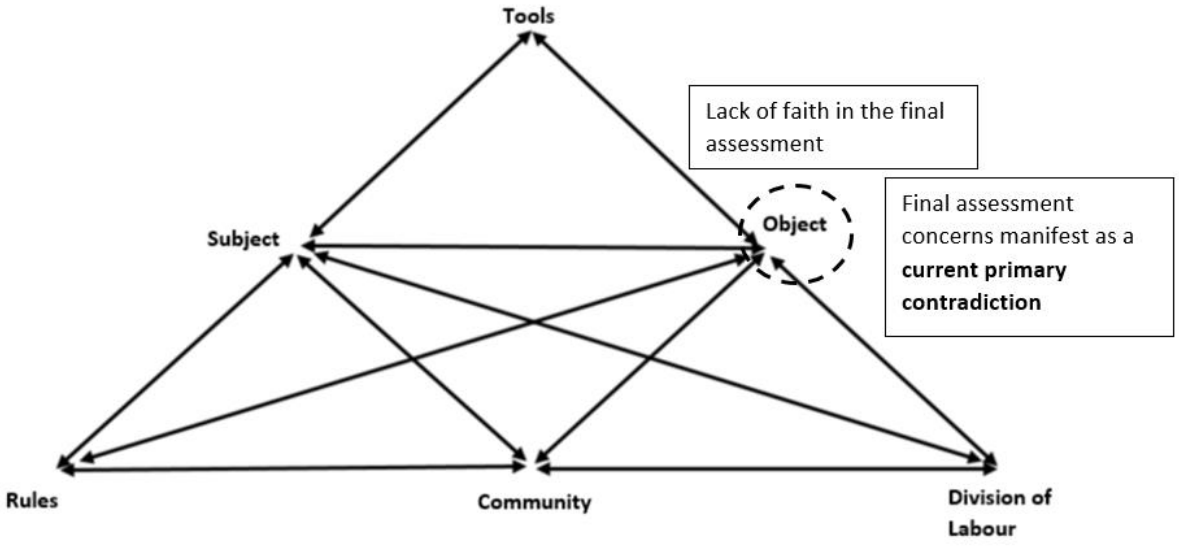
Teacher 2: why are we doing EmSAT under another guise why are we doing what we're doing?

This criticism continues, showing a lack of faith in this final exam and also the EmSAT. For example, Teacher 6 draws unfavourable comparisons with international exams such as IELTS, PET, and KET.[9]

> *Teacher 6: Well, that's it they you know, those are proper items that have been made by Cambridge and been checked in PET and KET and other things. And I guess we're not really sure whether EmSAT actually went through that rigorous process of checking that it is, [valid] yeah, at for the CFR levels, because it takes a long time. To do*

Put simply, the participants do not rate the final exam. This can map to the activity system as a *primary contradiction* in the object, representing the final assessment, manifested as a *Current Conflict with the Final Exam*, shown in Figure 5.22.

Figure 5.22: Current Conflict with the Final Exam



[9] PET = Preparatory English Test, KET = Key English Test

Current Issues concerning the Subjects

In the historical activity system, we saw that the subjects of the activity system had issues with classroom technology, and also concerns over autonomy and power. These continue to manifest in the current activity system although their nature, and subsequent impact, has developed in the current activity system in terms of how they are manifesting.

i. Issues with Technology

In the historical activity system some participants displayed negative attitudes towards classroom technology. In the current activity system, these attitudes continue to manifest as contradictions. More evident, however, is conflict and disagreement *between* participants regarding technology. One participant, Teacher 3, expresses a clear dislike for classroom devices and a preference for paper. For example,

> *Teacher 3: then they're still not learning the key skills that we were supposed to teach them. Like, for example, scanning, skimming, you can't do that on screen, or the writing. Their handwriting is terrible. And we're making it worse, basically, with the laptop.*

For this participant, paper is the answer to all issues caused by laptops. They continue,

> *Teacher 3: I really love traditional paper…*

And

> *Teacher 3: For me, I realized when they have a task on paper, they spend, they are really focused better and they spend the time that's needed on*

paper. Whenever they have it on a computer, it takes longer, apparently, because they're distracted by other things,

However, this feeling is not universal. One participant suggests the issue lies with the tasks and activities used in class, not with the device.

Teacher 6: But do you think that's because of how the activities on the laptop are presented? Do you think it's probably because they're using Word documents, or do you think if they were doing something more interactive online, like a book widget that would [help]

While another admits that students just throw paper away

Teacher 4: I think that many students will just leave the papers on the desk

Nodding and verbal clues among participants at this statement suggest this is recognised as a common issue. Paper is no longer the answer, it seems.

Historically, classroom devices were an interloper to the paper-based classroom, an intervention that interrupted the status quo. Now classroom devices are indeed ubiquitous – they are a fact of the modern classroom. Perhaps therefore issues with classroom technology are now a reflection of personal beliefs or discomfort rather than with devices themselves. This is illustrated in the following dialogue. Initial agreement turns to conflict. One teacher (Teacher 3) wishes to close laptops and use paper in order to teach effectively. Other participants (Teacher 2 and 8), however, argues that closing laptops is simply a technique for creating clear stages in class. Close the laptop, present information, then *return* to the laptop.

Teacher 2: Of course it's nice to close the laptops [yeah]

Teacher 3: Yeah, you get more stuff done

Teacher 2: If you want to get their attention, close the laptop I don't hate laptops. I quite like having them

Teacher 8: It's easier to have like key transition points through the lesson like. Like open your laptops, [yeah], close your laptop...And we have the transition points, where we are not relying just on the laptops, they're closed and we move around.

Closing laptops aids classroom management as it also prevents students 'hiding' behind them. Large laptop screens prevent teachers from seeing what students are doing.

Teacher 1: But yes, you can't see exactly what they're doing.

Teacher 8: Because they hide behind their laptops [yeah].

While one participant wants to shut the laptop down and put them aside, others are using the facility of closing the screen as a means of creating transition points and for classroom management. Closing laptops mean students have to sit up and pay attention to the teacher at key points during a lesson, ensuring they are on task. Students can then return to the activity on the device. This is an emerging solution.

Teacher 3 remains unconvinced.

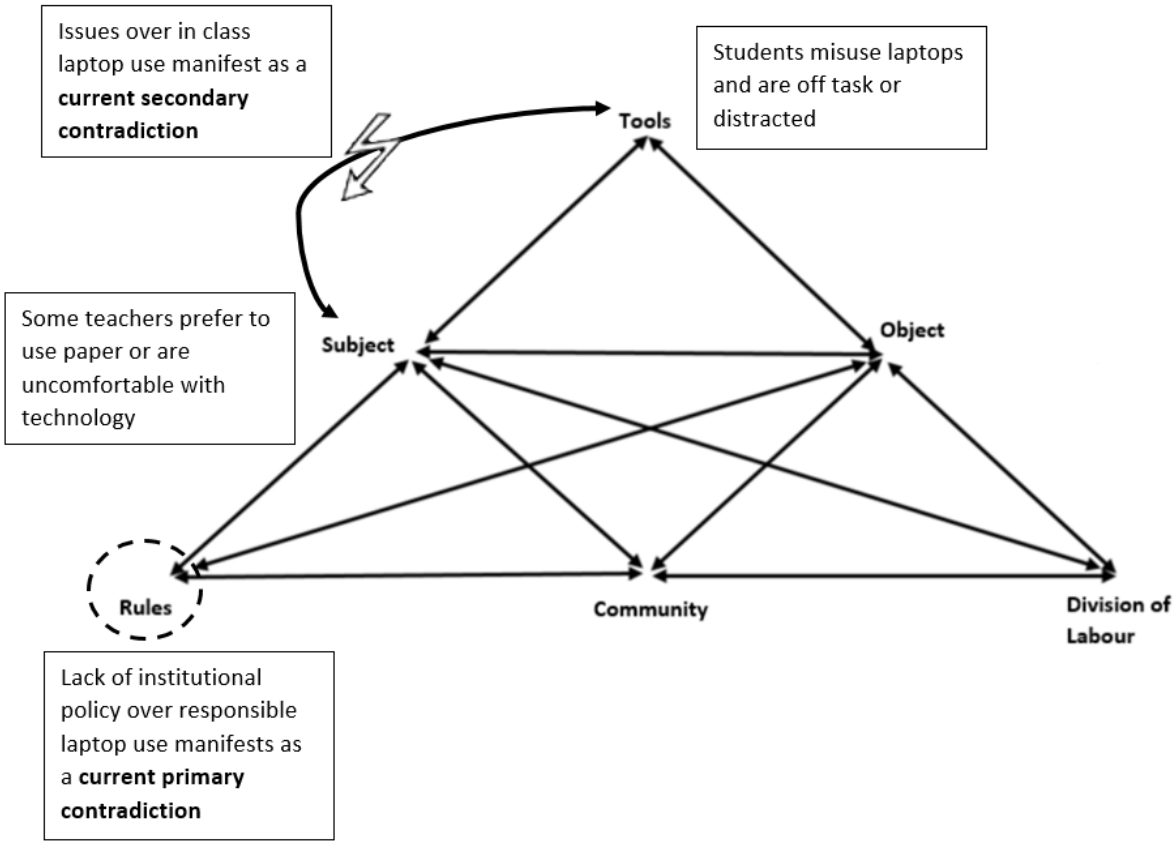
Teacher 3: They're rarely on task with laptops. I think I think the laptop although it's an amazing tool, but it is a distraction.

All participants recognise that student laptop use requires careful monitoring in class, even if they are accepting of classroom devices.

Teacher 5: and I kind of like, not policing, but maybe like friendly police you know. That's the only way I can keep them on task.

The risk that students are off task on devices while in class is a constant concern. The potential distraction, misuse and need for teacher monitoring combined with some teachers' preference for traditional paper are evidence of a *secondary contradiction* between the subjects and tools over usage, manifesting itself as a *Current Conflict with Classroom Devices* in Figure 22. There is also evidence of a *primary contradiction* in the rules. There is no effective college policy on responsible laptop use. This can be mapped to the activity system as a *Current Conflict with Laptop Use Policy*, also shown in Figure 5.23.

Figure 5.23: Current Conflict with Classroom Devices and Laptop Use Policy



A pattern of conflict between Teacher 3 and others is emerging, particularly in approaches to technology and classroom behaviour. Teacher 3 has expressed clear preference for paper and for simply closing classroom devices as a matter of course, in contrast to colleagues who 'quite like having them' (Teacher 2) and are seeking solutions to classroom management. This conflict is apparent in the next section, and is also addressed in the following chapter.

ii) Issues with the Mobile Phone

Perhaps the single, most critical disruption to the current activity system is the mobile phone. While mobiles could be classified as a tool or device, the critical issues relate to how the participants, the subjects of the current activity system, are reacting to this tool. The majority of the participants use strong language and metaphor to describe how mobile phones are a constant source of distraction in class. What begins as fairly understated recognition of a problem,

> *Teacher 1: phones are becoming an issue*

quickly becomes threats to confiscate

> *Teacher 1: Well, I've told them, I'm going to bring a little basket [to put the phones in]*

to actual examples of taking mobile phones from students

> *Teacher 8: I don't. Where am I? Okay, Maitha's still on the phone. So I'm taking everyone's phone off you because of Maitha. So I did, and the others were like 'Maitha!' and then she was just really sorry. And then she*

was just 'okay', then. So I've had enough, you know, it's tough. Serves her right.

Teacher 8 has reached a point where the only option that teacher felt remained was to confiscate a student's mobile. This is an extreme example, especially given that the English preparatory course is nominally tertiary education. Students at university would not expect to have belongings confiscated, nor would teachers at a tertiary institution expect to have to do so.

For the participants, students are using mobile phones for non-class related purposes at every opportunity.

Teacher 8: every lull in the class, you know…they're on their phones and I'm like 'we're still in the class we're still…I'm still standing here.'

Teacher 4: With the lights off yes

Teacher 1: it's an addiction

The participants are comparing this with an addiction, and showing clear frustration that students are simply using mobile phones in front of them during class with impunity.

At the same time, not all participants are resorting to punitive measures. For example, Teacher 6 has used classwork as an opportunity to negotiate mobile phone usage in class.

Teacher 6: At the moment I have been getting them to write paragraphs about the problem of students using their mobile phones in class, and we are going to write a causes paragraph and effects paragraph. And a

solutions paragraph. So I've told them that they have to come up with some solutions, which we will use.

Another participant is trying to educate the students. The message is that it is fine to not use your mobile. You do not have to be connected 100% of the time.

Teacher 8: I don't know I'm trying to get them to realize that actually, they can just sit there and do nothing. And it's okay. You don't have to be on your phone. You don't have to be in perpetual motion. You can just sit there and just have a break. And it's really important for them. This is what I'm saying.

These approaches are not uniform, however, and in fact there is clear disagreement between the participants. Teacher 3, who has expressed anti-classroom technology sentiments throughout the sessions is surprisingly unconcerned by students using mobiles during class. This participant suggests students are actually using them for classwork. A colleague immediately disagrees,

Teacher 3: I don't mind them looking at their dictionaries

Teacher 1: But they're not. It's all the text messages coming in

Teacher 3 continues to defend student mobile use in class. For this participant, it is acceptable for students to turn to their mobiles if they have finished the work. For example,

Teacher 3: But if they have their phone with them, for example, we finished that some of them finished the activity before for the others. What are they going to stare at the wall?

This again meets with disagreement from the other participants, who feel students who finish tasks early could make better use of their time. For example,

Teacher 1: [they could] Help each other, help somebody who's way behind

The participants, with one exception, are in agreement with each other during exchanges over mobile phones. The device is distracting and students overuse them in class. However, Teacher 3 remains indifferent to or even accepting of this. It is perhaps worth noting that this same participant frequently used their mobile during the Change Laboratory sessions. Acceptable usage of mobile phones is clearly a matter of personal opinion. Students – and Teacher 3 – feel it is acceptable to use mobile phones during class, particularly when you have finished an exercise, while the other participants find the device at best distracting and at worst a cause of frustration and even anger. The issue of mobile phones in class also ties with issues of power and the participants' feelings of emasculation and powerlessness. Interestingly Teacher 3 recognises this, but is contradictory in their own practice.

Teacher 3: Mobiles is a major distraction, unfortunately. And we I don't know if we can…

Teacher 2: We talk about it. We've talked about it for years. And it actually, we never get anywhere.

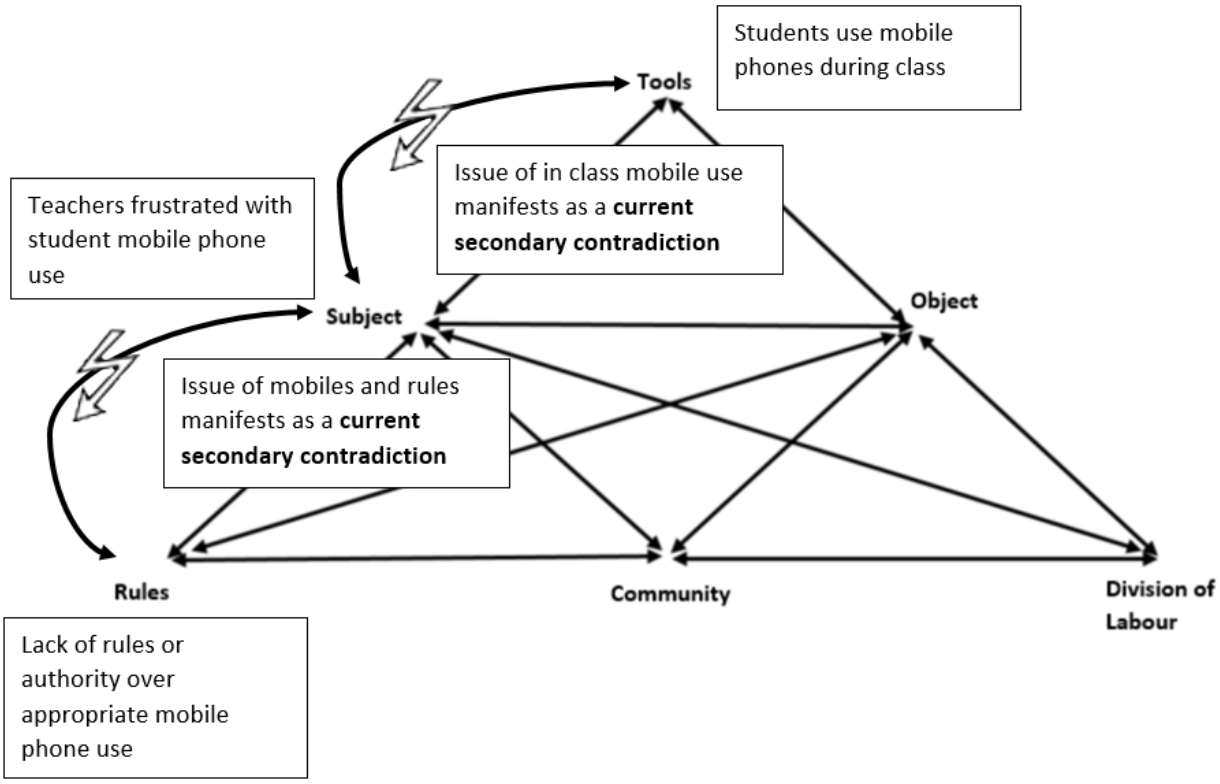
Teacher 3: And the thing is, we don't have any, we have no authority

Teacher 2: Power

Teacher 3: Or any power to do anything with the students regarding their mobiles.

The is a complex *secondary contradiction* that can be mapped to the activity system as a *Current Critical Conflict with Rules Concerning Mobile Phones* primarily occurring between the subjects and the rules of acceptable mobile phone usage in class, as shown in Figure 5.24, and also between the subjects and the tool, a *Current Critical Conflict with Appropriate Mobile Phone Usage.*

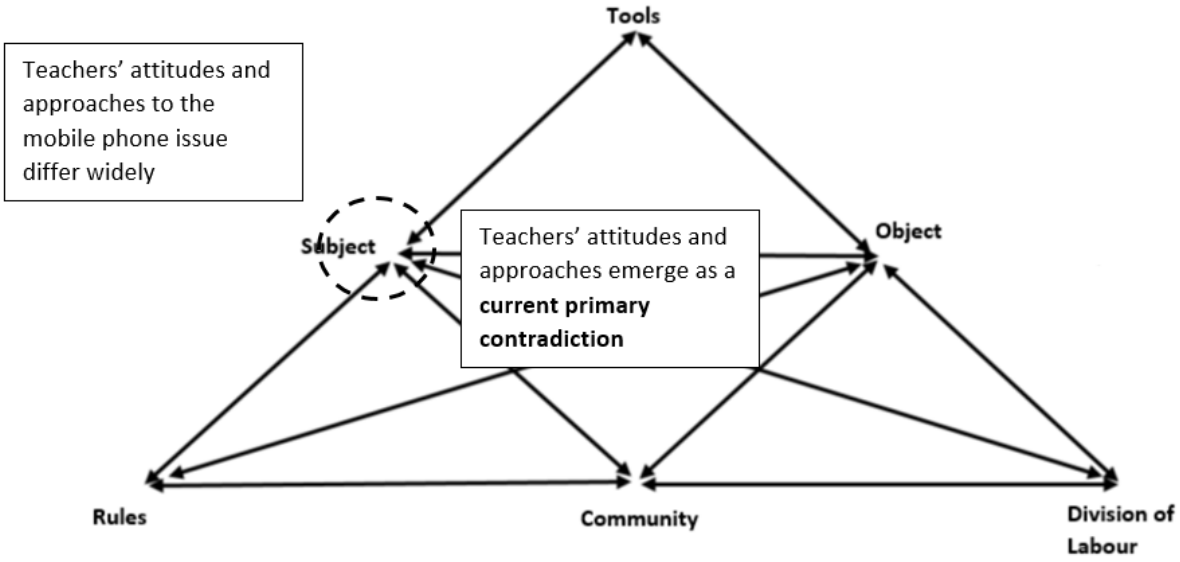
Figure 5.24: Current Critical Conflicts with Rules Concerning Mobile Usage and Appropriate Use



The obvious disagreement between the participants regarding mobile phones and usage in class is also evidence of a *primary contradiction* in the subjects, shown here

as a *Current Critical Conflict Concerning Teacher Attitudes and Mobile Phones*, see in Figure 5.25.

Figure 5.25: Critical Conflict Concerning Teacher Attitudes and Mobiles



Current Issues between Neighbouring Activity Systems

In the historical activity system, contradictions were apparent between the activity system of the participants, most particularly that of the management. This continues to be a notable issue in the current activity system, but issues with students are also evident.

i) Issues with Students and Management Expectations

In the current activity system there are clear issues arising between the activity systems of participants and students and the related expectations of institutional management. Classroom management has been an underlying thread both historically and currently, but here becomes overt in the discussion between participants. The UAE has a policy of 'no Emirati left behind'. This means that the preparatory English course is effectively open access, and there is no entry requirement or minimum cut off. The college must

accept all students regardless of ability, motivation and attitude. Issues with these three considerations then manifest themselves in student behaviour. One participant's experience of managing behaviour is described below.

> *Teacher 8: I don't know what it is. I just found it really hard. I was in [another campus] at that time. And it was a zoo. It was. This is before military service. So it was really, really difficult*

Combined with behavioural issues teachers bemoan a lack of motivation and personal responsibility.

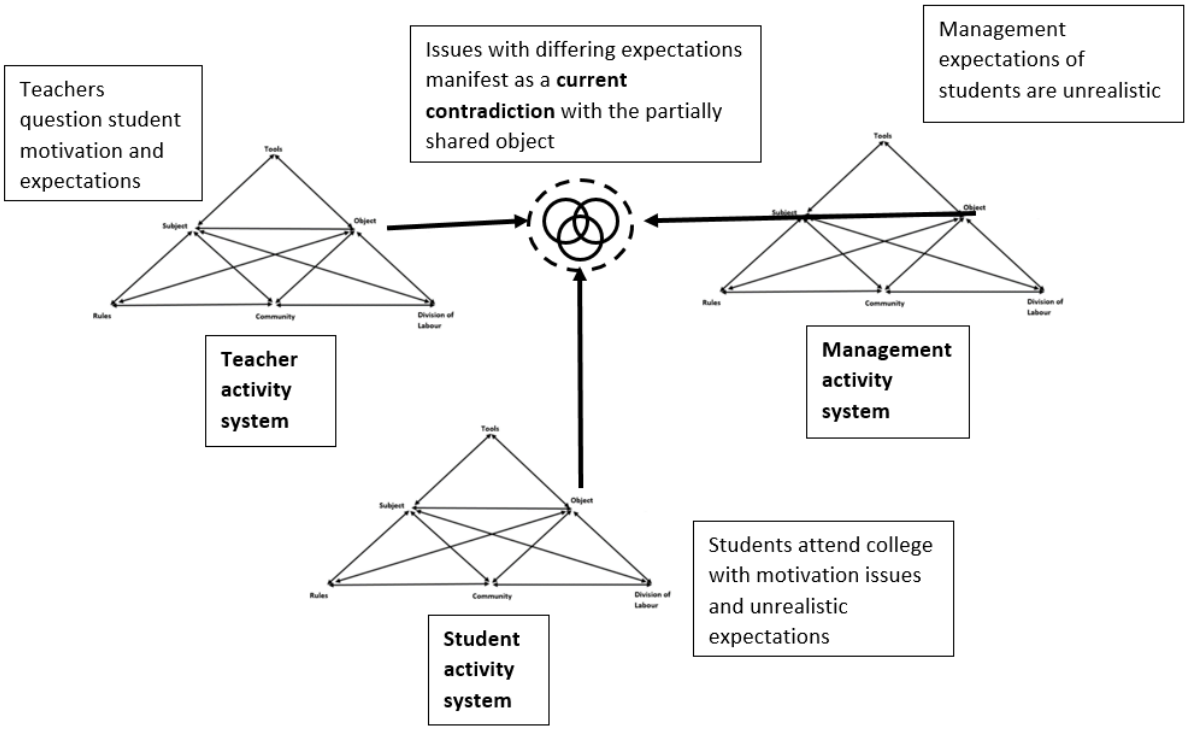
> *Teacher 5: They need so much hand holding and individual attention*

Participants also question the students' own expectations and those that the system as a whole makes about them.

> *Teacher 2: Talking of unrealistic there seems to be a real mismatch between expectations of the students and the students themselves. So all this fantasy, they will go off and do this independently and do that independently that's imposed, does not take into account at all, who they are, what their backgrounds are, culturally, or their age, and how immature they are, or any of those things. So it's all very well going 'Yes, they should be…Wouldn't it be great if they could do X, Y, and Zed?' So let's teach them x, y, and Zed without actually going 'But are they able to do x,y and z?' There seems to be no account taken of who the student body is before courses and assessments and things are put in place I often find myself asking the question, have they ever met them? Whoever they are? Making all the decisions about them? And their education?*

The language is rich and colourful and reflects the strong feelings typical of critical conflicts. This is a conflict between the partially share object of the activity systems of the teachers, the students and also the management, manifesting discursively as a *Current Critical Conflict in the Partially Shared Object*, Figure 5.26.

Figure 5.26: Current Critical Conflict in the Partially Shared Object



ii) Issues with Autonomy, Power and the Mysterious 'They'

Historically, issues over autonomy and power were expressed in more inward terms, and hence manifested largely within the element of subjects in the participants' own activity system. In the current system, however, these issues manifest more overtly and are linked directly to the mysterious 'they' representing local and institutional

management. Participants still maintain their power and autonomy has been removed. For example,

> *Teacher 4: There is no flexibility for the teachers to have their own say towards the writing scripts towards the banding scripts. That's, that's what I felt today. Just now*

The 'mysterious they' who have the power in the eyes of the participants, resurfaces. When informed that the current course was designed by a group called the 'Course Management Team', the group are unclear and suspicious. For example,

> *Teacher 2: who are they? Who is our representative?*

The group are unable to answer these questions, and continue

> *Teacher 2: Teachers came up with what we're doing now?*
>
> *Researcher: Partly. And then with [manager's name].*
>
> *Teacher 3: So basically, the group of teachers most probably the group of teachers gave them something that makes sense. And then [manager's name] screwed everything up.*
>
> *Teacher 1: They didn't know what they were doing*

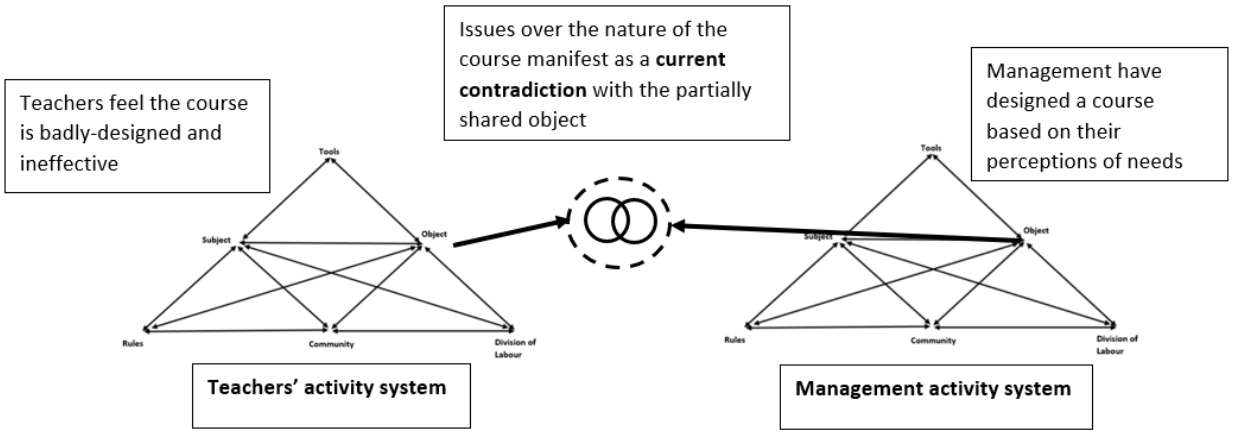
The teachers themselves are not to blame for this situation.

> *Teacher 6: But I think that's…that's not our fault. That's the fault of the planning the course they have just stuck, level three and level four together. So it's two courses rather than being one course. So it's not our fault, they should, if they're going to change the courses, then they*

actually need to change the courses. [Yeah], and they should have spent a lot more time you know, designing the courses that we need, rather than just trying to fit what we had into a semester

Note the desire to apportion blame to a named manager as well as 'they'. Once again there is conflict, this time as a *quaternary contradiction* between the subjects' activity system and that of management, manifested as *Current Conflict with the Mysterious They*. 'They', management, designed a course that they participants, the subjects, are very critical towards, yet have no power to change. The conflict here is over the nature of the course – the partially shared object of the two activity systems. This is shown in Figure 5.27.

Figure 5.27: Current Conflict with the Mysterious They



iii) Issues with Management and Manipulation

The final issue manifesting in the current activity system is perhaps the most serious and the most controversial, and as such appears as a double bind. Double binds present participants with pressing and equally unacceptable alternatives, with seemingly no way

out. While issues with management over the nature of the course have manifested as conflicts, when it comes to the attitudes of the two activity systems towards each other it becomes far more serious and therefore manifests as a double bind. The resolution of a double bind would require liberation and emancipation.

Serious, controversial concerns here are raised over the management's control and implementation of the final exam. There is a suggestion, or at least an implied suspicion, that the final exam is being manipulated and that this was the reason behind abandoning externally benchmarked international exams. 'They' are now in control of gate keeping.

> *Teacher 6: Well, I presume that you know, now that we have control over and we have control over pass rates and numbers*
>
> *Teacher 1: But we won't as individual teachers? [No, no.]*
>
> *Teacher 3: So we don't have control? [Yeah.]*
>
> *Teacher 6: Well, when I say when I say we I mean <u>the college has control over the gate</u>. So…*

The participants may have no control over the final exam, but this control rests firmly the hands of those who do. The mysterious they. This, in the eyes of the participants, completely devalues the final assessment. The management can now decide who passes, and how many. If the test is really a malleable gate that can be opened and closed as the college wishes, where is its validity? The rhetorical question is implied by the participants.

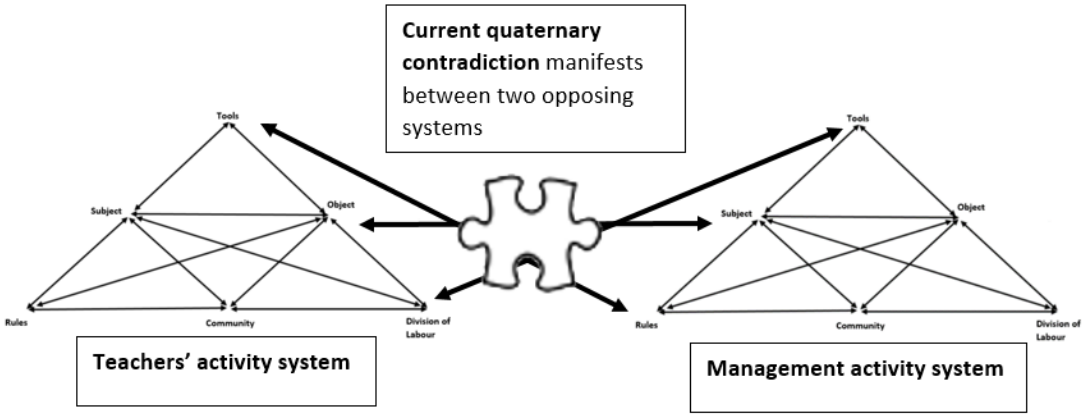
Furthermore, teachers give examples of having been asked to contribute to assessment and course design, but then ignored. There is sense that management has pretended to be interested in their opinion, to have paid lip service and then ignored them.

> *Teacher 2: Well we did pilot that [assessment]. We piloted that and said, 'No'. And so what was the point of the pilot things? They just went 'Well, we don't care. We're doing it anyway'. Or you're doing it?*
>
> *Teacher 7: Also, the other thing they sent us a couple of weeks ago, like would you prefer to, you know, the strict version or the more lenient version of marking?*
>
> *Teacher 5: Oh yeah we voted*
>
> *Teacher 7: But yeah, we never got any feedback on what we put*
>
> *Teacher 5: What was the point of that?*

The final line of this dialogue illustrates the double bind manifesting here. Teachers feel powerless, emasculated, and display a cynicism and weariness directed at management, at 'they'.

This can be mapped to the activity system as a *quaternary contradiction* manifesting as a *Current Double Bind between Teachers and Management*, between the subjects' activity system and that of the faceless 'they' of management, shown in Figure 5.28. Rather than a specific conflict over object, for example, this is a more general and all-encompassing contradiction between two opposing activity systems that hold each other in apparent contempt.

Figure 5.28: Current Double Bind between Teachers and Management



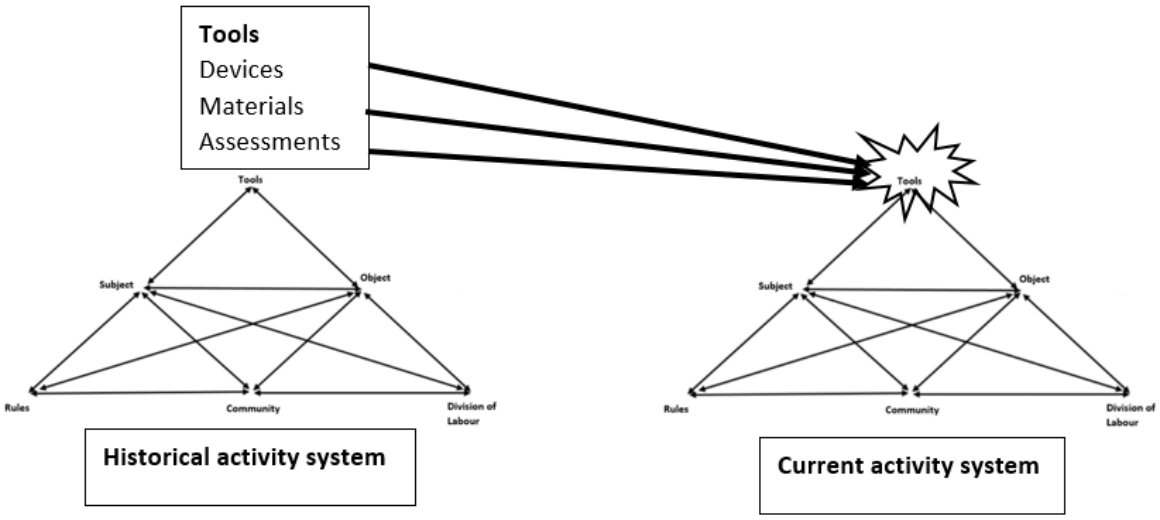
Summary: From Past to Present

The one constant in the English preparatory program since 2010 has been change. Top-down management initiatives have seen changes to the course itself and course outcome, and initiatives around classroom devices such as laptops and iPads have had major impacts on the nature of course delivery and teaching. Classroom technology has been implemented in good faith, with the aim of improved teaching and learning. That is not under question. However, while technology has been introduced with optimism and good intentions, the actual impact has been less effective and perhaps even detrimental at times. This is evident in a number of contradictions that have developed historically and are manifesting currently in the work activity system.

Firstly, historical issues with materials centred on the relative efficacy and relevance of published material compared to that created by teachers themselves. This remains a contradiction in the present, and has developed to include issues over interactive materials, online platforms and applications. There are also concerns over the nature and volume of assessment in an overcrowded curriculum. Further historical

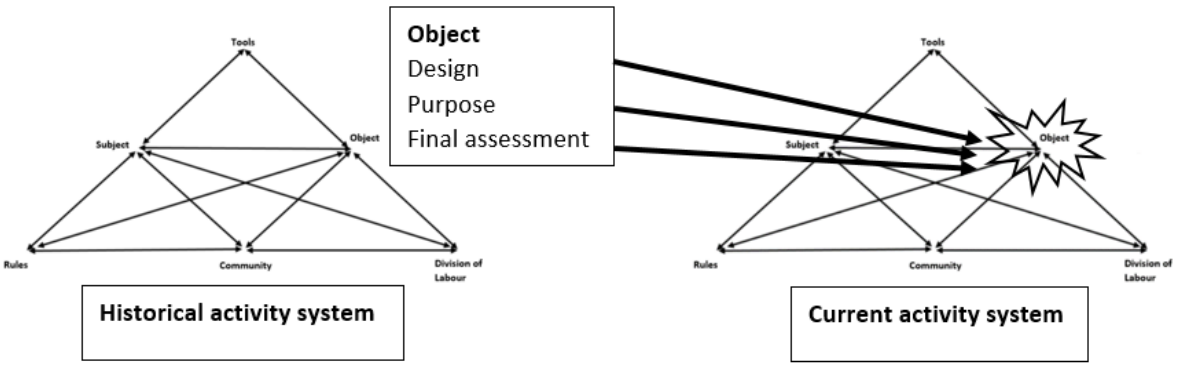
contradictions within the element of tools concerned classroom devices, in particular the huge impact of the iPad on teaching and learning, and unintended outcomes on classroom behaviour. iPads have been supplanted in the current activity system by laptops, but contradictions remain over effective use of classroom devices. See Figure 5.29.

Figure 5.29: Historical and current contradictions in tools



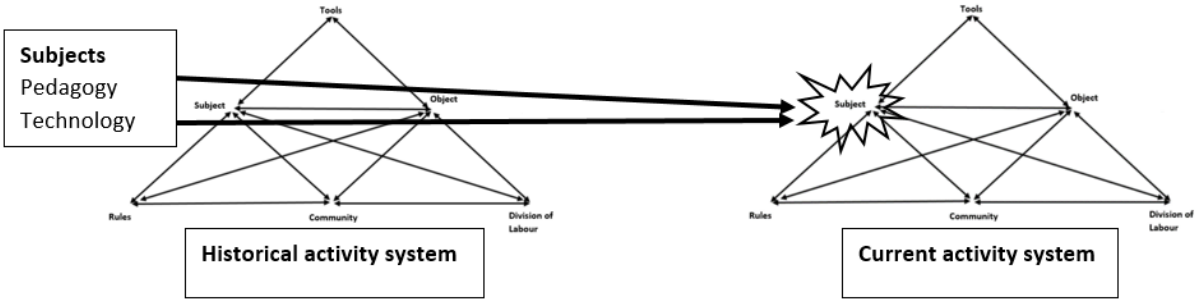
Secondly, top-down changes to the course itself caused historical contradictions manifest in the present as major contradictions over the design, nature and purpose of the current English preparatory course. Related to this, historically frequent shifts in the final examination have led to a situation today where the validity and reliability of the final exam is being questioned. See Figure 5.30.

Figure 5.30: Historical and current contradictions in object



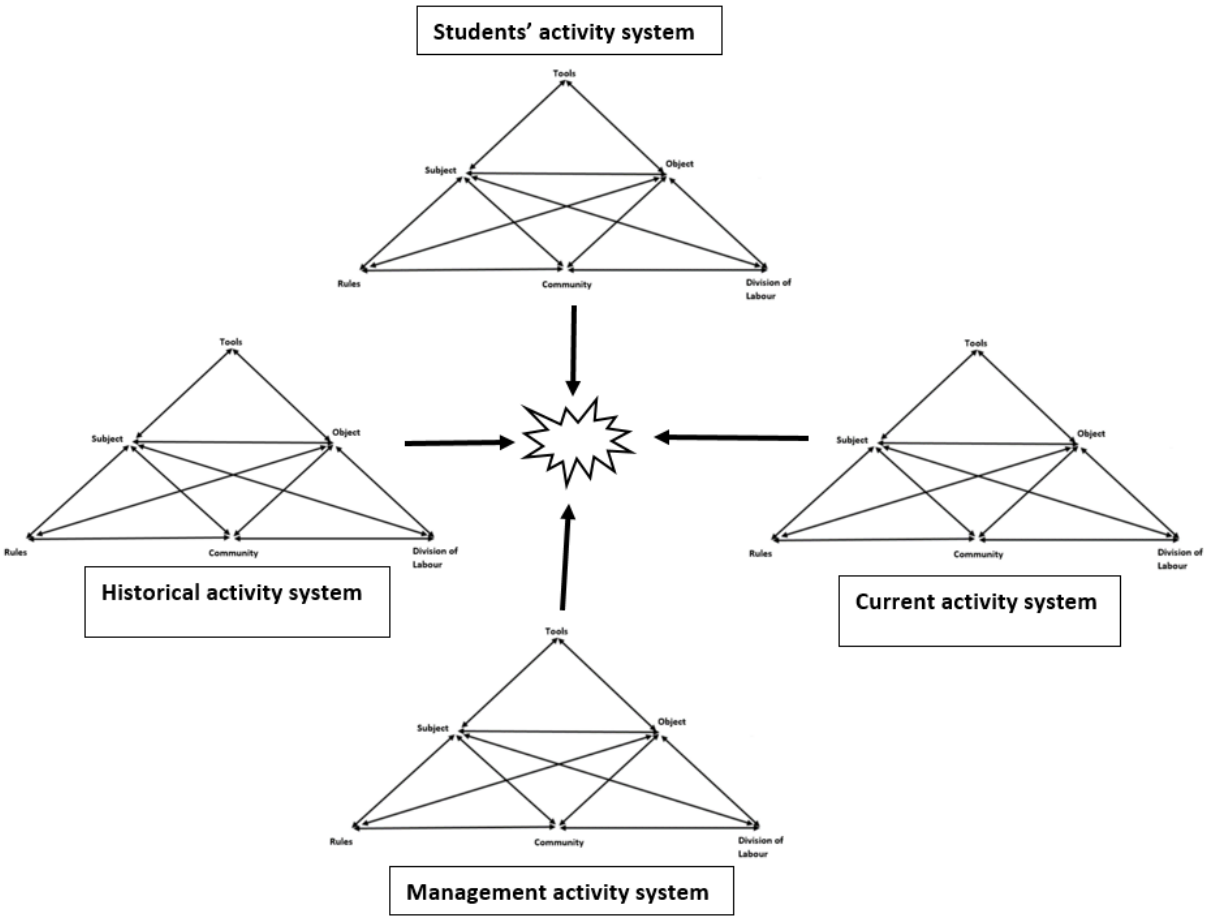
Thirdly, contradictions within and between the subjects emerged historically as a direct result of classroom technology initiatives. Teachers were pushed out of pedagogical comfort zones into forced paper-free environments with perceived detrimental effects on student behaviour, teaching and learning. Teachers also feel unsure how to best teach collaboratively in the laptop-mediated classroom. These contradictions manifest today as disagreements between the subjects among those who are for and against classroom technology, with some still expressing clear preference for paper, exacerbated perhaps by a lack of proficiency in classroom technology applications and an unwillingness to change. Attempts to embrace technology, or at least the pressure to do so, have perhaps pushed pedagogy out of consideration. In addition, the mobile phone has emerged in the current system as a massive source of disruption, not only in the classroom but between teachers themselves. See Figure 5.31.

Figure 5.31: Historical and current contradictions between subjects



Finally, activity systems do not exist within a vacuum, and are part of a number of interrelated neighbouring systems. Historical contradictions with these related systems continue today. There appears to be serious conflict between the teachers and management. The mysterious ‘they’ that is seen to hate those delivering classes is even named and shamed by participants in some cases. This quaternary contradiction continues to have serious implications on the current activity system, with teachers’ power and autonomy seen as under threat if not removed entirely. There are also very serious concerns regarding manipulation of the final exam and pass rates. There appears to be a serious breakdown of trust between these activity systems. At the same time, the activity system of the students themselves is called into question, particularly in terms of classroom behaviour and expectations, specifically linked to issues with classroom devices and the nature of the course itself. See Figure 5.32.

Figure 5.32: Historical and current contradictions between neighbouring systems

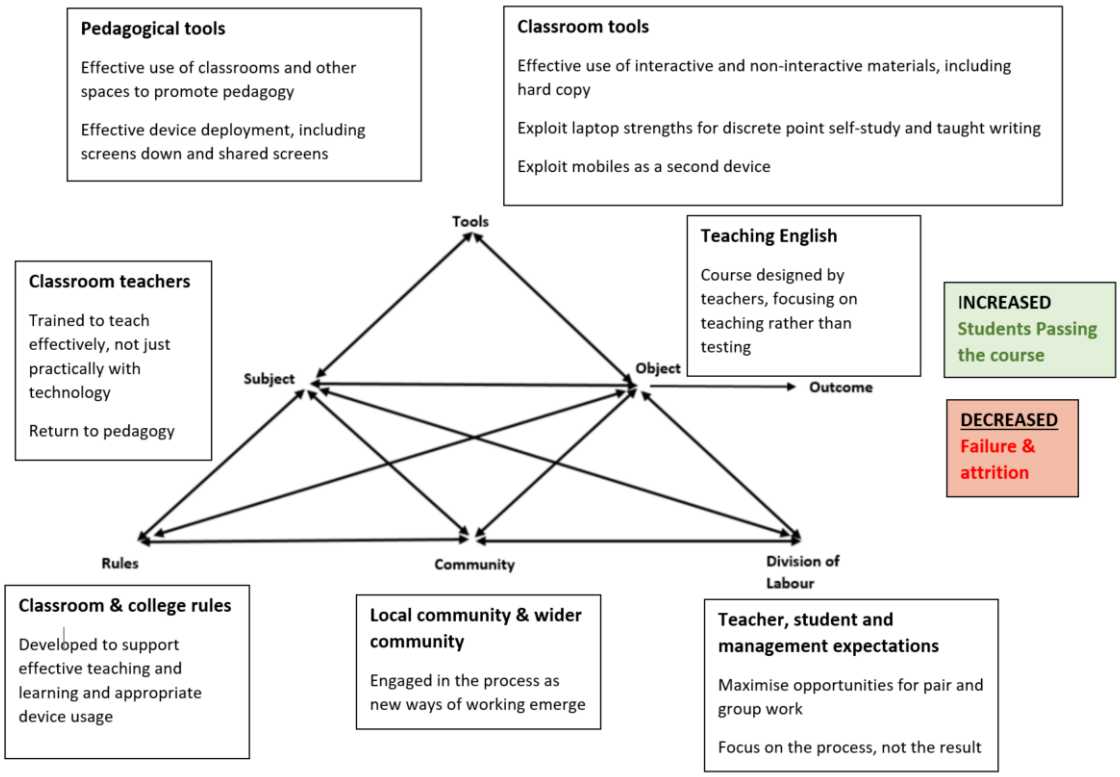


The identification of these contradictions allows us to describe the issues facing the current activity system, issues that may be causing the unintended outcomes of failure and attrition. However, mere identification and classification is not the aim of the Change Laboratory. It is not enough to simply describe and interpret the world. The point is to change it. This is the purpose of the following chapter.

6 Findings 2: The Future Model of the Activity System

The ultimate aim of the Change Laboratory is to revise work practice, to create a new activity system that is culturally more advanced than its current manifestation, through 'ascending from the abstract to the concrete' (Virkkunen & Newnham, 2013, p. 29). The participants confront the complex challenges of their work practice. Identifying and analysing these complexities allows for the formulation of abstract ideas, ideas that are then modelled and experimented with, leading in turn to concrete solutions and revised practices in an evolved activity system. A number of solutions have emerged, some at a concrete applicable level, while others remain more abstract, given the limited time scale of this Change Laboratory. Many of the ideas presented will take time to solidify into concrete practice. However, it is possible to create an emerging model of the future activity system. See Figure 6.1.

Figure 6.1: The future activity system (proposed)



This new model is the result of the solutions proposed and also those emerging less directly. It should also be noted that solutions related to issues with neighbouring activity systems have not manifested in isolation. Instead, solutions to issues with students and management emerge instead within the solutions proposed to issues with the tools in use or with the participants' attitudes. This is further evidence of the interconnectivity of activity systems. A contradiction may manifest in the object, yet the solution my lie in the tool. Similarly a contradiction in a neighbouring activity system may be solved in a different, yet, related, activity system.

The solutions are discussed in direct relation to the contradictions identified in the previous chapter. Given the context of the intervention, the solutions are specific to and

use the language of English Language Teaching. However, the ideas and principles discussed should be applicable to any laptop-mediated classroom environment.

6.1 Tackling the Issues with the Tools in Use

As we have seen, a number of contradictions, both historical and current, centre around issues concerned with the tools in use – the materials, devices, course work and so on that teachers are using in the classroom. Emerging solutions to these contradictions are now described, under three clear areas: using devices effectively, using devices for different purposes, and utilizing space and deployment. Some solutions have been implemented while others have only been suggested. It should also be remembered that solutions themselves can cause further contradictions in need of resolution.

Effective Device Usage

Laptops can be very effective tools for self-study and individual work, exploiting the vast amounts of available interactive and online materials available to modern educators. There is an extremely wide and every growing range of tools, applications and websites that allow teachers to author or download interactive materials for use in class. Many activities take the forms of games or quizzes, and allow students to answer and receive instant feedback on their performance. For the participants, such activities work well with discreet point teaching such as vocabulary or grammar and provide structured practice. For example,

> *Interventionist: What sort of materials do you actually find work best with the students. You mentioned a couple of things over the last couple of weeks*
>
> *Teacher 2: Games*

Teacher 1: but only in controlled situations. But they can't do it when it's freer

Teacher 3: They like to be structured more or less

Such materials can almost be considered as self-study. Students can study and effectively test themselves on their progress. For example,

Teacher 6: today when I left the classroom there was a group of students actually doing a book widget word search without me telling them to do it. So. It's good.

And

Teacher 3: because vocab it's more of an individual thing that they have to do so they can do it on their own on the computer. Then when it comes to other things, it's nice that they collaborate yani I like the idea of vocab. They sit on their own doing the quizlet, doing the book widget, doing the kahoots or what not, the kahoots, sorry, doing whatever activity on their own. So that works there. That works fine.

The participants feel that students working individually on interactive vocabulary exercises is effective and desirable. The same is true of grammar,

Teacher 7: I think laptops [are] good because you can get some quite good online, practice quizzes, just quick quizzes that you can give them to test. Will and going to, that's, that's what I did today, will and going to? And you can, like you finished your lesson early and you've done a grammar point last week and say, Okay, look at this one for 10 minutes

[it's a good filler] just go for it. So it tells them what they got correct. Their mistakes. It's good for them.

Interactive exercises are good to practice and test knowledge, and also to fill unexpected spaces in the lesson. Students know how to complete controlled practice activities, which grammar and vocabulary lend themselves to.

Teacher 2: Yeah, I think they like controlled practice because they know what to do. And they've done it. It's drills isn't it? They, while they might go 'oh grammar' they get on with it because they understand what they're supposed to do there quite well. [they're] trained to do it.

Interactive materials, therefore, are very effective when used for controlled practice activities with discrete items like grammar and vocabulary, especially for self-study.

An important point raised by the participants is the sheer volume of available applications and platforms. This becomes an issue in itself. It can be hard to know what to choose, and some platforms may have restrictions based on licensing or access. For example, work completed today may cease to be available to students after a time.

Teacher 2: The problem with it is everything disappears after seven days…it doesn't disappear off your account but it becomes non-shared. Whatever you share, the links stop working after 7 days.

Other platforms may limit the number of uses or users, or may simply be over-used leading to boredom on the part of students and even annoyance for teachers. One popular quiz platform has been used so much that the background music is a source of conflict, for example.

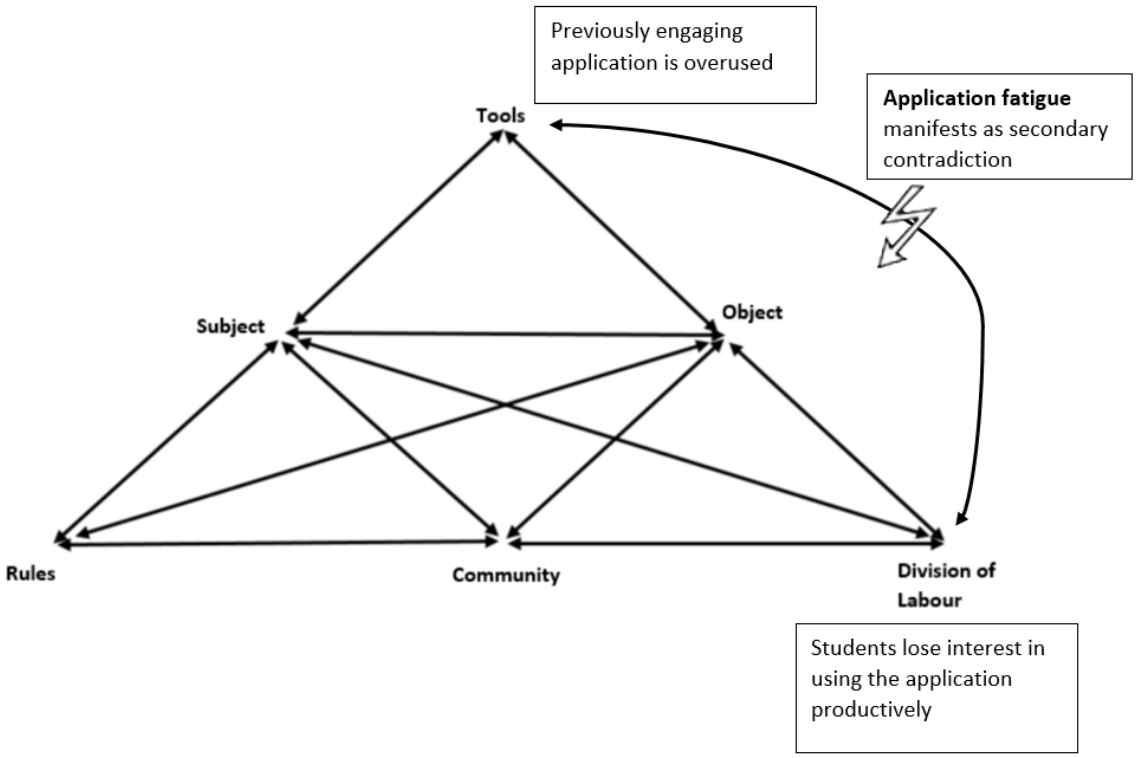
Teacher 2: [that background music] Oh it does drive you mad doesn't it!

For the participants, the key is to use software, applications and platforms that you are comfortable with, but not to over-rely on one.

Teacher 5: [you need to] mix it up!

To avoid complacency, platform fatigue and associated boredom, variety is necessary in the use of interactive materials. What is bright and engaging today can quickly become dull and uninspiring if over-used. I have termed this *application fatigue*, where a previously engaging platform or application ceases to be effective through over-use. This is a *secondary contradiction* manifesting between the tools and division of labour, shown in Figure 6.2.

Figure 6.2: Application fatigue



However, interactive materials are not necessarily suited for all activities. As previously

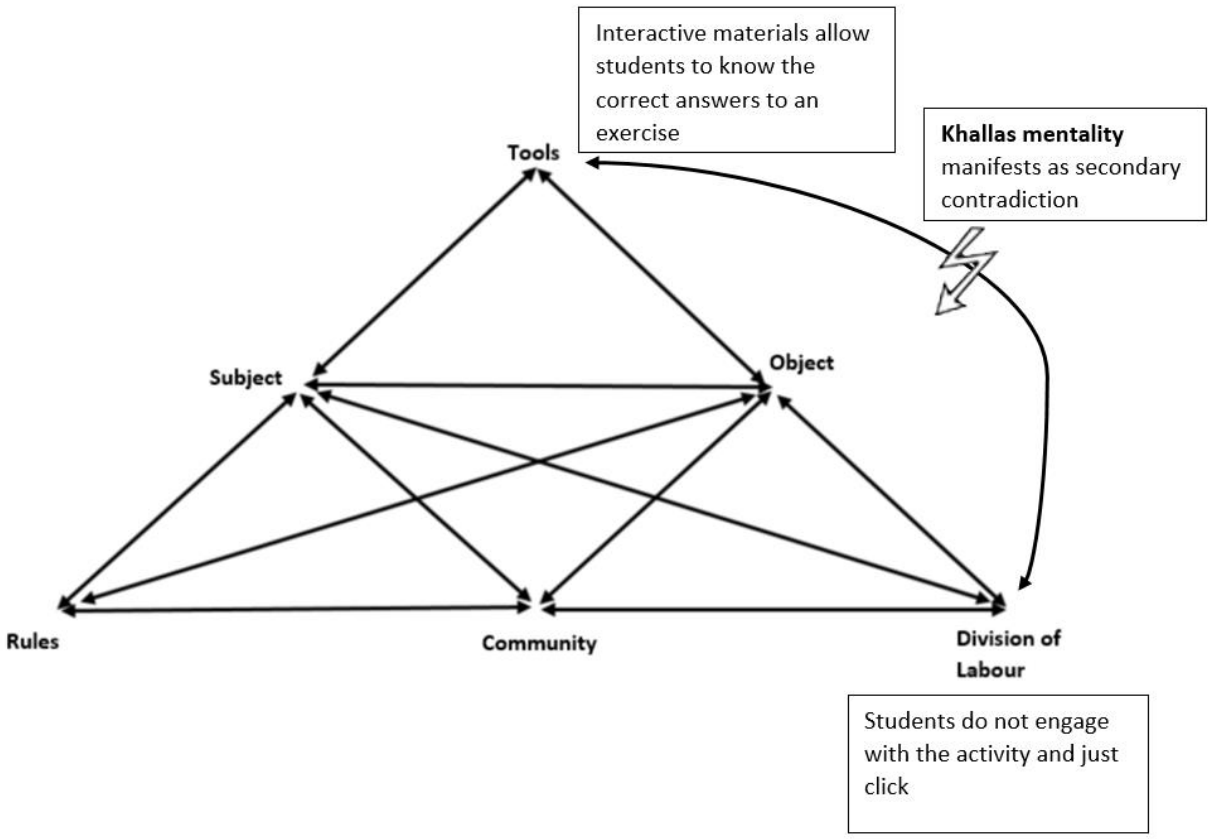
mentioned, students can over-focus on the answer and not the process of arriving at the answer. Interactive, self-study material can encourage this. Students simply click all options, for example, until they arrive at the correct one. I call this the 'khallas[10] mentality'. Students will quickly click through activities, particularly interactive exercises, to say that they have finished, 'Khallas!'. This 'khallas mentality' is facilitated by this type of material, so teachers need to employ a different approach.

> *Teacher 6: [with interactive materials] you know if it's multiple choices, you know, click, click, click, click click, tell me the password.*

In this case, the khallas mentality manifests as *a secondary contradiction* between the tools and division of labour, and is shown in Figure 6.3.

[10] Khallas is Arabic for finished

Figure 6.3: The khallas mentality

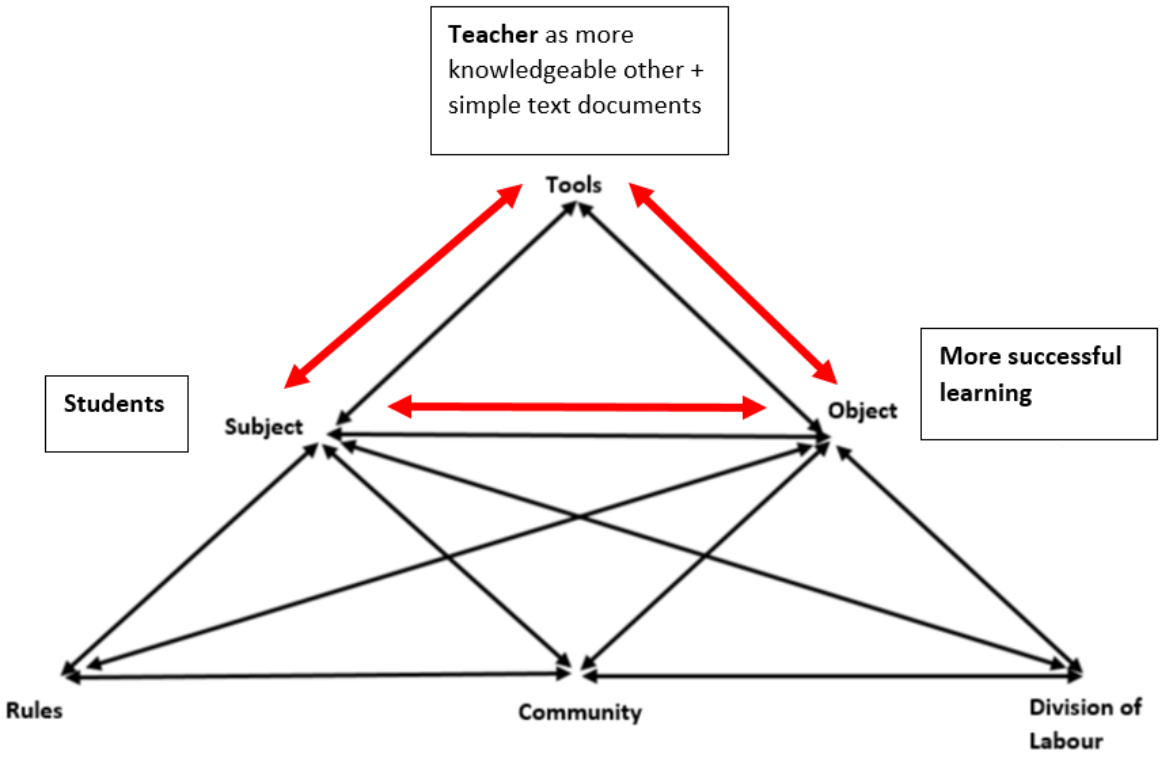


When working with reading or audio texts that require deeper comprehension, the participants have found that it is preferable to use applications that require teacher feedback or allow for teacher control over the release of answers. This prevents the 'khallas mentality' as students are relying on the teacher to find out if their answers are, in fact, correct. There is even a suggestion among the participants that in actual fact it is better to work with PDF or simple text documents. Students can highlight or annotate such documents much in the same way they would work with a physical piece of paper.

> *Teacher 6: If it's a book widget no, because their interest is gone because they but whereas with a Word document at least we can go over each question together rather than seeing that they've been given the answers to everything straight away [Yeah.]*

Once students see the answers they lose interest. By not releasing answers teachers can hope to maintain more interest in the process. This is an interesting development. Since the introduction of 1:1 classroom devices teachers have been bombarded with applications and platforms that create visually appealing, interactive all-singing all-dancing materials for classroom use. However, the participants are suggesting that the simple text document is in fact often a more effective teaching tool when students are required to interact more comprehensively with texts or dialogue. In this situation, the teacher also acts as a mediating tool or a more knowledgeable other (Vygotsky, 1978). This is represented on the activity system in Figure 6.4.

Figure 6.4: The teacher as more knowledgeable other



Different Devices and Different Purposes

For productive skills such as writing, laptops are an effective tool. Learning Management Systems, for example, have built in discussion boards which allow for students to present written work, either privately in journals or publicly in discussion boards. Teachers can give feedback and students can draft and redraft. For example,

> *Teacher 2: I use the discussion board and if you say edit you can type in it… And I highlight things that I want them to correct. [Okay.] And they can, say, edit and go in and fix it*

Outside of discussion boards, there are online platforms that allow for writing to be posted on 'walls' in real time or asynchronously. Technology also provides opportunity for collaborative writing through wikis or shared documents.

> *Teacher 7: Wikis [are] really good...So they can write it. And either you can go in and change bits or correct it or somebody else can, and then they can look at the history so they can see what's in red, what's been changed, in the green what's been added…*

In another example

> *Teacher 7: So I did a PowerPoint yesterday on OneDrive. So you know, you can see what the students are writing in real time. And that was on those, what was it, 10 questions for the research project? And so each group did their own research, PowerPoint with each, each slide was a question on and I could go in and correct them or point things out and then they will use that as a revision tool*

> *Teacher: 5: Real time*

Classroom devices allow students to produce work that can easily be shared, either for editing or to provide audience. For the participants, teaching writing on laptops is generally a positive experience. Laptops facilitate the effective teaching of writing.

The laptop is not the only device in the modern classroom. In the current activity system we saw that the mobile phone is a major contradiction, manifesting as a critical conflict between the teachers. Some are attempting to prohibit usage completely, while others are attempting to incorporate the mobile into teaching. Two main approaches are identified.

The first way of dealing with the problem is to involve students in the process of rule creation. Through class discussion, debate and perhaps writing tasks the issue can be confronted. Suggestions and examples from the participants include no phone days, separate tables for students to leave their mobiles, mobile break times – ten minute slots where students are allowed to catch up on their messages – and so on. Some success is reported with each example. The common theme is that the issue needs to be explicitly addressed, and simply banning mobile phones is not the answer.

The second, more exciting, solution involves exploiting mobiles as a second classroom device. Mobiles can be used to access dictionaries or for translation during regular class activities, or can be used as the focus of the class itself. Quiz applications can easily be access on mobiles, as can polling sites and the like. Laptops can be closed and students can be told to specifically use their mobiles. Other suggested uses involved practising speaking. Modern phones allow the user to record voice notes, which can then be sent via messaging apps. This can be exploited in class. For example,

> *Teacher 3: Or another one can be is they send voice notes with they have a picture. They have to describe the picture and the other person has to draw it, according to the voice note that they get.*

Or

> *Teacher 8: Yeah, I did. I've been doing it for a few weeks. But they upload it to Blackboard and they, they use their laptops or they use their phones and upload it and then and then we can listen to it together. [Oh, yes,] that worked really well. I've been doing that for a while now…yeah that worked quite well they really enjoyed it.*

Recorded voice notes can be used to complete tasks or accessed later for feedback and correction. Students can also use mobile phone cameras to create their own short dialogues. Cultural issues mean that students cannot film each other, but they can use puppets, for example,

> *Teacher 7: they can script a dialogue well not script it, but have a dialogue there. And they have like stick puppets and they get the stick puppets to talk to each other and they film that*

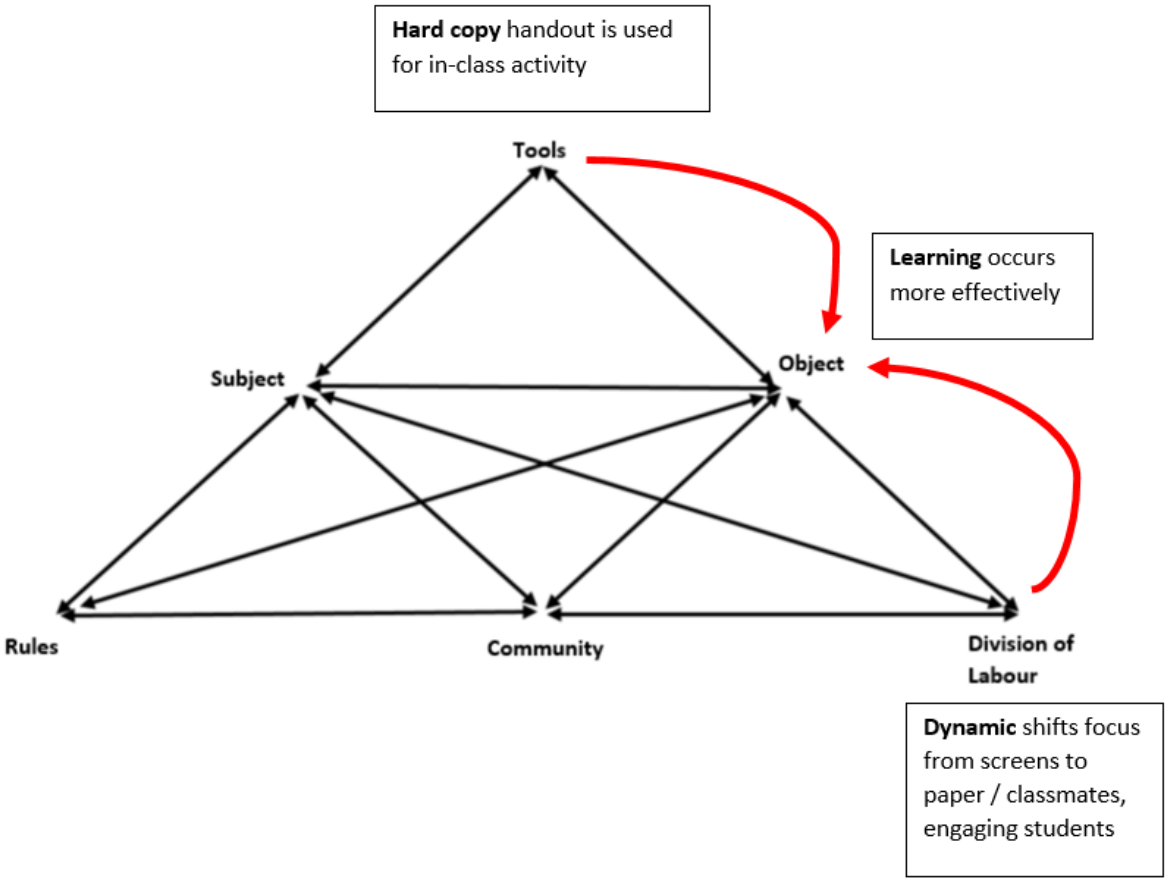
There are also applications that allow students to create dialogues using photographs or built-in characters as an alternative to the physical versions suggested by Teacher 7. In short, it is unrealistic to permanently exclude mobile phones from the classroom. It seems that the solution to this critical conflict is not to fight, but to embrace mobile phones as a powerful, secondary classroom device.

While it important for the subjects to embrace the laptop and mobile phone as effective devices, another solution proposed does not involve technology. Just as there are times to close laptops, and there are times to put down the mobile phone, there is value in stepping away from technology. This is not a Luddite preference for paper, but a recognition that at times you need to 'mix it up'. Students today are used to high-tech classroom environments, with 1:1 devices, LMS and online assessment. To suddenly introduce paper can have a dynamic motivating effect. For example, one participant describes running a speaking exercise using paper role cards.

> *Teacher 2: because you get up, walkabout, and there's also the illusion of fun with…they like it when you give them a bit of paper, they think they're gonna do something [fun]*

We have perhaps turned full circle. Ten years ago, the introduction of classroom devices and applications was seen to herald an age of fun, engagement and enjoyable learning. Now, the introduction of paper into the laptop-mediated classroom is having the same effect, although this is in direct opposition to the paperless environment and could lead to conflict with the institution. This is shown in terms of the activity system in Figure 6.5.

Figure 6.5: The effect of hardcopy in the classroom

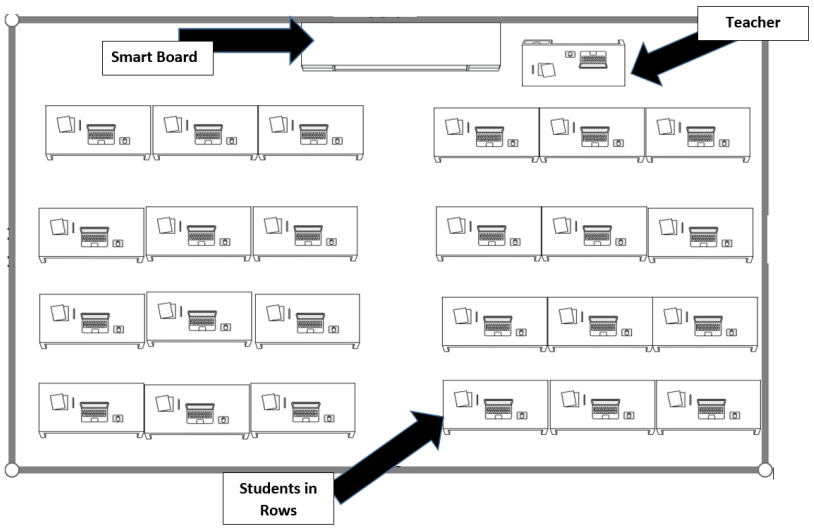


A Return to Pedagogy through Space and Deployment

Classroom technology initiatives concentrate typically on the device itself, on training teachers to use it, and on applications and materials that the device can support. A well-planned initiative will also carefully consider the infrastructure and attempt to ensure that the institution is able to support the initiative in terms of network server capacity, technical support and so on. This focus on the device, and the assumption that devices will be deployed 1:1, however, fails to take into account the *actual physical space* where the devices will be deployed. This has very much been the case with the preparatory English course. Classes are organized in rows, facing the teacher's desk, in a very traditional classroom layout. The network infrastructure is excellent, technical support

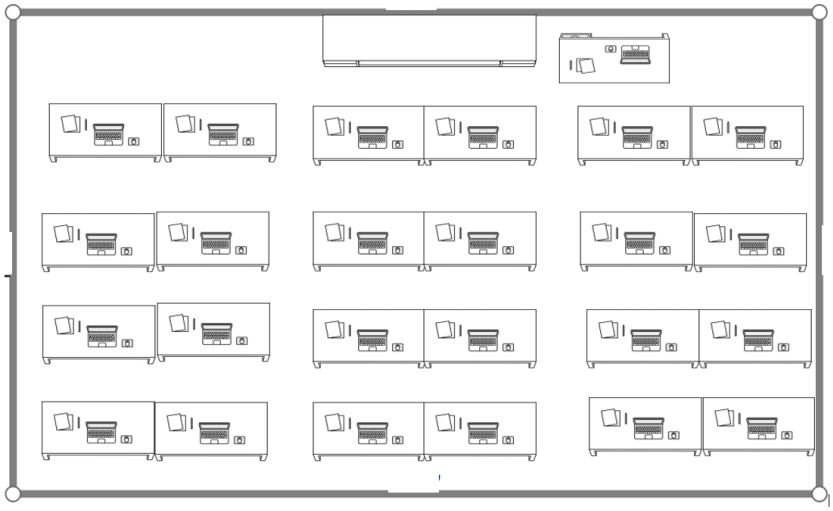
is a quick phone call away if needed, and all classrooms have desktop teacher computers and state-of-the-art touch screens surrounded by white glass writing surfaces. This traditional set up can be seen below in Figure 6.6.

Figure 6.6: Current traditional classroom set up



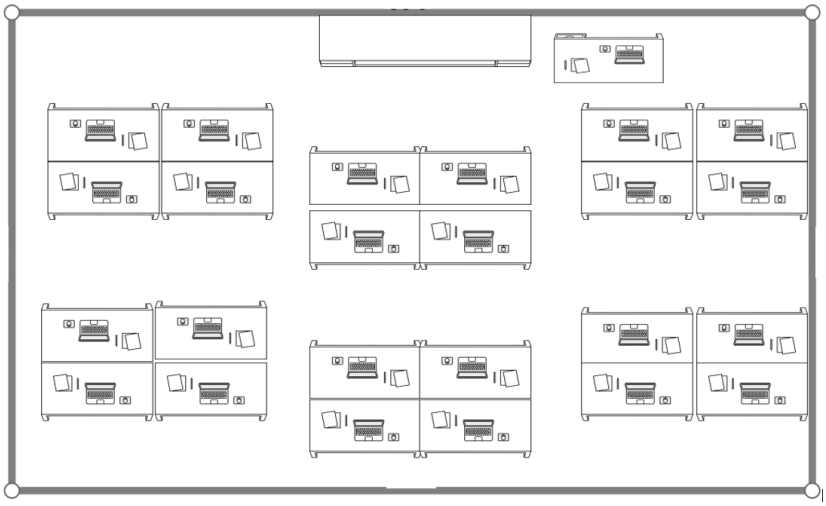
However, the physical set up encourages students to interact solely with the computer screen in front of them, in conjunction with the larger screen at the front of the class. This is not conducive to collaborative learning or Communicative Language Teaching. In the laptop-mediated environment, the importance of working in pairs or small groups, a mainstay of CLT, has been forgotten. Devices are ubiquitous. They are here to stay. The merging solution returns to the pedagogical underpinnings of Communicative Language Teaching, and reminds us that the classroom space itself is another tool for teachers to use in the achievement of their overall object. In a return to pre-classroom devices, the Change Laboratory participants suggested, experimented with and put into practice a number of seating patterns. For pair work, moving the traditional rows into pairs proved very simple. See Figure 6.7.

Figure 6.7: Desks arranged for pair work



Pairs can be achieved very quickly but effectively. Pairs can also quickly become islands of four tables for group work. Note that in this room layout students are facing each other rather than the front of the class. See Figure 6.8.

Figure 6.8: Groups arranged for group work



Other layouts experimented with included the ‘communicative U’ that generated a lot of floor space for stand up and move around exercises (Figure 6.9) and a boardroom set up (Figure 6.10) that proved effective for whole group work and discussion.

Figure 6.9: Communicative U layout

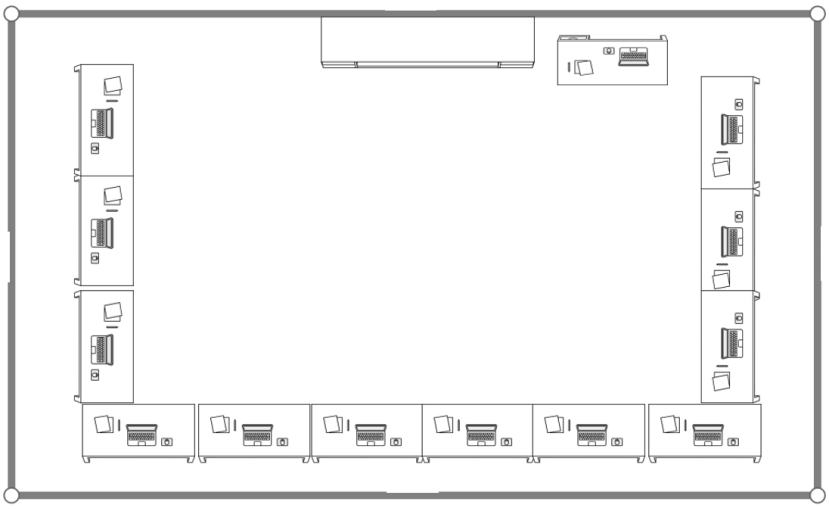
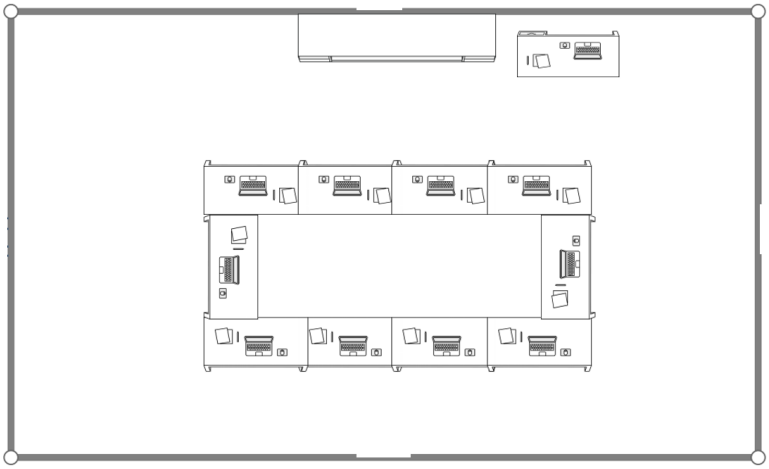


Figure 6.10: Boardroom layout



By removing the traditional rows, participants were able to increase communication and collaboration. For example,

> *Teacher 3: it was very nice because the girls were interacting with girls they don't usually talk to. And the way they were seated, made them interact,*

The participants are positive about these new layouts.

> *Interventionist: has anyone else tried different layouts*
>
> *Teacher 1: Yeah I have. It is more productive*
>
> *Teacher 2: it did make as you say the girls are sometimes that aren't very sociable, did then sit with people they wouldn't normally sit with which is one nice thing*
>
> *Teacher 7: it's quite good for project work as well, get in your project groups M5*

This solution may seem simple or obvious. However, I would argue that the over-focus on technology and classroom devices has blinkered teachers to sound pedagogical practice, particularly in language teaching. 1:1 device initiatives have meant that each student is focussing on one screen only. This has created a classroom environment where students merely stare at the device in front of them and do not interact with their surroundings and peers, and teachers' practices have compounded this. What we are seeing here is perhaps a reawakening of pedagogy, a return to pre-laptop practices adapted for the modern classroom.

However, the application of alternative classroom layouts is not without problems. Teachers employ alternative layouts, but then find the class has returned to its traditional layout the following day.

> *Teacher 2: There's always an issue here with moving the desks. [I know] because we at one point we, we've had them in nice groups and we've had them in all of this and they all just get moved back*

Teacher 7: Because we don't have our own classrooms

Teachers do not ‘own’ the classrooms, but share them with other teachers and other departments. The rooms have always been set up in rows, so that is always the position they are returned to. The problem is not just other teachers or the facilities department. Students show dislike for new classroom arrangements. For example,

Teacher 2: but they don't like the group thing. If they're not facing forward. You'll find if you because we've done this over the years, and we set them up in different ways, so if you're on the side, which I think is perfectly acceptable, they hate it and they all start moving their chairs so that they're all facing forward because they're very conditioned to that's what we do

Teacher 7: well you can have them like sitting sideways. So what they can sit at the side

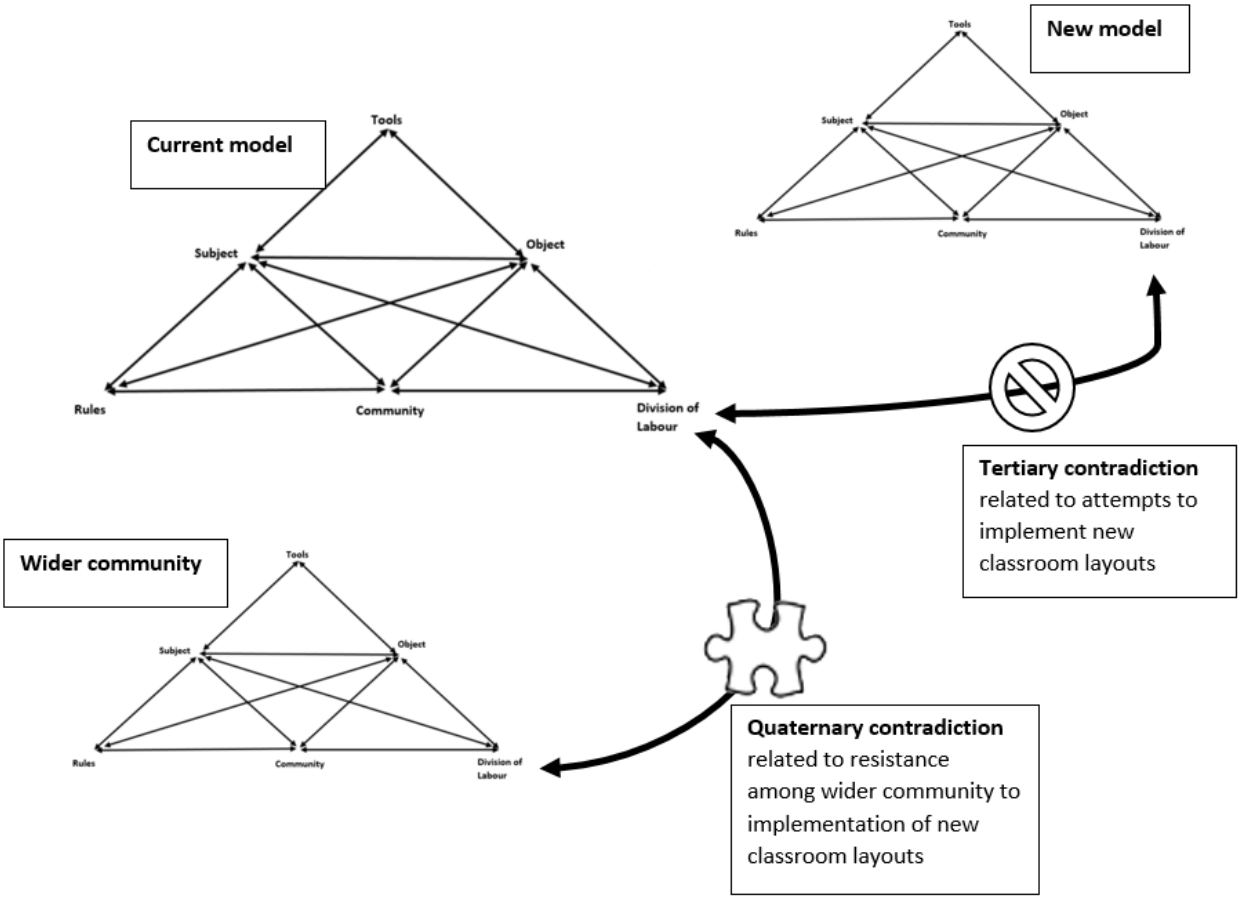
Teacher 2: I'm saying they hate it

Students are conditioned to sit in rows facing the teacher, and rearrange classrooms given the opportunity.

This is evidence of a *tertiary contradiction*. Attempts to implement the new model, in this case new classroom layouts and seating arrangements, are meeting with resistance. Other teachers, facilities and cleaning staff and so on keep returning classrooms to their original layout. This contradiction is both *tertiary* between the old and new model, and *quaternary* between the activity systems of the wider college

community and that of the participants. This can be seen in relation to the activity systems in Figure 6.11.

Figure 6.11: Tertiary and quaternary contradictions between new model and wider community



Another solution proposed and modelled involves a different approach to classroom *device deployment*. Classroom device initiatives centre on the presumption that 1:1 device deployment means students spend 100% of their time in front of their own screen. While changing the classroom layout will facilitate group and pair work, in order

for this to truly take place effectively then teachers and students need to move away from this common conception of 1:1 devices. For example, there are occasions when a teacher requires the students to pay attention. At these moments, teachers should insist that all students close their laptops.

> *Teacher 2: If you want to get their attention, close the laptop*

> *Teacher 8: It's easier to have like key transition points through the lesson like…like open your laptops, [yeah], close your laptop.*

With closed laptops, teachers can insist on 100% attention and remove the distractions of screens. Rather than 1:1 deployment, at certain stages in class it is necessary, indeed beneficial, to have 0:1 laptops, no laptops per student. The same is true during class activities. Students can work in pairs with one laptop between two (1:2), or even in groups with one laptop between all the students (1:4). In this way students have to work together to access materials or submit work, if both are going to participate. Furthermore, one student is unlikely to be off task, for example checking their Twitter feed, if a colleague is also looking at their screen. It forces students to communicate and collaborate. For example,

> *Teacher 4: Two girls sharing one laptop and it works. Yeah, they were both into it. They were both communicating a lot and there were better results.*

> *Teacher 8: Yeah, I've done it the same as well the same sort of similar with the Nearpod and Padlet, having to do the collaborative writing. And yeah…one screen two girls, and it forces the quieter ones who kind of don't do anything very much. So maybe they're shy or wherever…*

> *Teacher 7: Yeah, I did a description, the writing description writing booklet, what is it, [name of booklet]? And they were doing it in pairs. And then they did the whole booklet in on one laptop and then they just shared it. So they both had the answers but they'd worked out the answers. Together.*

Sharing one device between two students changes the focus and brings students out of their individual zone into a shared space where collaboration can occur. Management-driven device initiatives have insisted that all students have devices, and at the classroom level this has been misapplied and misinterpreted. All students can have devices, they just do not all need to be working on an individual device at all times.

Again, participants report evidence of a contradiction caused by their attempts to introduce this new model. Some students struggle with the concept initially, and some are unwilling to collaborate. For example, some students voluntarily exclude themselves from group work if working with students they do not know

> *Teacher 3: if you group them, you would have people left out, you know, if they group themselves, they would work better some times.*

Some students are unwilling to interact with their peers.

> *Teacher 6: It's strange that the some of them don't you know, have any seem to care about the person sitting next to you next to them and not have any interaction.*

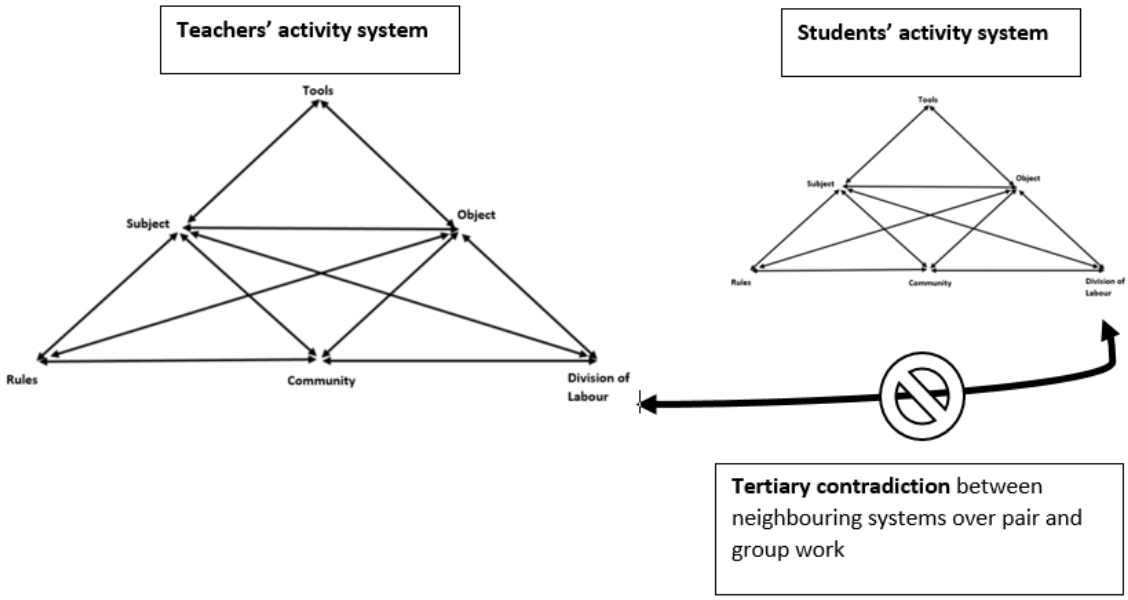
In Communicative Language Teaching, pair and group work, the process of working together to discover answers or produce work, is part of the learning process. Students

come from previous learning environments where the only thing that matters is the answer – how you got the answer is not important. Participants find the need to explain this to students.

> *Teacher 2: Yes, that wasn't the point of the exercise wasn't you to walk away with the correct answers. [Yeah I know]*

This is another example of the 'khallas mentality'. The process, engaging with the materials and discovering the correct answer, is secondary to completing the activity and being told the answer. The process of working collaboratively with their peers to build understanding is alien. In this case, this manifests as a *tertiary contradiction* between the students' traditional views of the classroom division of labour and that of the teachers who wish students to work together. It is in conflict with the new model of pair and group work combined with screen sharing and non-1:1 deployment of classroom devices. This is mapped to the activity systems in Figure 6.12.

Figure 6.12: Tertiary conflict over division of labour



To summarise, the laptop-mediated classroom *should not consist of students sat in rows in front of individual screens*. The classroom should be set up to facilitate pair and group work, and devices should be deployed so that students work collaboratively. 'Khallas' is not important – focus on the process of learning and return to communicative pedagogy.

The participants also share some successes with the use of *alternative spaces* to the traditional classroom. In the context of this Change Laboratory, students arrive with 12 years' experience of traditional classroom settings. From high schools with rows of desks facing the teacher, students graduate to college, again with rows of desks facing the teacher. Just as changing the room layout can change the classroom dynamic and facilitate learning, changing the class *location* can also have an effect on student motivation and application.

Obviously this is very much dependent on the research site. Large colleges and universities will have libraries, study areas, cafeterias and outside spaces that can be utililised, while such opportunities will be limited in other institutions. As a concept, however, the participants are in favour of taking students to work in other locations than the classroom if the opportunity is present. For example, one reports success with project work

> *Teacher 7: I sent my kids over to the [library space] like I sent two classes they were doing their questions for the project. [Yeah.] And they had to write a questions and then email me. And out of the nine groups, I've got eight emails, there's only one group…And I sort of took a walk around, but I don't want to be too intrusive. And most of them are working.*

Laptops are effectively mobile devices, and email means work can be delivered to teachers remotely. Students do not need to be in a physical classroom space even if they are required to physically be in college.

Another teacher shows clear enthusiasm for trying different spaces

> *Teacher 8: Yeah. And the [multi-purpose hall] I went with them. And then my next thing to do is go into the [library space]. I'm determined this week to go and check out the space there. And then go and book something…*

One participant has made this a regular thing. Note that students react positively, are 'excited', which in turn motivates them.

> *Teacher 4: Academic Success Centre? I take my students every Monday, they do some Kahoots, some quizzes on the new screens they have installed there. That's taking place they get a little, little excited to be there. A little motivated because it's the afternoons it's really difficult. [Yeah.]*

Another participant even sends students to work in a well-known chain of coffee shops on campus, and reports that

> *Teacher 3: …so I told them, 'You know what, go wherever you want.' Most of them went to [coffee shop], but they completed their reading, because I was basically seeing everything they were doing online… [did you take a walk though to take a look?] I did. They had coffee with them. But they were working.*

Moving out of traditional spaces can also change traditional teacher/student dynamics. For example,

> *Teacher 8: And sometimes it's just nice to have chats actually, and just remind them that we're all you know, find out exactly what's going on again with them you know when you find out Oh yeah, some someone's 'My wife is in hospital' or whatever you know it's quite nice that it'd be nice to have a dedicated space for the English communication*

However, a tertiary contradiction is already evident. Teachers (and students) cannot randomly change classrooms. In a large institution such as the research site, alternative spaces need to be booked in advance.

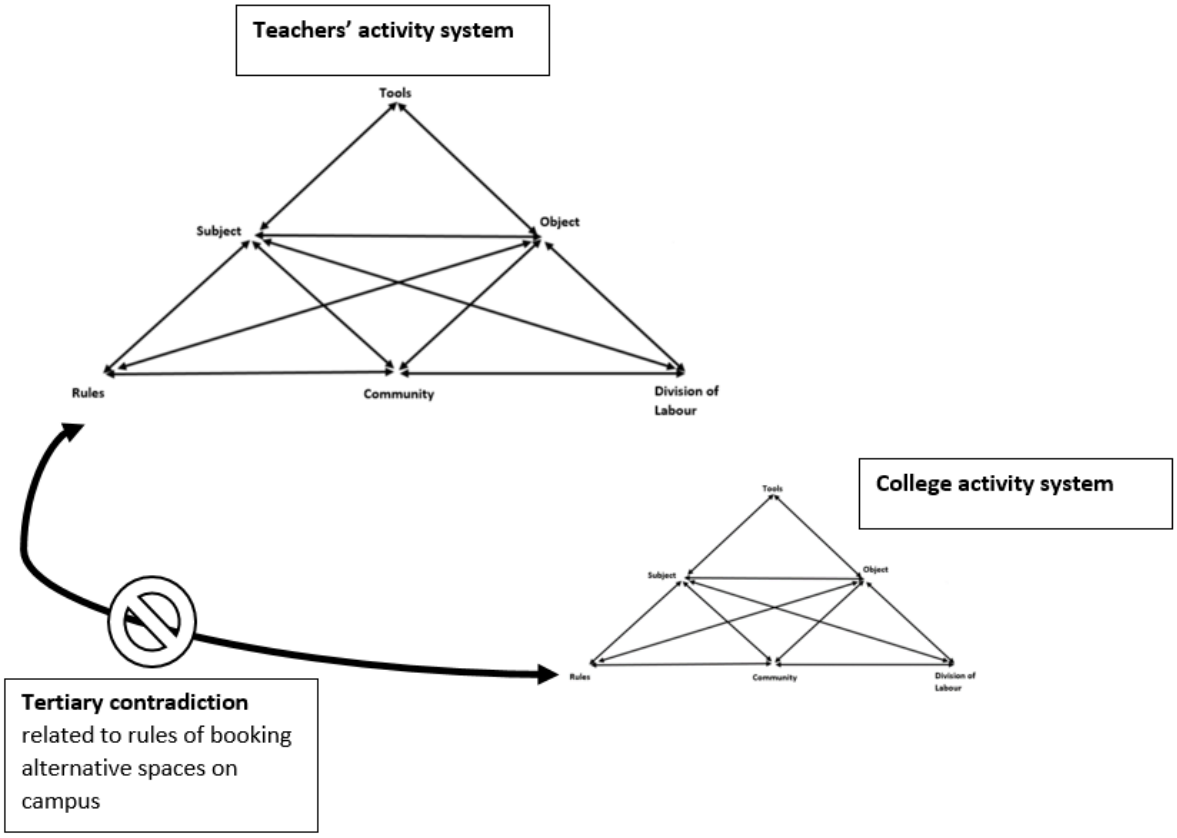
> *Teacher 2: ...I don't like to pour cold water on your suggestion… but then you need to book [staff member's name]. And [he]'s very elusive these days.*

Teacher 2 has attempted to book alternative spaces in the library, but has run into difficulties as the rooms cannot be booked and are already in use by groups of students on free time.

> *Teacher 2: … I tried to book the rooms, this little interview room, which, when we do our speaking we should insist upon and because [there's] no booking system so they're just full of random girls sitting having a little party. Some are having their lunch some having a dinner…some were just lying around on the floor…others are asleep and you're like…*

This is a *tertiary contradiction*, manifesting as conflict. The proposed solution is to use alternative spaces on campus for classes to change focus and dynamics. College rules mean that these spaces must be booked, but no booking system exists. This is mapped to the activity systems in Figure 6.13.

Figure 6.13: Tertiary conflict over alternative spaces booking



As a solution, however, changing the class location and exploiting mobile devices can provide a welcome alternative to traditional classroom settings. While teachers may have misgivings – will students work if I am not watching them? – the participants are positive about this solution. *Students do not rise to low expectations.* Trust students to work outside of traditional classroom settings, on material that is delivered – and

monitored – online through learning management systems or email delivery. The institution may demand physical attendance, but technology can facilitate less traditional working practices on campus. Devices can access and deliver classroom materials from any location. Exploit this on campus.

Summary: Solutions and Expected Contradictions

A number of solutions have been suggested and experimented with in regard to tackling the issues identified with the tools in use. These involve several solutions for the effective use of classroom devices, returning to pedagogy and exploiting the classroom space, device deployment and exploiting alternative spaces on campus. It must be noted that serious contradictions have failed to manifest during the modelling and implementation of tools and materials-related solutions. This suggests that these are viable and effective solutions, and can be put forward as generalizable and desirable for the wider English preparatory course. It should also be noted that the solutions related to the tools in use also provide answers to the issues with the neighbouring activity system of students. In particular, the 'khallas mentality' is countered by effective materials, and the use of classroom spaces to better deploy students and the devices they use will lead to more successful pair and group work. A neighbouring activity system that is better engaged should go some way at least towards preventing the contradictions currently manifesting between these interrelated systems, and ultimately improved learning and teaching.

6.2 Tackling the Issues with the Nature of the Course

The Change Laboratory participants were able to model and implement a number of solutions related to the tools in use. These were, perhaps unsurprisingly, areas over which they had direct control and influence, namely actual classroom teaching and learning. The contradictions manifesting in relation to the nature of the course have also

been tackled by the participants, but the solutions proposed could not be modelled in the limited scope of this Change Laboratory. Major contradictions were identified regarding the very nature of the English preparatory course. These issues do not relate to classroom technology, or to classroom practice as such, but to curriculum and assessment. The participants proposed the following solutions.

The curriculum – its content, assessments and guiding principles – needs to be completely redesigned and redefined, although the participants lack faith in the possibility of this occurring.

> *Teacher 6: I'm not saying it's gonna happen…*

The course needs to move from its current remedial exam focussed state to one where it is developmental and preparing students for their future studies, based on their needs such as study skills and academic English.

> *Teacher 6: Yeah, but we also, yeah, we should see what their needs are in the program. So,*
>
> *Teacher 2: Yeah it might be an idea to ask the people who teach the programs, what problems we have in terms of language with the students*
>
> *Teacher 8: study skills*
>
> *Teacher 7: I mean, if we're going if we're preparing them as opposed to remedial, then you know, we should be teaching them some sort of academic English [yeah] and we should be teaching them how to write essays and quote sources*

The course needs to be designed by teachers, and not the ‘mysterious they’.

Teacher 3: And I think the group [designing the new course] should be teachers, [yes, yeah], not businessmen or whatever, whoever is doing it now. They have to be in the classroom with the students teaching all levels at least. Just so that they have a good scope for everything.

Assessment should be related to the course and what is taught. Currently this is not the case.

Teacher 3: Thing is the curriculum wants something and we're doing something else. This is another issue. Basically, we're teaching them the skills like for example, whatever you learn, you're gonna use but it doesn't make sense with whatever is coming next. For example, the vocab doesn't work with the writing doesn't work with the reading, and there's no connectivity in any of these things together.

It should instead

Teacher 6: ... actually fit what we're doing in class.

Assessment generates strong feelings among the participants, evident in the language used.

Teacher 2: ...there's way, way too much

Teacher 8: I think it adds to the pace of the course, doesn't it? Because it makes you feel you're on this treadmill

Teacher 5: kind of frantic.

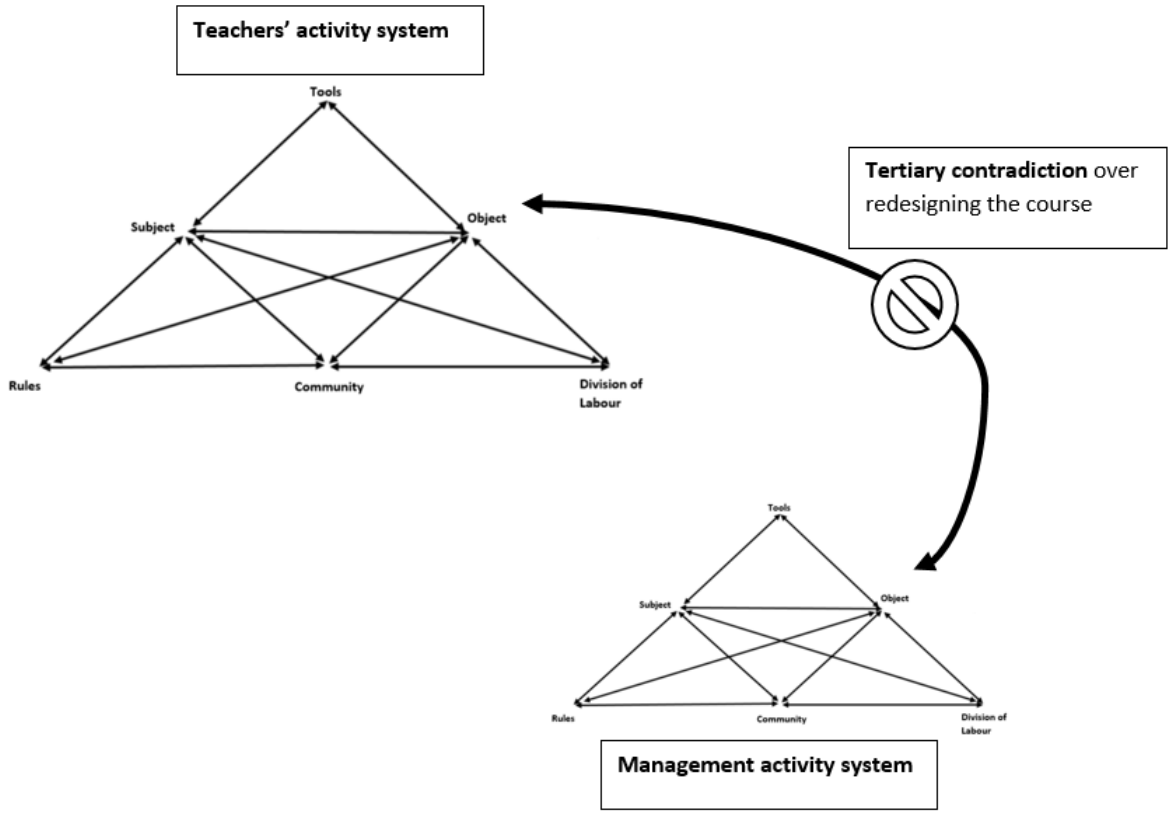
Teacher 8: Yeah. You know, even if you know really you're teaching it quite badly.

Teacher 2: Well, there's a big difference between telling somebody something and teaching it to them. And I think at the moment we just tell them this and then move on and tell them [yeah], there's

The participants are stuck on a treadmill of testing conducted at a pace that prevents proper teaching. Furthermore, they have little faith in the assessments they are delivering.

The solutions proposed are to redesign the course so that it is a developmental skill-building experience rather than a remedial test based course. The course should be redesigned by actual practicing teachers rather than by management, and assessment should relate to what is taught in class. This is a policy level decision, and is beyond the scope of the participants' activity system. Resolution will require the involvement of other, more powerful, activity systems, in particular that of management. This can be represented on the activity system as a *tertiary contradiction* between the activity systems of the participants and management preventing the effective redesign of the course and assessments. This is shown in Figure 6.14.

Figure 6.14: tertiary contradiction regarding redesigning the course



In addressing the issues with the nature of the course, those serious issues identified with the neighbouring activity system of management also need to be confronted. Critical conflicts and double binds are not easily resolved, and emancipation and practical transformation would be required to properly address these issues. In other words, the system would need a complete overhaul. However, if the participants were given the autonomy – and power – to redesign the course, this might begin a slow process of resolution. At the same time, systemic change at societal and ministerial level would be required if change were to become transformation. The double binds manifesting between the participants and management run too deeply for the scope of this Change Laboratory, reflecting perhaps a longer term struggle between those who wield power, and those subject to it.

6.3 Tackling the Issues Concerning the Participant Attitudes

The issue of mobile phones has moved into the area of tools as part of its solution. However, the issues arising between themselves regarding technology were not addressed by the participants. These issues were highlighted more by the research-interventionist and as a result the proposed solution also comes from this source. The majority of the participants appear to accept that classroom technology and 1:1 devices are a reality that is not going to change. For example, the solutions proposed by the participants to tackle issues with the tools in use all occur within a laptop-mediated environment. Paper is only suggested as an alternative in exceptional, occasional circumstances. For Teacher 3, however, references to preference for paper-based teaching, or negative comments on the effects of laptops, have occurred in almost every meeting, see Table 6.1.

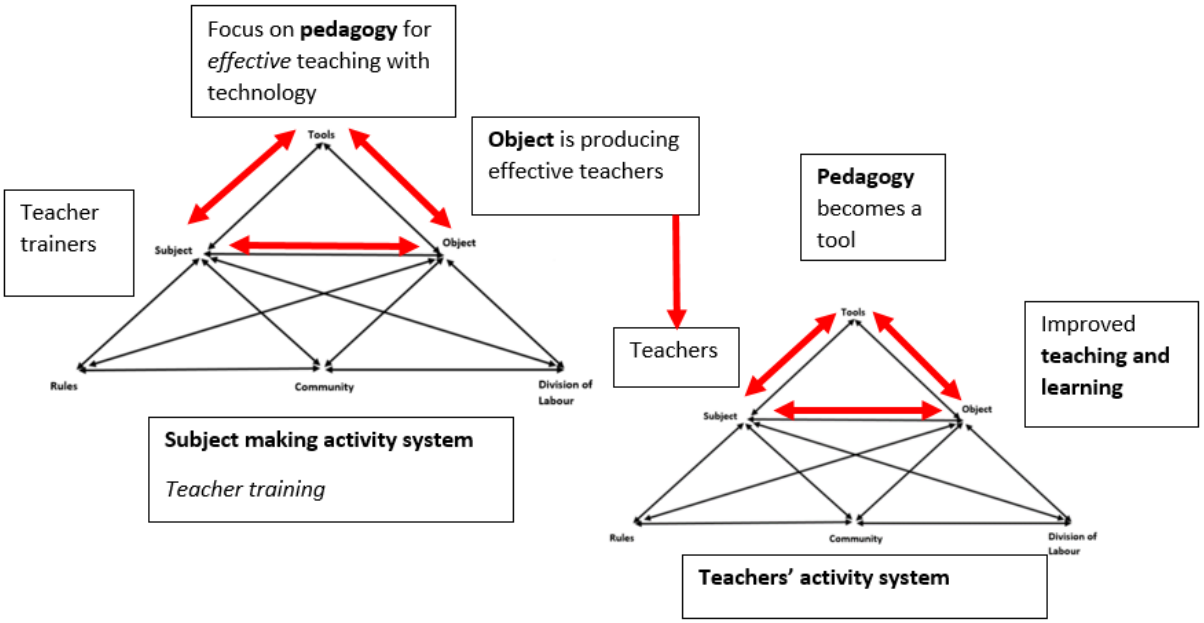
Table 6.1: Teacher 3 attitudes to paper and laptops

Meeting 1	I really love traditional paper.
Meeting 2	And we couldn't have papers…we were threatened not to use paper
Meeting 3	..they're still not learning the key skills that we were supposed to teach them. Like, for example, scanning, skimming, you can't do that on screen, or the writing. Their handwriting is terrible. And we're making it worse, basically, with the laptop.
Meeting 4	I find it very nice to have a paper and a pen
Meeting 5	I like papers.
Meeting 6	they had a paper in front of them, which is good

Teacher 3 is not completely alone in this as other participants mention paper use, but for them paper is another tool in their arsenal, while for Teacher 3 there is a sense they would prefer it to be their sole means of delivery. It is doubtful that Teacher 3 is alone in their feelings regarding classroom technology. The participants were chosen in an attempt to represent the larger teaching community involved in the preparatory English program. If one-eighth of this group prefer a paper-based teaching environment, then perhaps as many as one-eighth of the wider teaching community are also sympathetic to this concept.

The solution lies with the neighbouring subject making activity system, in lay terms those training and developing the teachers. Training needs to focus not on transferring the skills necessary to teach in a laptop-mediated environment, but now more on the ideas and attitudes that might prevent effective attitudes towards laptop-mediated environments. Teachers know what they can do – they need to know why they should, and how they can do it effectively. We need to return to pedagogy not only in the classroom as teachers, but in how we train these same teachers. This is represented in Figure 6.15.

Figure 6.15: Effective training



6.4 Summary

The intended outcome of the Change Laboratory is to create a culturally more advanced version of the current activity system, through the revision of work practices, adoption of new tools, the creation of new rules and modification of relationships with interrelated systems. This has largely been achieved, and an emerging model of the future activity system has been created (Figure 1), although further discussion, modelling and implementation would be needed in order to arrive at a final version.

For effective device usage, interactive materials are most effective when deployed for self or individual study, but care must be taken to avoid overuse of one platform or application. For actual classroom teaching, simple documents such as PDFs are much more effective. Classroom and campus space should be utilized to implement pedagogy and create opportunities for student collaboration, and 1:1 device deployment needs reconsideration. Furthermore, teachers need to be trained in effective, rather than

proficient, technology use and the attitudes that promote this efficacy. Where issues remain, they represent a larger, external battle between historically opposed activity systems, a battle for another day perhaps.

The implementation of this new model focusses on the state-of-the-actual. It is unlikely there would be a fanfare of excitement, or photo opportunities and press interest. However, this new activity system may make tangible differences to teaching and learning in the technology enhanced laptop-mediated classroom. Most importantly, it could increase student success. That remains the overarching aim of this project.

7 Discussion

The English preparatory course clearly exists at 'the vanguard' of computers in education (Levy, 1997, p. 3). Classes take place in a technology rich, laptop-mediated environment. However, this state-of-the-art environment is not producing state-of-the-art results. Increasing numbers of students are failing to progress, or are leaving the college before their academic careers have even begun. The wider view in education that technology can only lead to more learning (Scanlon & Issroff, 2005) does not seem to be playing out in the context of the English preparatory course. Consequently, the over-arching motivation driving this project has been to address these issues of failure and attrition. Rather than dismiss technology, the aim has been to improve the effectiveness of classroom delivery in a laptop-mediated learning environment with ultimately improvements in teaching and learning leading to greater student success. The state-of-the-actual, the *actual current reality* of the activity system, has been sought as opposed to the state-of-the-art ideal that research into technology enhanced learning tends to prefer. In order to do so, three main aims were identified, represented by three research questions. These questions are now discussed with reference to the theory, findings and literature.

7.1 RQ1: What contradictions are experienced by English language teachers in a laptop-mediated federal preparatory English program in the UAE?

The aim of this intervention is neither to discount classroom technology, nor to blame the device as the cause of failure and attrition. This may be a dangerous oversimplification. While some argue – and bring evidence - that computers in classrooms are detrimental to learning with certain groups of students (Carter et al., 2017; Patterson & Patterson, 2017), simply removing the device through blanket bans

(Elliott-Dorans, 2018; Yamamoto, 2007) remains, in my view, a Luddite solution when faced with the reality of a generation of media-saturated multi-tasking students (Gaudreau et al., 2014; Roberts et al., 2009). In using activity theory to identify the contradictions occurring in the activity system, it becomes clear that it is not simply a matter of the device itself, but a combination of contradictions that reflect the complex activity system of the English preparatory course.

It is possible to identify a number of clear contradictions in the current activity system and their historical precedents. Firstly, the historical dilemmas, conflicts and critical conflicts demonstrate the importance of Engeström's historicity (iii) and multi-voicedness (ii). The participants also bring their own identities and histories to the intervention that combine with the historicity of the current activity system to create a complex picture of the state-of-the-actual. These historical contradictions feed into *four key areas*, areas where the current contradictions are manifesting. These areas are:

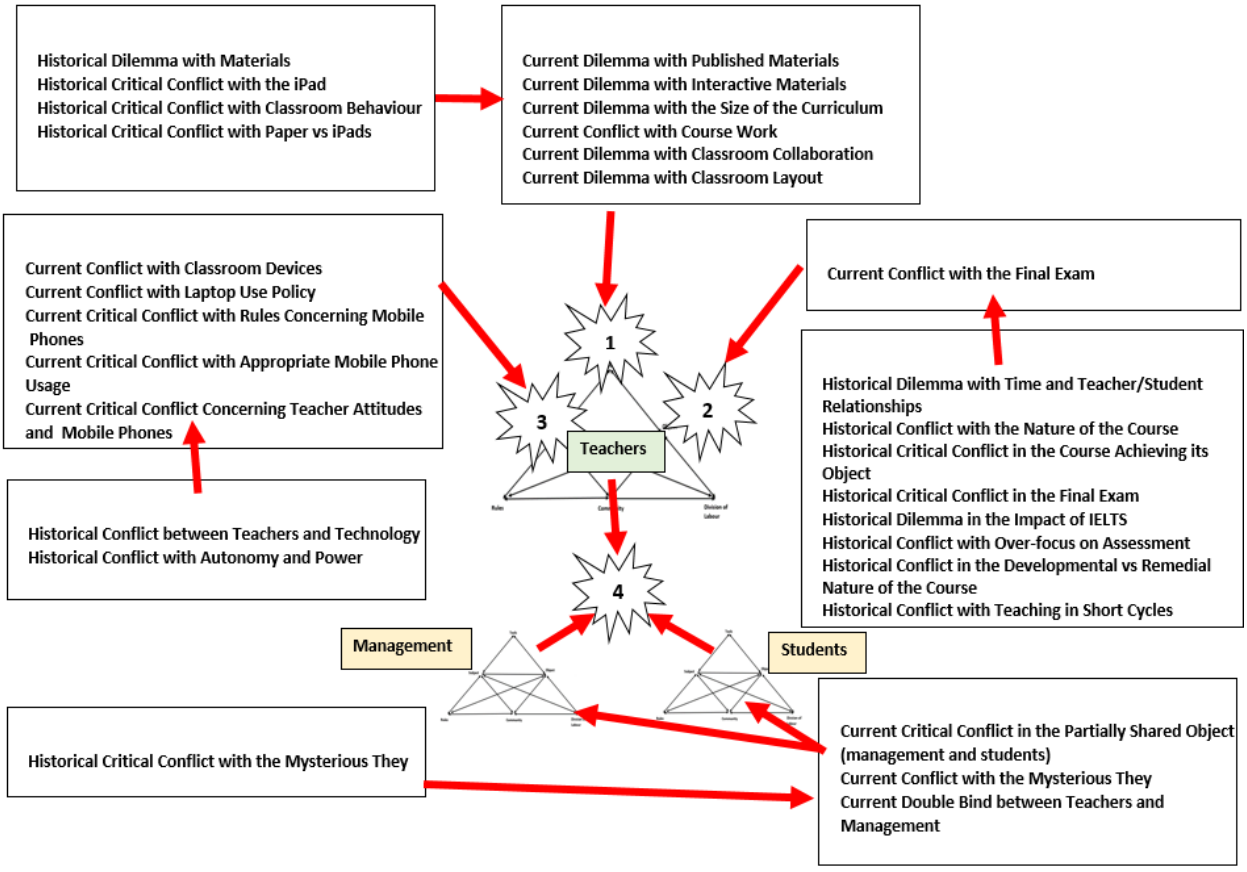
1. issues with the tools in use
2. issues with the nature or object of the course
3. issues between the subjects themselves
4. issues with the neighbouring activity systems of students and management

The fourth area also demonstrates the first of Engeström's five principles – the current activity system representing the English preparatory program is clearly part of an interdependent network, and the conflicts between these networks are a key contributor to issues with the system. The past cannot be separated from the present, and we still fight today's wars with the 'battle cries and costumes' of our ancestors (Marx, 1852/1979, pp. 103-104). The current contradictions have their predecessors firmly rooted in the history of the preparatory English course and its participants.

In summarising, the large number of contradictions identified means that it is difficult to represent these visually. As a result, the contradictions are shown in Figure 7.1 with

reference to the four key areas, numbered 1 – 4, rather than the type of contradiction (primary, secondary etc.).

Figure 7.1: A visual summary of the contradictions in the current activity system



KEY: **1**. issues with the tools in use; **2.** issues with the nature or object of the course; **3.** issues between the subjects themselves; **4.** issues with the neighbouring activity systems of students and management

TEL advocates see the introduction of technology as a positive that will lead to more learning (Scanlon & Issroff, 2005), and champion the positive impact of classroom

devices on ESL students (Grimes & Warschauer, 2008; Park & Warschauer, 2016) and on students in the UAE in particular (Mokhtar et al., 2009; Raddawi & Bilikozen, 2018; Tubaishat & Bataineh, 2009). However, the *issues with the tools in use* suggest that the impact of devices in this context has been less than positive. There has been a clear progression from historical to the current set of contradictions. Contradictions with the materials used (published or teacher-generated), the devices and over paper feed into the current set of contradictions. Current issues with the classroom layout and collaboration have links to student behaviour, and the historical concerns expressed over students are also manifesting between the activity systems in area four. Computers might indeed be ubiquitous (Cook & Das, 2012), but this ubiquity does not automatically translate into successful learning.

The historical contradictions in the second area, *issues with the nature of the course*, appear to far outnumber the current contradictions, but just because these concerns are not actively manifested discursively does not mean they have no influence on the present. The constant changes of direction to the English preparatory course have had a clear effect on the participants, and are perhaps a major contributor to the poor relations between teachers and management. To return to Leontiev's 'primeval hunt' (1981), the actions taken towards the achievement of an activity may seem counter-intuitive, but they have meaning for the participants. The hunters driving the prey towards their colleagues waiting in ambush knows that their counter-intuitive action, making their prey run away, will have reward and is contributing to the object of the overall activity. However, there is a clear risk in the current activity system that the teachers are losing the sense and meaning of the activity. The hunter is no longer certain why they are chasing the prey, and this is manifesting as *issues with the nature of the course*, and having a negative influence on the relationships between neighbouring activity systems.

These context-specific concerns are perhaps evidence of a gap in the broader field of CALL research. The plurality of terms in current CALL research (Tafazoli et al., 2019), interest in Web 2.0 tools (Arnold et al., 2012; Ebner et al., 2008; Miyazoe & Anderson, 2010; Woo et al., 2013; Zheng et al., 2015) and general focus on distance and learner autonomy (Bahari, 2019; Godwin-Jones, 2019; Webb & Doman, 2020) all ignore what is actually happening with devices in face-to-face contexts. The disconnect between teachers and course in the current context is an area that deserves further research.

The shadow of behaviourism on CALL may be the cause of some of the contradictions. Behaviorism and CALL typically focus on the individual learner (Berns et al., 2016). Negotiation and interaction are lacking. This clashes, perhaps, with the reality of teachers attempting to teach communicatively in a face to face environment.

The third area, *issues between the subjects themselves*, shows a strong correlation between the historical and current issues. Historical concerns over technology and autonomy manifest as issues with laptops and with policies over appropriate usage of classroom devices, while current contradictions over mobile phones are critical conflicts for the current subjects. Faculty clearly remain a barrier to successful device implementation (Saunders & Quirke, 2002) despite wide-ranging training opportunities that are painted in positive tones (Cavanaugh et al., 2013b; Cavanaugh et al., 2013a; Hargis et al., 2014) or more realistically (Donaghue, 2015). There are clear internal barriers to classroom devices among some teachers and their beliefs (Ertmer et al., 2012; Kelly, 2015) that indicate perhaps a backlash against classroom devices as sources of distraction (Fried, 2008; Goundar, 2014; Jackson, 2012). There might be evidence too of a clash of mindsets over multitasking (Knobel & Lankshear, 2007; Kraushaar & Novak, 2019) or cyberloafing (Wu et al., 2018) on the part of students. The participants,

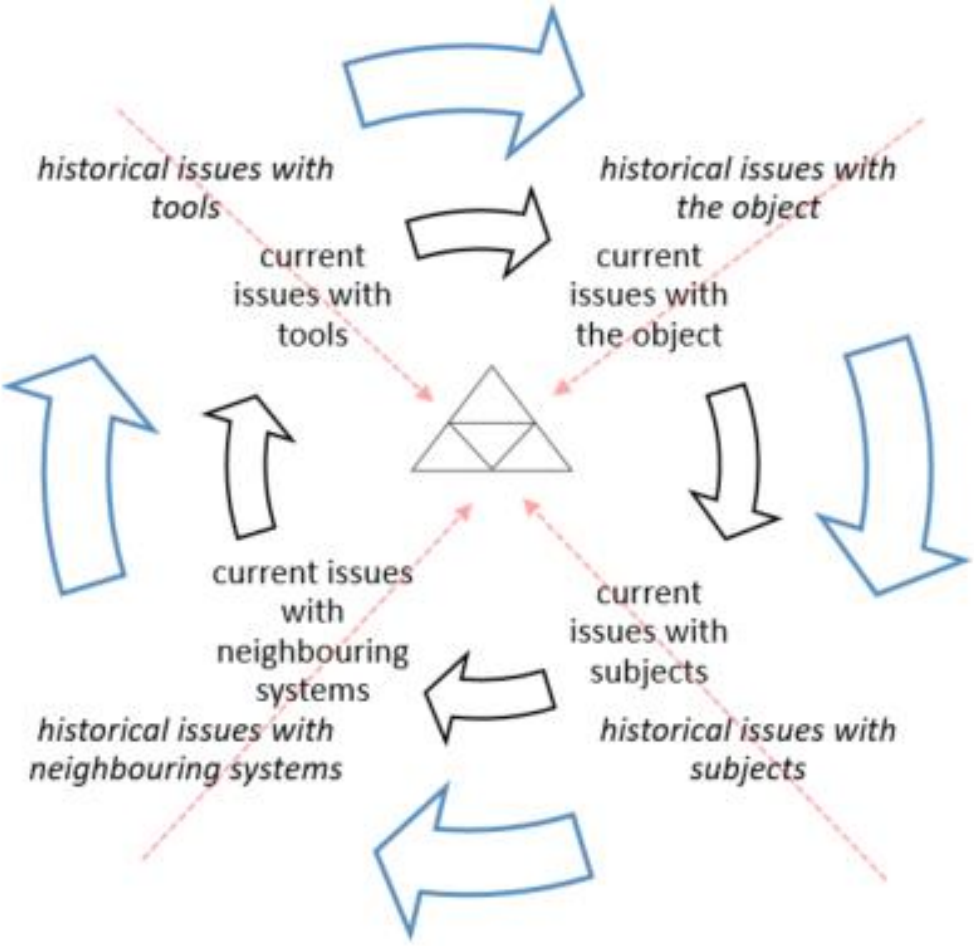
and from there we can generalize to the wider group of teachers at least in this context, are divided. Again, computers may be ubiquitous, but that does not mean the proponents of CALL are necessarily willing acolytes.

Area four, *issues with the neighbouring activity systems of students and management***,** is a major source of current contradictions, manifesting solely as critical conflicts and a double bind. At this level of discursive manifestation, the contradictions can only be resolved through emancipation, liberation and practical transformation. This suggests that a complete overhaul of the activity system may be necessary if these contradictions are to be resolved. This is no simple task. Teachers may be better educated than ever before (Hyland, 2019) but lack the security of tenure (Garrett, 2009). Without this security they are unlikely to challenge the management status quo, especially when they lack agency (Vähäsantanen et al., 2020). There is clear evidence of conflict between the teacher-participants and those in authority (Di Napoli & Clement, 2014). This same management would need to offer their full support if teachers were to make a real impact on the activity system of students. Students in this context readily admit to being off-task in class (Awwad et al., 2013; Genena et al., 2019), and simply banning devices is not the answer (Elliott-Dorans, 2018; Yamamoto, 2007). Management and teachers need to work in harmony to find a solution that works for a generation of multi-tasking students immersed in media (Gaudreau et al., 2014; Roberts et al., 2009). Emancipation, liberation and practical transformation may be required, but will be extremely difficult to achieve while contradictions exist between the neighbouring activity systems. This resolution seems unlikely given the lack of equality and partnership (Saroyan, 2014)

The influence of the four key areas on each other, and the overall interconnectivity of the contradictions manifesting historically and currently cannot be ignored. From past

to present, and from each area in turn in relation to each other, the state-of-the-actual is in fact a complex web of interconnectivity and interrelation. While the key areas have been separated and identified for pragmatic reasons of reporting findings, the reality is interdependent. There is no start or end point, and the interdependency works in all directions. Although the arrows suggest a simple left to right movement, in reality the movement is multi-directional. This is shown in Figure 7.2.

Figure 7.2: Complex interdependency of past and present key areas



Activity theory has, however, allowed for the identification and classification of the contradictions as they manifest in both the historical and current activity systems. How

these contradictions might be resolved by Engeström's fifth activity principle, *expansive learning*, is discussed in the next section.

7.2 RQ2: How can these contradictions be resolved through expansive learning via a Change Laboratory intervention?

In theoretical terms, the Change Laboratory is a cycle of expansive learning designed to 'apply a Vygotskyan, developmental approach in real-world, collective, organisational settings' and 'render this process more directly *visible* to its participants' (Bligh & Flood, 2015, p. 150). In practical terms, it is a formative intervention that allows actual practitioners to develop new work activities (Virkkunen & Newnham, 2013). New ideas are generated, and ascend from the abstract to the concrete. A new model is discussed, modelled, examined and eventually implemented. Put simply, the contradictions identified may be resolved as a result of this process, a process that is firmly rooted in activity theory. The issues – the contradictions in the current activity system – are presented to the participants as a *first stimulus*, and using the activity systems as a *second stimulus* a new model may emerge.

As we have seen, the contradictions identified fall into four key areas; issues with tools, issues with object, issues with subjects and issues between neighbouring systems. The participant's attempts to resolve these key issues have not been uniform, and can be classified as follows:

- A new model has been proposed, implemented and reflected upon
- A new model has been proposed, but not implemented
- A new model has neither been proposed nor implemented

In the final case, solutions have been proposed by the researcher-interventionist. These resolutions will now be discussed.

Resolving the issues with the tools in use

Solutions have been applied more comprehensively, that is proposed, implemented and reflected upon, with regard to contradictions affecting the tools in use. Teaching and learning are areas that the participants have direct control of and influence over, and solutions have emerged in three clear areas:

i) Effective Device Usage

ii) Different devices and different purposes

iii) A return to pedagogy through space and deployment

The solutions related to *A return to pedagogy through space and deployment* deal more directly with collaborative language learning. These will therefore be discussed in relation to Research Question 3 in a later section. As previously mentioned, all the solutions are concerned primarily with language teaching as this is the object of the participants' work activity. However, I believe the solutions proposed and modelled could at least provide a starting point for new models in other laptop-mediated classroom settings, although more research is needed in order to measure the generalisability of these particular findings. Furthermore, the concrete solutions starting to enter practice here should engage and motivate students, resolving the contradictions occurring in the present between the teachers' and students' activity systems.

i) A key consideration in *Effective Device Usage* is the materials that are actually used in class, the activities that teachers are asking students to complete during class time. There is a wealth, or perhaps an overload, of readily available online interactive material that any teacher or student with an Internet connection can access. Published eCoursebooks follow in the same vein. Familiar exercises such as multiple choice, true

and false, drag and drop, matching and cloze exist for any subject you care to name. For those who wish to self-author, there is a similar plethora of platforms that allow any teacher with basic computer skills to generate interactive, web-based exercises for their students. These may seem the go to materials for laptop-mediated teaching – indeed, the preponderance of such exercises in published eCoursebooks would suggest this is the case – and as we have seen research has also largely focused on the abundance of material that can support learner autonomy (Bahari, 2019; Blin, 2004; de Vries et al., 2015; Godwin-Jones, 2019; Reinders & Hubbard, 2013) particularly in the flipped classroom (Webb & Doman, 2020) and the study anywhere, anytime domains of distance learning (Lamy et al., 2013; O'Dowd, 2013) and MALL (Kim et al., 2019).

However, the English preparatory course is *laptop-mediated*, and this Change Laboratory has found that interactive, web-based materials are not best suited for this context. The participants agree with the research findings. Interactive material is good for self-study or self-access materials where students can study and check their understanding of discrete grammar or lexical items, for example, in the context of language teaching. Similarly, a history student could self-check important dates, a physics student their recollection of formulae, and so on. At the same time, in the environment of the Change Laboratory such material may not be effective for laptop-mediated teaching. If students need to be *taught*, then material needs to be non-interactive. The participants have described a situation where students using interactive exercises will simply keep clicking until the answer is correct if that option is available. This is a controversial statement, and one that is not explicitly uttered by participants, but it is one that it may be necessary to infer in this context at least. Students can *find* the correct answer but do not need to actively engage in *discovering* the correct answer, a situation I have described as the 'khallas mentality' – I've finished, my answers are

correct, can I go now? The solution may lie in non-interactive material, simple documents that students can edit but that actually require students to discover the correct answer. Editable documents such as Microsoft Word, PDF or Google Docs can be accessed on laptops through Learning Management Systems and presented through Smartscreens, but the content can actually be taught and understanding checked by the class teacher. In this sense, the teacher acts as the mediating tool in the process of achieving the object – successful learning. This emphasizes that the teacher's role as a Vygotskian more knowledgeable other is crucial. Interactive materials have a place, but should not have primacy, in the laptop-mediated classroom.

The Change Laboratory has also highlighted the danger of *application fatigue*. A platform that seems exciting and new today can quickly become jaded and unengaging if overused. Students will react positively to an online quiz format, or a gameified activity that turns answering questions into a race, for example. However, if this is all they do in class interest will quickly wane. This echoes research that suggests actual sustained use of these types of activity and application are low (Blume, 2020; García Botero et al., 2019; Loewen et al., 2019). Humble documents, while perhaps lacking the immediate appeal of a gameified application, do not suffer the same fate. With a document, the focus moves away from the style of the exercise and the format it is presented in to the actual purpose of the exercise and the language point being tested. Documents are teaching tools rather than attractive gimmicks.

To summarise, interactive materials work best for self-study, especially with discreet points. However, care must be taken not to overuse a particular platform and cause application fatigue. When it comes to classroom teaching in the actual laptop-mediated environment, the PDF, or its equivalent, is the most effective delivery platform.

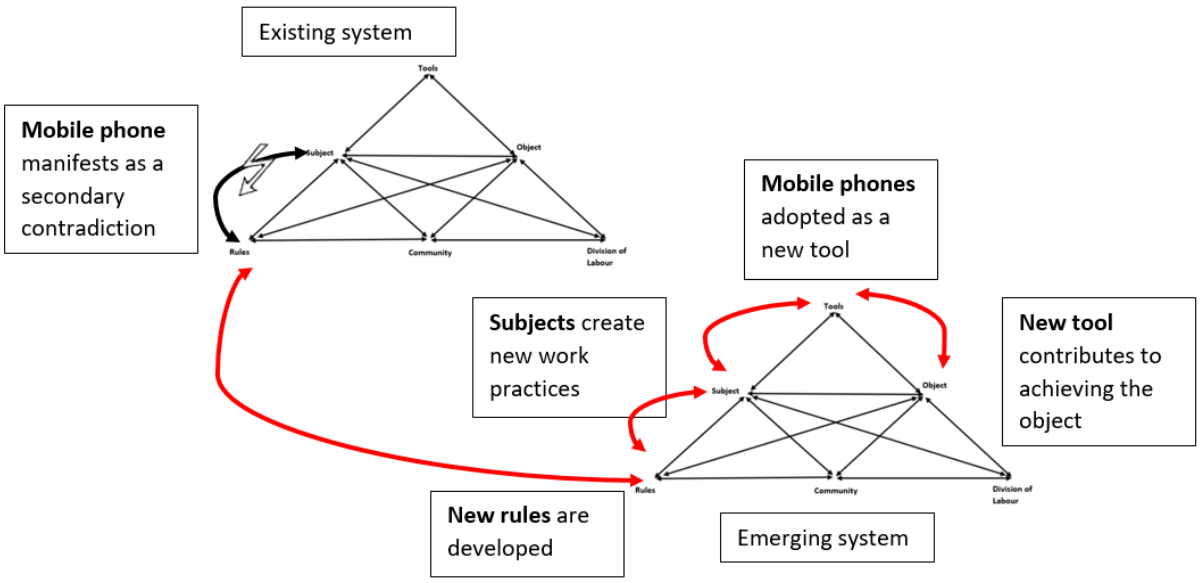
Importantly, the teacher must act as a Vygotskian more knowledgeable other for successful learning to take place. Device initiatives often put considerable pressure on teachers to learn new platforms for creating interactive materials, and for casual observers there is perhaps great immediate visual validity in this kind of activity on 1:1 laptops. However, the Change Laboratory has highlighted the impotency of this type of material in a laptop-mediated environment. We can take advantage of the affordances of devices in accessing and presenting materials, but we cannot ignore the process of mediation that leads to new knowledge. The solutions presented here have been proposed and implemented, and to some extent reflected upon. Further implementation and opportunity for reflection is necessary for these to become truly concrete practices.

ii) The next set of solutions relates to *Different devices and different purposes*. The Change Laboratory has recognised that laptops are an effective tool for productive work. In ELT terms that generally means writing, but this could be extended to any productive task in any subject where students have to produce a piece of work to be submitted, such as an essay, a report or presentation etc. This supports research showing improvements to ESL students writing in the USA (Grimes & Warschauer, 2008; Park & Warschauer, 2016) and also the UAE (Mokhtar et al., 2009; Raddawi & Bilikozen, 2018; Tubaishat & Bataineh, 2009), although writing scores remain low for UAE students in standardized tests such as IELTS. The participants also highlight examples of using LMS discussion boards as a means of sharing work and creating audience. Laptops provide students with the means of producing professional quality work, and in tandem with LMS, the means of sharing this work with a wider audience. This is a strength of the device and should be exploited. These findings also support research into Web 2.0 tools such as wikis, blogs and forums, particularly in relation to writing although the participants do not mention revising texts collaboratively (Arnold et al.,

2012; Ebner et al., 2008; Miyazoe & Anderson, 2010; Woo et al., 2013; Zheng et al., 2015).

The mobile phone was identified as a cause of critical conflict in the current activity system, particularly in terms of the subjects' attitudes to this device. The attitudes ranged from a complete blanket ban on mobiles in class to letting students use their phones as and when they please. The proposed solution lies between these two extreme poles. Firstly, students need to be part of the solution, and rules over mobile usage can and should be negotiated. Secondly, the mobile must be embraced as a powerful second classroom device. Laptops, with their power cables, mouse, phone charger cables and so forth quickly become immobile in real terms. A student cannot move around a class, or college, at the same time as they interact with material on a laptop. On a mobile phone this becomes a possibility. One of the promises of the iPad initiative was to kick start mobile learning, a promise that for various reasons largely failed to materialize. Perhaps embracing the mobile phone means this promise can now become a reality. Mobile phones are 'truly pervasive' and 'truly ubiquitous' (Cook & Das, 2012). Devices are in class, and students are online, a reality that educators need to acknowledge and accept (Marinagi et al., 2013; Norris & Soloway, 2008). The solution that sees the mobile phone embraced as a tool is evidence of the participants' willingness to acknowledge and accept this reality, and of the success of expansive learning in solving this contradiction. A new tool has been introduced to the activity system and caused a contradiction. By creating new rules and new activities that change existing practice, the source of disturbance becomes instead a functioning tool that *contributes* to the successful outcome of the activity system's objective. This is represented on the activity system in Figure 7.3.

Figure 7.3: Adoption of mobile phones as a new tool



The next solution is controversial perhaps in a project that aims to improve teaching and learning in a laptop-mediated environment, and even more so for champions of technology enhanced learning and 1:1 devices. For the participants, there are times when it is important to *close the device*. Despite the clear preferences of some teachers for a technology free environment, the participants recognize that this is unrealistic and undesirable in the modern classroom. However, there are clear advantages to knowing when NOT to use devices. A hard copy hand out, or time away from screens can shift focus and create clear transition points, and remind the student that everything is not to be found on a screen in front of them but may exist outside the device and their mobile phone. This is not evidence of a 'true backlash against laptops' (Fried, 2008), but is instead a realistic attempt to make a concrete difference. Devices are distracting (Andersson et al., 2016; Goundar, 2014; Jackson, 2012), a 'smorgasbord of fun' (Miles, 2019, p. 18) that students admit to using for non-college related activities (Awwad et

al., 2013; Genena et al., 2019). The Change Laboratory recognizes this, but accepts the reality of ubiquitous devices in classrooms. Laptops have benefits in class, but students do not need to be on laptops or other devices 100% of class time. The challenge is to balance device usage with screen downtime to maximize learning opportunities. This solution also ties in with *device deployment*, discussed in a later section.

Resolving the issues with the nature of the course

The resolution of the issues identified with the nature of the course have not been as comprehensive as those relating to the tools in use. The participants proposed changes, but these were not modelled or implemented.

The solutions proposed were radical, and reflected the critical nature of some of the conflicts feeding into the current activity system. The participants proposed redesigning the entire course, but this redesign should be undertaken by actual course teachers. There was a clear sense that despite the frequent changes to the nature of the course, these changes had always been implemented as top down, management led projects that had failed to consider the students, the teachers and also the actual object of the preparatory English course. The iPad initiative of 2012, and subsequent reintroduction of laptops in 2017, are good examples of this perhaps.

That such a change was neither modelled nor implemented reflects two clear points. Firstly, this Change Laboratory was limited in temporal scope – such a radical change would need far longer than this intervention allowed. As previously mentioned, Change Laboratories are by their very nature ‘pilot units’ (Bligh & Flood, 2015). It is not unexpected that a Change Laboratory does not provide a finished, concrete solution (Garraway, 2020; Virkkunen & Newnham, 2013). Secondly, this also highlights the relative lack of autonomy and control the participants have over the object of their

activity and indeed their own activity system. This is not uncommon with Change Laboratories, where the institutional context, rules and policies act as barriers to agency (Englund & Price, 2018). This could be the result of the relative insecurity of English teachers with regards to their positions and lack of tenure (Copland et al., 2020; Garrett, 2009). Teachers lack the agency to create change, and lack the security of tenure in order to insist on their right to create change. There is conflict when there should be partnership if change is to be affected (Di Napoli & Clement, 2014; Saroyan, 2014). To return again to Leontiev (1981; 1978), each participant needs to have both a *sense* and a *meaning* of the activity and their place in its hierarchy. For the participants, this place appears increasingly isolated, disconnected and insecure. The current conflict concerning the final assessment is actually a manifestation of the several historical concerns resulting from the top-down changes to the English preparatory course. For change to occur, radical transformation would be required.

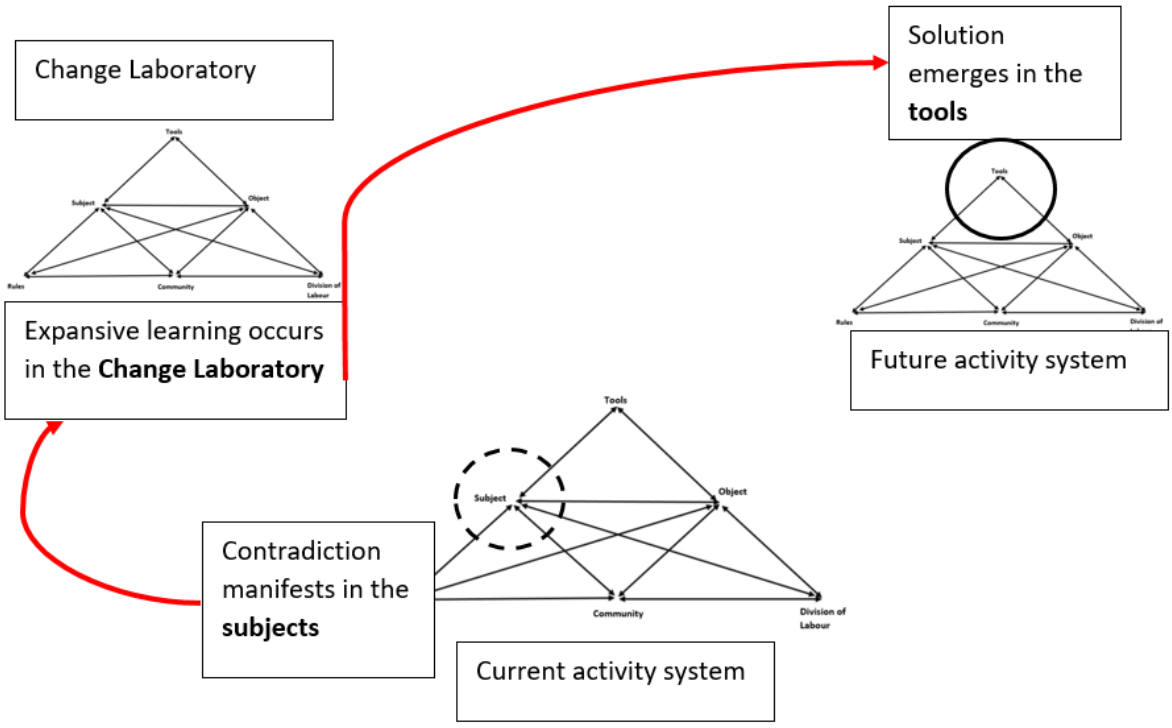
This radical transformation would also need to involve the resolution of the serious contradictions between the teachers' activity system and the 'mysterious they' of management. Unfortunately, the lack of proposed solutions suggests the participants understand that their place within this hierarchy lacks the power to effect change of this magnitude. The neoliberal 'they' of management will not readily give agency and freedom to those academics under their control (Vähäsantanen et al., 2020). The solution requires complete emancipation and transformation of the activity system, but reality of the current situation makes this highly unlikely. It appears that revolution is beyond the scope of this Change Laboratory.

Resolving the issues between the subjects

A number of conflicts and critical conflicts had emerged among the participants themselves. In the course of the Change Laboratory, these were not addressed directly

as contradictions within the subject element of the activity system, but potential solutions emerged in other elements. Contradictions over laptops and policies regarding their use may resolve if the proposed solutions over effective device usage are adopted – if interactive materials are avoided for in-class work, and the teacher regains their role as a more knowledgeable other, then this may cease to be a source of disruption. Similarly, if the mobile phone is adopted as a second classroom device, whose use is negotiated between students and teacher, then future research may show that this contradiction has also resolved, at least partially. The fact that these contradictions exist within the element of subjects, but are potentially resolved within the element of tools, is further evidence of the interconnectivity of activity systems. The initial contradictions manifest between the subjects, are subject to expansive learning in the Change Laboratory, and resolution then occurs through the tools. This is shown in Figure 7.4.

Figure 7.4: Resolving the issues with the subjects



The preference for paper and the anti-technology sentiments are perhaps a more challenging contradiction to resolve, and the solution lies outside the remit of this Change Laboratory. The answer was not proposed by the participants, but I have argued that the solution lies in training. This is not a ground-breaking suggestion, and indeed the literature recognizes the need to train teachers to use technology. For example, research into the iPad initiative focused on training and painted a positive picture of iPad-based professional development (Cavanaugh et al., 2013b; Cavanaugh et al., 2013a; Hargis et al., 2014). Earlier initiatives to introduce laptops to tertiary UAE classroom also highlight the importance of removing the barriers to technology adoption caused by teachers lacking proficiency through training (Saunders & Quirke, 2002; Schoepp, 2005). While parents and students are also important stakeholders in device initiatives, teacher beliefs and readiness are strong indicators of the potential success – or otherwise – of a technological intervention (Inan & Lowther, 2010). However, any training must of course be effective. The iPad training reported so favourably in institutionally-led research has received less positive reports in independent literature (Donaghue, 2015) and has even been likened to 'being water-boarded' by one disgruntled participant (Miles, 2017). Training teachers in technology use needs to return to pedagogy as the prime motivator for the adoption and deployment of devices and technology enhanced materials. The Change Laboratory has shown that a holistic, focussed approach is needed. A neighbouring activity system, focusing solely on teacher training could facilitate this solution and make the abstract concrete. This subject-making activity system would need to focus on effective teaching with technology, rather than simply mastering a given app or software tool. A teacher may know how to create activities on a platform, but these activities need to be pedagogically

effective, not technically impressive. Attention needs to be given to all the elements of the activity system, not just the tools, in order for this to truly change how teachers are deploying technology in the classroom.

7.3 RQ3: How can the solutions of the Change Laboratory ultimately foster collaborative language learning in a laptop-mediated environment?

One aim of this Change Laboratory, represented by research question 3, was to foster collaborative language learning. Collaborative learning is a major component of Communicative Language Learning, yet earlier research suggested that collaboration was rarely taking place successfully, if at all (Miles, 2018). A commonality that connects both CALL and ELT is the lack of a single, unifying theory. CALL either borrow various theories from other fields, or for practitioners remains a practical field without theoretical underpinnings (Chapelle, 2009; Levy, 1997; Levy & Stockwell, 2013). In ELT, some argue that today's ELT professionals are increasingly professional and qualified (Copland et al., 2020; Hyland, 2019; Keaney, 2016), and like artists are able to choose from a palette of theories and approaches in a carefully reasoned manner (Larsen-Freeman, 2012; Pica, 2000; Richards & Rodgers, 2014), but a serious research agenda remains lacking (Garrett, 2009) and the field remains focused on practice above theory.

However, Communicative Language Teaching (CLT) is widely accepted in the world of ELT (Richards et al., 2001), and consequently there is general agreement among practitioners over the value of pair and group work in the ELT classroom. This is also perhaps one area of consensus in ELT regarding theory. The value of pair and group work draws on Vygotsky's theory of cognitive development (1978). A novice carries out a new task with the assistance of a more knowledgeable other, an expert. The expert

provides support for the novice, scaffolding, that assists the novice in completing the task (Wood et al., 1976). As the novice becomes more proficient, the scaffolding is removed until eventually the novice is able to complete the task by themselves. As the process is internalized learning is considered to have occurred. It was therefore hoped that this Change Laboratory would find ways to increase classroom collaboration. The participants have proposed, modelled and examined three solutions under the heading of *A return to pedagogy through space and deployment.*

The first solution involved using the *physical classroom space* effectively to maximize opportunities for pair and group work. This proved relatively simply to put into practice. Changing the classroom layout from traditional rows to layouts that encourage communication and facilitate group and pair work has had an instant effect on the relative efficacy of such exercises. The introduction of devices to classroom has created a situation where although students sit in face-to-face environments, over-focus on classroom devices has created a situation where students are in fact isolated from their peers, and even their teachers, because of the screen in front of them. Teachers themselves have been so focused on getting to grips with the practicalities of laptops in classrooms that they have forgotten basic teaching skills, basic pedagogy, that will have formed the basis of their initial teaching training as ELT professionals. ELT teachers may not subscribe to one theory, and may use the 'palette' of available approaches and methodologies, or simply approach teaching as a practical activity, but the influence of Communicative Language Teaching runs deeply through classroom practice (Richards et al., 2001). Changing the classroom layout to facilitate communicative, collaborative activities through pair and group work actually brings theory back to the ELT classroom. Research has shown that learner-learner interaction gives students the means to solve problems, scaffold learning and co-construct new language (Dobao, 2014a,

2014b; Ohta, 2001; Swain, 2000). Students can act as the more-knowledgeable other (Vygotsky, 1978) providing the scaffolding to support weaker colleagues (Wood et al., 1976). Working together, students are able to produce language and solve problems above their own individual ability (Donato, 1994; Ohta, 2001; Swain, 2000, 2006). Further research could be undertaken to see whether small groups are indeed more effective than pairs as some studies have suggested (Andersson et al., 2016; Dobao, 2012; Dobao, 2014a, 2014b; Dobao & Blum, 2013). Changing the classroom layout and reincorporating pair and group activities based around problem solving is a return to pedagogy. Again, this is not new, but through the process of expansive learning the participants have *remembered* historical practice that has been successful, and are now *reapplying* it in the current situation. The participants have accessed a collective historical memory and put it into practice in the present. The battle cries of our ancestors are heard once again.

A second solution considers *device deployment*, and is brave in that it runs counterintuitively to 1:1 device initiatives. Devices – laptops, tablets etc. – have been brought to classrooms so that each individual student has access to the affordances the devices provide. The community expects to see devices in the hands of each student in class 100% of the time. Management have invested heavily in infrastructure and training and expect to see a visible return in terms of how classrooms are conducted. Parents, seen by some as the key to device initiative success (Kiger & Herro, 2015), and students have invested heavily to purchase devices and expect to use these every day. Teachers feel this pressure and classroom activities have consequently been based around 1:1 usage. However, this has resulted in the situation mentioned above. Students may be in a face-to-face classroom, but their interaction has become limited to the screen in front of them. The English preparatory class has risked become an archipelago of student

islands working independently and ineffectively in isolation. In employing alternative classroom layouts, however, participants also modelled and implemented alternative device deployment. For classroom activities, it is not necessary for each student to be facing their own screen. Instead, the participants modelled activities where students shared devices, and therefore screens. The participants found that pair and group work took place more effectively when students were focusing on a shared device. The community of management, parents and students may expect to see every student sat in front of their own device, but this is not an indicator of effective teaching. The pair and group work necessary for effective language learning is better facilitated when devices are not deployed 1:1. Further research would be necessary to see whether different constellations mentioned by Andersson et al. (2016) are more effective than others, but the initial reflections among the participants suggest that deploying devices 2:4 or even 1:4 are encouraging. The community needs to accept that while every student may need a device, they do not need to use this device 100% of the time. Effective group work means group, rather than individual, devices.

The final point proposed regarding *alternative spaces* is perhaps an evolution of both previous solutions**.** If students should not sit in traditional rows, and should not be using devices 1:1 100% of the time, (a situation that has perhaps quickly become traditional in the sense that it is the norm in laptop-mediated classrooms), then perhaps removing students from the traditional setting entirely can have beneficial effects on learning. Firstly, allowing students to complete classwork in a different location may negate negative preconceptions students are bringing to their learning. Students on the preparatory English course have already had 12 years of traditional schooling, and their very need for the preparatory course suggests this schooling has not been altogether successful. After all, how students are used to learning affects all future learning

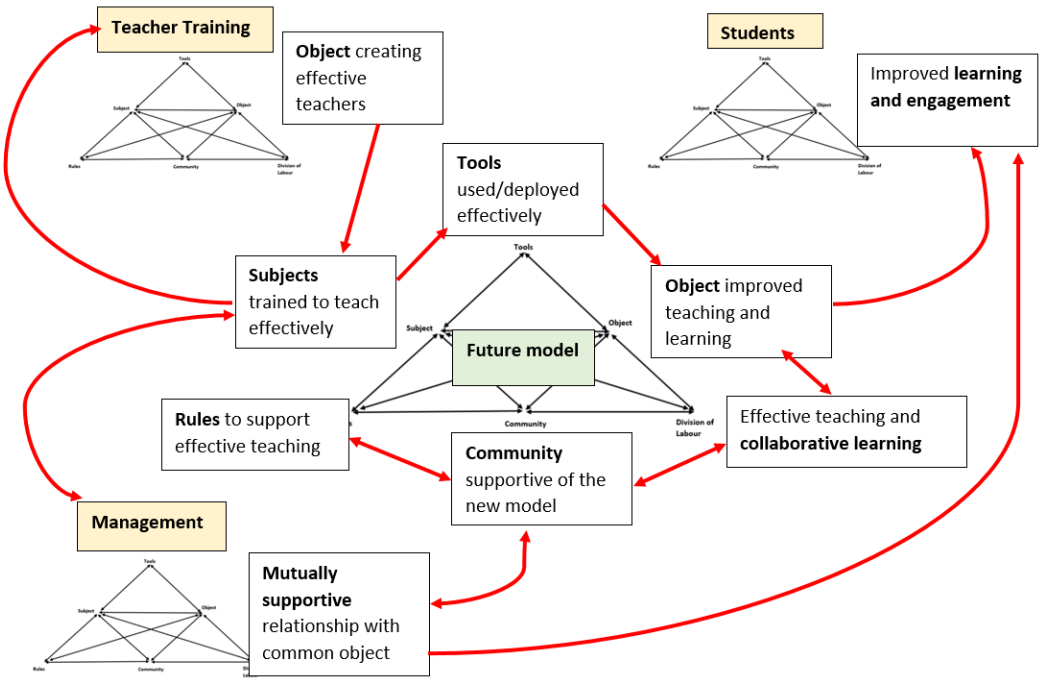
(Andersson et al., 2016). Even the approach of CLT could be overly Anglophone and hegemonic in terms of Western bias (Baker, 2015; Kramsch & Zhu, 2016). Removing the limits of the traditional classroom space and allowing students to work in alternative areas, in their own style and at their own pace, may have positive effects on learning. The teachers' cultural preconceptions of individual, pair and group work are removed, and any accusations of subtle cultural agendas can perhaps be discounted (Anderson, 2005; Holliday, 2006). The students are free to use devices for self-selected purposes (Leander and Frank, 2006, in Knobel & Lankshear, 2007) and multi-tasking that would risk accusation of 'cyber-loafing' (Wu et al., 2018) in the traditional classroom. By allowing students to work at their own speed, in their own way, and utilizing the affordances of the devices to access and deliver materials remotely, on-campus demands for attendance can be met in a non-classroom manner. The clash of mindsets (Knobel & Lankshear, 2007) causing a backlash against devices (Fried, 2008) can be defused. The focus can be on learning rather than traditional classrooms and traditional and historically out-of-date modes of student behaviour. I do not suggest that this becomes the *sole* form of instruction, but rather is recognized as another tool in the armoury of the successful laptop-mediated teacher that can be deployed at their discretion.

7.4 The Way Forward

The Change Laboratory is firmly rooted in activity theory, and a key pillar of activity theory is the fact that activity systems do not exist in isolation, but are 'always a node in a network of functionally interdependent activity systems' (Virkkunen & Newnham, 2013, p. 35). The elements *within* an activity system are also interrelated, and the solutions proposed have highlighted the complex interconnectivity of the activity system and its interdependent neighbours. Contradictions emerge in the present on the

back of their historical predecessors, and issues emerging in one element or neighbouring system may find their solution lies in a different element or even activity system. This Change Laboratory has resulted in a future model of the activity system, and this system must also be considered in relation to its neighbours if implementation of the solutions modelled and suggested here are to become concrete and firmly ascend from the abstract. While a solution to the very real issues between teachers and management has not been found, the contradictions manifesting between the participants and the students' activity system may in fact have been resolved. Effective device usage and deployment coupled with improved opportunities for collaborative learning should increase student engagement, motivation and consequently success. The future model is represented in relation to this interdependent network in Figure 7.5, and includes an ideal relationship with management. It must be noted that this is a *proposed* future model. It has not been implemented, and therefore the model is representative rather than comprehensive, and details are more vague than concrete at this early stage. Furthermore, the implementation of a new model will generate further contradictions both within and between activity systems, and these cannot be predicted with any certainty. This future model is therefore an ideal and illustrative example of what is required, not that which is yet in existence.

Figure 7.5: The future network



It is an over-simplification to state that a Change Laboratory has been either successful or unsuccessful. While other forms of intervention have pre-conceived outcomes, the Change Laboratory starts with a broad aim; to foster change in collective activity. Where researchers in other interventions may have clear aims and ideals they wish to see bearing fruit, the role of the researcher-interventionist in the Change Laboratory is to design and implement the stages of expansive learning, but this takes place based on the sessions and the input, involvement and direction taken by the participants. The agency of the participants means that the outcome of the intervention can be neither predicted nor guaranteed. However, in this Change Laboratory it is clear that some changes have successfully emerged, while others remain embryonic or as yet unborn. The participants have been able to create the most concrete differences in those areas over which they have most control, namely the classroom and actual teaching and learning. Given the immense importance of what happens at the sharp end of education then perhaps these changes are the most significant. The changes effected here

potentially have the most immediate impact on teaching and learning, while the lack of change in other areas highlights the importance of activity theory in examining and explaining collective activity. Activity theory allows us to see that the activity system of the teachers is not an isolated unit that can be changed merely by giving agency to its subjects. This system is in fact just one element of an interconnected network of related activity systems, all with various influence and control over a common objective. To make a systemic change at this level would require a broader field of participants and a greater multi-voicedness than was possible in this limited intervention.

The challenges of the theory-based research for the participants themselves also need mentioning. Activity theory is complex, and the Change Laboratory is inextricably linked to activity theory. Perhaps a greater theoretical understanding may lead to more concrete outcomes, and may ease the process for the researcher-interventionist. While activity systems diagrams were used as mirror date throughout this intervention, the participants themselves did not routinely use the theoretical terms in their own interactions during the sessions. This could be contextual. Teachers in ELT may see theory as irrelevant or separate to practical classroom teaching (Garrett, 2009; Medgyes, 2017), and perhaps Change Laboratories featuring disciplines more familiar to academic research may find the participants engage more with the actual theoretical framework.

However, I argue that this Change Laboratory has proved the success of this methodology for changing and evolving work practice and collective activity. Change has taken place, and the abstract has become concrete in some crucial elements of the participants' activity. The main contradictions have been identified, and solutions now

exist that focus on the effective use of classroom devices and a return to pedagogy that various technological interventions – interferences even – had pushed from centre stage. The effectiveness of these solutions remains to be seen. The new approaches of today need to become normalized in the activity system and given time to fully solidify as concrete in order for their true efficacy to be judged in real terms as improvements in student success and a reduction in failure and attrition. Only then can the success of this project be truly evaluated.

8 Conclusion

As this project concludes, it is necessary to recognize the contributions it makes towards knowledge and practice, and the implications this has for policy and policy makers. There are of course limitations, but these limitations are themselves opportunities for future theory-driven research. These points are discussed in the final chapter.

8.1 Contributions to Knowledge and Practice: Closing the gap

This project has taken place in a context that is both highly specific yet globally prevailing. As a flagship for classroom technology, the English preparatory course has seen high profile high tech device initiatives herald undreamed of improvements to learning and teaching, yet these improvements have remained elusive and student success has failed to increase. The English preparatory course is situated in the wider, global, field of education and technology, where the umbrella term 'technology enhanced learning' (TEL) has come to encompass any situation where technology is seen to play a significant – and positive - role in making learning more effective, efficient or indeed enjoyable (Goodyear & Retalis, 2010). The results of this project, however, highlight the limitations of this particular device initiative, limitations that may well be applicable in other contexts. The implications for practice inherent in the solutions offered could be broader than the very narrow context in which the research took place, and would be a starting point for other contexts considering changing laptop-mediated teaching practices.

Although narrow, this project has occupied a significant gap in research into technology enhanced learning. Through the methodology of the Change Laboratory, it has carried out a teacher-led, bottom up intervention that is strongly rooted in theory at all stages

of the research, from design to implementation to data analysis. The project has focussed on face-to-face device usage in a laptop mediated environment. While devices have been central to the project, as an English preparatory course ELT has also played a major role. The overarching aim throughout has remained making teaching more effective through collective effort. The approach taken has been critical but not dystopian (Castañeda & Selwyn, 2018), and this criticality has recognized and implemented the need for strong theoretical frameworks (Jameson, 2019; Passey, 2019). These twin needs of criticality and theory have been combined via activity theory and the Change Laboratory, and have resulted in findings that describe the state-of-the-actual (Selwyn, 2011) while pointing towards a *realistic* state-of-the-art. The project contributes to research in two main areas.

Firstly, the state-of-the-actual described has highlighted the current issues with teaching via laptops in face-to-face environments, and the historical antecedents that have contributed to *practices* of this dysfunctional present. The proposed solutions point towards a state-of-the-art that concentrates on *effective* device usage through careful selection of materials, considered device deployment, classroom layouts that promote opportunities for students to collaborate and a recognition of the importance of the teacher as a mediating tool in a student's cognitive development. Where device initiatives might presume laptops or tablets should be deployed 1:1, and materials must consist of visually impressive interactive exercises and gamified activities, the effective reality should concentrate instead on effective teaching. Pedagogy, not technology, is the answer to successful teaching and learning in this laptop-mediated environment. While this project has focused on ELT given the context of the research the findings and solutions proposed might be applicable, with any necessary modifications, to other environments where teaching is taking place face-to-face via classroom devices.

Secondly, this project makes a significant contribution to *theory*. While the Change Laboratory is not an uncommon methodological approach (Barma et al., 2017; Englund, 2018; Nleya, 2016) few examples can be found in the literature connected to teaching English (Mbelani, 2018; Montoro, 2016), and research specific to the region concerned with theory-based intervention or activity theory is rarer still (Al Ali, 2020; Miles, 2020). This project has also taken care to document and report the actual steps taken during the intervention, and the intentions behind the intervention at all stages. Literature tends instead to focus on the outcome of Change Laboratory interventions, and thus 'obscure those links from critical analysis' (Bligh & Flood, 2015, p. 158). This is not a concern that can be levelled at this project. While the outcome is obviously highly important, the journey to this destination has been well-documented and holds a central position to the eventual results. As an *insider*-researcher, my role as researcher-interventionist also contributes to the insider-Change Laboratory scenario, an area 'poorly documented' in the literature (Bligh & Flood, 2015, p. 155).

Ultimately, the contributions to technology enhanced learning and theory-driven research combine in the future model of the activity system presented in the findings. This model takes a realistic, pragmatic approach to actual classroom teaching, but roots this firmly in theory and well-executed research to provide an effective solution to the issues faced by this particular English preparatory course. The research has been led by theory, but carried out by actual practitioners with real world experience of the problems and challenges teachers face in 21st century classrooms. The new model is not the work of idealistic researchers, self-serving publishers, or self-interested management. It is the work of education professionals with student success as their focus, and as such may appeal to teachers everywhere. These solutions may not be universal, but could be applied to other contexts where learning is taking place via classroom devices in a face-

to-face environment. In the case of this project, theory and practice combine to produce a state-of-the-actual that may actually enhance rather than hinder learning with technology. This may not just be limited to ELT or to the geographical region of the English preparatory course. Collaboration, for example, is not the sole preserve of ELT or language teaching in general, and the solutions offered might be applicable to other contexts where teachers want students to work together. Changes to classroom layout and device deployment can facilitate better team and group work in other teaching contexts. Similarly, the return to pedagogy and the importance of the teacher's role might be applicable in other classrooms or subjects. Effective device usage will be at the centre of any successful teaching with technology. The solutions offered aim to actively *enhance* learning with technology. That is a major contribution of this project.

8.2 Impact for Policy and Policy Makers

The new model has clear implications for practice in terms of how devices should be deployed, how they should be used effectively and how teachers should best be trained in order to teach successfully in laptop-mediated environments. There are also clear implications for policy and those responsible for device initiatives.

Perhaps technology is indeed now so ubiquitous that we will not see the fanfare that accompanied projects such as the iPad initiative in the UAE in 2012 (Cavanaugh et al., 2013b; Cavanaugh et al., 2013a; Hargis et al., 2014), but this Change Laboratory has highlighted some key areas. Most critical among these, and an issue that this project has not resolved, is the relationship between teachers and management. The Change Laboratory has highlighted a situation where a 'mysterious they' are blamed for many of the perceived failures and weaknesses of syllabus, curriculum and assessment, and the relationship has become so fractured that actual resolution would require complete overhaul of the system. All members of the activity system need to maintain a sense of

their activity (Leontiev, 1981; Leont'ev, 1978), and there is a clear risk that poor management relations are leading to disenfranchisement and alienation. Disenfranchised and alienated teachers are not good teachers. Policy makers need to not only recognise this but also build systems that *re*-enfranchise their teaching professionals. The successful creation of the new model here emphasizes that bottom-up intervention works. The glamour and the fanfare are missing, but the efficacy and real-world application that result from the Change Laboratory have concrete potential that transcends the over-hyped dreams of developers, managers and others driven by self-interest. Put the power to change things in the hands of those that recognise what change is needed. This is the path to success, and the Change Laboratory is the road map policy makers can follow to achieve this.

8.3 Limitations

All projects have limitations, and this Change Laboratory is no exception. The main limitations on this project have been those forced upon it externally, namely time and scope. The timescale for completion of this project have meant that the actual Change Laboratory sessions were limited, particularly in terms of follow up. For Virkkunen & Newnham, the initial intensive sessions would be followed by 'a number of follow up sessions' (2013, p. 66) in order to fully experiment with and reflect on the new model and proposed solutions in practice. A second limitation is also the result of contextual pressures, namely the difficulty in effectively reflecting the multi-voicedness of activity systems and their interrelated neighbours (Engeström, 2001). Ideally a Change Laboratory in this context would allow greater weight for the other two principle actors, namely students and management. However, local access policies make the inclusion of students prohibitive in terms of the permissions needed and the likelihood that these permissions will not be granted. Similarly, access to management is extremely limited,

and the insecurity of lack of tenure common to ELT teachers worldwide (Copland et al., 2020) is extremely apparent in the context of the UAE. Job security is not a given. This further emphasizes the contradictions that manifest between the two systems of management and teachers. The mysterious they remains mysterious through their very mystery. Access is not easily achieved, and obtaining agreement and participation in a Change Laboratory would be a challenge. Top-down management systems may not favour bottom-up interventions, but this is not an impossible challenge. Given the right approach and patience it may be possible to include both students and management in a future project. Through careful participant selection, a more multi-voiced group could be formed that was more representative of the interrelated activity system as a whole.

It is important to mention the potential limitations of my own role as research-interventionist, and more specifically as *insider*-researcher. I have a long history with the institution and with the English preparatory course, particularly in technology initiatives within the department. I was an integral member of a team putting laptops in classrooms in 2011, and played a very central role in the iPad initiative of 2012. I have been an advocate of Learning Management Systems, paperless classrooms and online assessment, and I quite happily subscribed to Scanlon and Issroff's (2005) assertation that the introduction of technology is something desirable that will lead to more learning. However, my research into iPads (Miles, 2019), classroom collaboration (Miles, 2018) and the contradictions that exist within the course (Miles, 2021) have led me in a direction that questions the actual impact of technology, particularly in this context. This could be a potential limitation. My own views have been coloured by the journey my research has taken. These views could influence my interpretation of the data, and the classification of contradictions and so forth. Furthermore, this Change Laboratory has been very much the work of one person, where a team of researcher-

interventionists might have reached very different interpretations of the data presented. Perhaps an outsider to the English preparatory program would have probed more deeply in certain areas, and developed contrasting insights as a result. These potential limitations do need to be considered, and weighed against the benefits of being an insider-researcher. Ideally further research built on this Change Laboratory will be able to involve a wider team of researcher-interventionists and build a picture based on broader and more varied perspectives beyond one individual.

The issues of time and scope and the challenges facing a single insider-researcher may also be apparent in the mirror data. The mirror data for the first session (Appendix 10.1 – 10.9) is very broad and perhaps therefore unwieldy. A more experienced team of researcher-interventionists may have presented this more succinctly. Similarly, generating the mirror data for subsequent sessions was very challenging. Meetings needed to be transcribed, analysed and then presented as first stimuli in a short two-week window. This was a major challenge. A longer time between sessions, and more researcher-interventionists to examine and analyse the data could only be beneficial. This issue with time may have also reflected in the participants' occasional struggles with the theory. As Teacher 2 mentioned post Change-Laboratory,

> *I didn't really understand the theory and the diagrams seemed to get a bit out of hand as the meetings went on.*

Activity system models could be better managed and explained more clearly given increased time and understanding on the part of the researcher-interventionist.

A final limitation following on from this relates to the specific cultural setting of this project. Teachers in ELT may see theory as irrelevant or separate to practical classroom teaching (Garrett, 2009; Medgyes, 2017), and as we have seen lack the security of

tenure. This may be exacerbated by the Gulf context and the uncertain realities of expat teachers. These factors cannot help but weigh upon the project outcomes. It may be that teacher-led interventions may be more fruitful in contexts where research is held in more esteem, and jobs are more secure and predictable. An environment or context that is more open to change can only benefit from the application of Change Laboratories.

8.4 Where Next? Opportunities for Future Research

That limitations exist is inescapable, but these very limitations provide clear opportunities for future research. An immediate opportunity that faces perhaps the biggest challenge would be to include the student and management activity systems. This would be a long-term project in simply gaining the permissions, and patience would be needed in order for the researcher-interventionist to wait and reformulate proposals as necessary. While such a wait may prove fruitless in the end, it does not mean that one should not try, and if time concerns over project completion are removed then this is an avenue worth pursuing at least. There are also numerous opportunities that arise from the solutions proposed in order to measure their efficacy. Research comparing interactive and non-interactive materials, for example, could be combined with research looking into device deployment and alternative room layouts. Of particular interest would be further research into pair and group work (Dobao, 2012; Dobao, 2014a, 2014b; Dobao & Blum, 2013) and different constellations of students (Andersson et al., 2016) with relation to collaboration and learning.

Outside of the classroom, there are clear opportunities relating to the Change Laboratory methodology itself. One proposal would be to firstly train the participants more in the theory in order to investigate how a more theoretically informed group of participants would engage with the Change Laboratory process, in comparison to a group who enter into the process with a more rudimentary understanding of a theory they do not fully

understand or even accept. Research could also focus further on the actual process and steps employed. Currently, the focus of Change Laboratories in the literature remains the *outcome* of the process, the actual results achieved. The Change Laboratory as a research and intervention tool could only be strengthened if more detailed research examining the process, the actual steps and the contradictions emerging within the process, were to take place, a Change Laboratory of the Change Laboratory as it were. I would recommend, however, that any further research stemming from this project stays true to the theoretical underpinnings of activity theory and retains the criticality that has run throughout this undertaking.

In conclusion, it is necessary to return to the overarching aim of this project. To paraphrase Marx, this project has not simply described the English preparatory course as it exists. It has sought instead to change it, and this has been achieved at least in part by the construction of a new model of teaching and several new work practices that are well on the way to becoming concrete reality in the classroom. This change, however, has not been for the mere sake of change. While recognizing the importance of not losing sight of the state-of-the-art, this project has focussed on improving the state-of-the-actual in order to make tangible differences in the technology enhanced classroom. Most importantly, it has sought to maximise the academic success of the students. This remains the overarching motivation driving this project.

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10 Appendix 1: Mirror data for meeting 1

10.1 Mirror Data Set 1: Published vs Actual Pass Rates
10.2 Mirror Data Set 2: Student Voices
10.3 Student Survey Results – Sample
10.4 Mirror Data Set 3: Focus Group Interview Protocol Spring 2018 and Summer 2019
10.5 Marken (2006) Six Step Model based on Mwanza (2002b)
10.6 Mwanza (2002b) 8 Step Model
10.7 Interview to the Double Protocol Spring 2018
10.8 Interview Protocol Fall 2018
10.9 Combined Contradictions

10.1 Mirror Data Set 1: Published vs Actual Pass Rates

Figure 10.1: Published vs actual pass rates

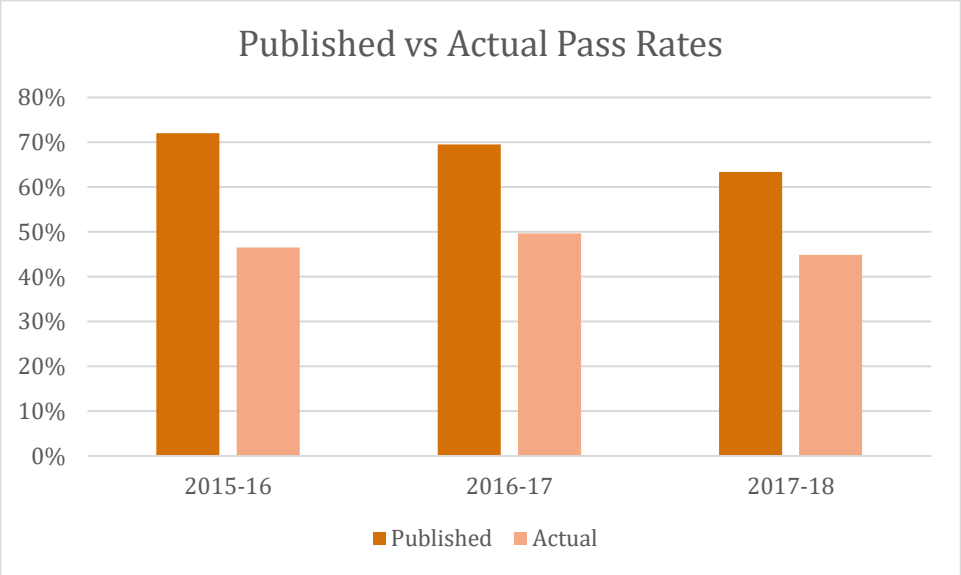


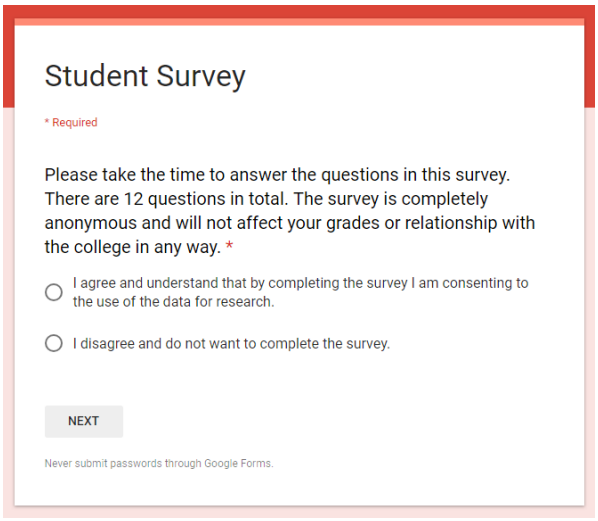
Table 10.1: Actual vs published pass rates in numbers

Academic Year	Incoming Cohort Size	Passed within one year	Withdrew	Remained enrolled but did not pass	Withdrew or failed	Actual pass rate	Published pass rate
2015-2016	3208	1493	1136	579	1715	46.5%	72%
2016-2017	3297	1638	941	718	1659	49.7%	70%
2017-2018	2420	1086	706	628	1334	44.9%	63%

10.2 Mirror Data Set 2: Student Voices

Student Survey – Google Forms

Below is the cover page. Clicking no takes students out of the survey, clicking yes takes them to the questions.



Students then answered the following questions in a Google Form.

What is the MAIN reason that you are here at college?
Are there any other reasons? Please list them below.
How do you use your laptop to study in class?
What other things do you do on your laptop in class? Why?
What do you do with your phone in class?
What is the teacher's job in class? What do you expect from them?
What sort of activities do you enjoy doing in class?
What sort of activities do you NOT enjoy doing in class?
What is your job in class?
What do you think about college rules? Please give examples of rules you do not like.
Did you pass or fail in Cycle 3?
Why do you think this happened?

10.3Student Survey Results – Sample

This spreadsheet was shared with the participants prior to Meeting 1

Timestamp	Please take the time to answer the questions in this survey. There are 12 questions in total. The survey is completely anonymous and will not affect your grades or relationship with the college in any way.	What is the MAIN reason that you study at college?	Are there any other reasons? Please list them below.	How do you use your laptop to study in class?	What other things do you do on your laptop in class? Why?	What do you do with your phone in class?	What is the teacher's job in class? What do you expect from them?	What sort of activities do you enjoy doing in class?	What sort of activities do you NOT enjoy doing in class?	What is your job in class - what is your role?	What do you think about college rules? Please give examples of rules you do not like.	Did you pass or fail in the last Cycle?	Why do you think you passed or failed?
6/16/2019 9:52	I agree and understand t	to get a job	no	and play some games	teacher	sending massege	to help us	playing games	clarity	attention	the rules in college	fail	I need more study
6/16/2019 9:52	I agree and understand t	to get a job	no	and play some games	teacher	sending massege	to help us	playing games	clarity	attention	the rules in college	fail	I need more study
6/16/2019 9:53	I agree and understand t	salary	close to my home	to open black board	for playing games	google	help us	playing quizlet	reading	being attention	want card , and for the	fail	its hard
6/16/2019 9:54	I agree and understand t	STUDY AFTER TAKE A	NO	KAHOOT, QUZIZZ	DO PROJECT	SOME TIME DO QUIZIZZ	NOT UNDERSTAND	KHAHOOT	NOTHING	DO NOT USE PHONE	EMSAT , I THINK I WILL	FAIL	BUT I DO GOOD BUT I
6/16/2019 9:56	I agree and understand t	is better	no	me to pass emsat	watching movies	play quizizz	advise me and respect	vocabulary games	i don't know	very carefully for the	the same time its good	fail	i hope passed
6/16/2019 9:57	I agree and understand t	important in the future.	salary after study in the	have something we	the class because I	don't have anything to	more and they	kahoot and translate	like it because I come	and do what they want.	strong and help us.	I fail in the last cycle.	pass inshallah.
6/16/2019 10:00	I agree and understand t	to get a high degree	no	practice		transelet	helping the students	playing kahoot	studying without games	studying	nothing	fail	passed
6/16/2019 10:03	I agree and understand t	To learn	Get a expensive	good	sometimes I watch a	phone at the class.	them a lot.	do quiz	break.	study do not make noisy	I like the rules	fail	the emsat exam is hard
6/16/2019 10:04	I agree and understand t	university	lot to do better and	kahoot	search for video and	phone for kahoot and	They teach us	quizizz	Nothing	teacher and active	but the attendees is not	Fail	I don't know
6/16/2019 10:05	I agree and understand t	to learn	no	black board	play game in kahoot	silent	she teach	kahoot	quizizz	study	the rules are good	yes	not studying well
6/16/2019 10:11	I agree and understand t	degree.	excellent work.	university site and	understand meanings.	and Kahoot!)	classroom is to try to	Showing video about	Writing.	teacher.	college rules.	I fail in the last Cycle.	best in studying and
6/16/2019 10:11	I agree and understand t	college to have	bust place to study and	best way for study it	in class with laptop like	my phone to have the	teacher I had it is	class like khaoot qizziz it	them.	to learn and leson to my	the college and I think	I fail at last cycle	dosent a study and I
6/16/2019 10:12	I agree and understand t	ambition.	certificate.	some links to study on it.	class finish. because I	up me after I finish my	to pass EmSAT.	plying games.	good.	when I go to the home I	no comment for the	Failed.	failed.
6/16/2019 10:29	I agree and understand t	To improve my English	study in collage	meaning of hard word	I write some information	bag	writing	kahoot	the class	the class	I like all rules	fail	writing
6/16/2019 9:11:59	I agree and understand t	to study program	good and to get a good	to	to typing	and take photo and	example or things about	more activity funny	work in calss and	other	no thing	pass	if you help me in the
6/16/2019 9:16:04	I agree and understand t	program	good	to login BBL	translation,kahoot	take photo of the board	good english	develop		reading and wriritng	difference.	exam enshallha.	Because i not do very
6/16/2019 9:16:16	I agree and understand t	good	to study	login to bbl	kahoot	board	to help	to develop our English	talk	learning	it is good	pass	studied hard
6/16/2019 9:16:44	I agree and understand t	To study business	to get a good job	translation, kahoot	login to bbl	board	to help, to be fun	kahoot	do more writing	lessen to my teacher	program	maybe pass	I'm trying
6/16/2019 9:17:05	I agree and understand t	to study business	good	,login to bbl	information	board	to teach , help	kahoot , apps	book widgets	listen to learn good	not okay	pass	i dont like to faill
6/16/2019 9:21:50	I agree and understand t	To get Knowledge.	good job.	To enjoy and studing	play kahoot	translation	to teach	kahoot	reading	student , to learn	It is good	pass	passed
6/16/2019 9:21:55	I agree and understand t	TO get Knowledge.	to get good job	worke and login to BBL.	sacrative	TO translate the words.	to help	writing.	reading	other	its nice.	pass	passs
6/16/2019 9:23:41	I agree and understand t	to study	good to get a good job i	kahoot and apps	English	BBL	, new information	kahoot	grammar apps	student	i like the rules	pass	passed
6/16/2019 9:27:18	I agree and understand t	we want college degree	to get a great job	about grammar and	study for the exam.	play kahoot	great job	kahoot	socrative	listen to the teacher	for one class	pass	the last cycle
6/16/2019 9:30:07	I agree and understand t	to studyIIT a program	to get a good job	to do the exam	the exam	kahoot	to give example	socrative	Xreading	to learn and listen	to graduate	pass	i will passed
6/16/2019 9:30:20	I agree and understand t	electricity engineering	To get a good job	To do the exam	the exam	translation	To teach and help	X reading	guizizz	I learn and listen	to graduate	yes I pass	Inshallah I will passed
6/16/2019 9:36:28	I agree and understand t	to study a program	good to get a good job I	reading also quzizz	we do our quzizz.	board and translate.	english	kahoot	X reading	login to bbl and listen to	attendees in summer	I pass	passed
6/16/2019 9:44:09	I agree and understand t	To study.	No.	for study.	watch movies.	not using a lot .	Respect first .	quiz zz.	apps , book widgets.	and respect to her.	15% be out of college.	I pass the last Cycle.	I think will passed.

10.4 Mirror Data Set 3: Focus Group Interview Protocol Spring 2018 and Summer 2019

Question	Comments
Object Why are you teaching the students? What's your purpose? *Is that all? Nothing else?*	
Tools **What *tools* do the *subjects* use to achieve their *objective* and how?** **How does the *tools* in use affect the way the *community* achieves the *objective*?** *Look at the LMS / Blackboard site – go through each item under Theme 1.* How would you use….? Talk me through how you would deliver this to students. Is there anything you would adapt? Is there anything you wouldn't use / that wouldn't work? Why? Is there anything missing or anything you would add? What?	
Division of Labour **How does the *division of labour* influence the way the *subjects* satisfy their *objective*?** What's your role in the classroom? What about the students? Is it always the same? What governs this? Is it static or fluid?	
Rules **What *rules* affect the way the subjects achieve their *objective* and how?** What rules do you apply and how does this affect how you use X? What are your class rules? Do rules have a positive or negative effect on your classes?	
Community **How does the *division of labour* affect the way the *community* achieves the *objective*?** **What *rules* affect the way the *community* satisfies their *objective* and how?** How do the following people affect your teaching – students, colleagues, management, senior management, parents?	
General Describe your ideal lesson / classroom? Why do you think some students are not succeeding? What's the answer?	

10.5 Marken (2006) Six Step Model based on Mwanza (2002b)

1. What *tools* do the *subject* use to achieve their *objective* and how?
2. What *rules* affect the way the subjects achieve their *objective* and how?
3. How does the *division of labour* influence the way the *subjects* satisfy their *objective*?
4. How does the *tools* in use affect the way the *community* achieves the *objective*?
5. What *rules* affect the way the *community* satisfies their *objective* and how?
6. How does the *division of labour* affect the way the *community* achieves the *objective*?

10.6 Mwanza (2002b) 8 Step Model

Identify the…		Question to ask
Step 1	Activity	What sort of activity am I interested in?
Step 2	Objective	Why is this activity taking place?
Step 3	Subjects	Who is involved in carrying out this activity?
Step 4	Tools	By what means are the subjects carrying out this activity?
Step 5	Rules and regulations	Are there any cultural norms, rules and regulating governing the performance of the activity?
Step 6	Division of labour	Who is responsible for what when carrying out this activity and how are the roles organised?
Step 7	Community	What is the environment in which the activity is carried out?
Step 8	Outcome	What is the desired outcome from this activity?

10.7Interview to the Double Protocol Spring 2018

Imagine you are going to train a 'double' to take your place tomorrow. It is very important that your colleagues, students and management do NOT detect the double as an imposter, so you must provide them with as much information as possible. The double looks – and sounds – exactly like you.

Now, I want you to imagine you are teaching this double all the things they will need to know to replace you at work tomorrow, specifically in the classroom, without arousing suspicion and being exposed as an imposter.

What will you tell them?

(The above was carried out via email)

10.8 Interview Protocol Fall 2018

What do you understand by collaborative learning?

Question	Comments
What *tools* do the *subject* use to achieve their *objective* and how? How do you use the laptop to get students working together? Are there any tools (e.g. Book Widgets) that are better than others? Do you use other tools, e.g. mobiles, paper?	
What *rules* affect the way the subjects achieve their *objective* and how? What are your rules when students are working together? Do you tell the students out loud or do you expect them to just know the rules?	
How does the *division of labour* influence the way the *subjects* satisfy their *objective*? When students are working together, what's your role in the classroom? What about the students? Is it always the same? What governs this? Is it static or fluid?	
How does the *tools* in use affect the way the *community* achieves the *objective*? When they are working together, how are students and colleagues using the laptop/LMS/materials? Give some examples of the type of activities you do that get students working together. Are some apps / platforms better than others?	
What *rules* affect the way the *community* satisfies their *objective* and how? How are rules implemented by colleagues / management etc? How do the following people affect your teaching – students, colleagues, management, senior management, parents in terms of rules / expectations??	
How does the *division of labour* affect the way the *community* achieves the *objective*? What are the expectations from management / students/ colleagues on who does what in class?	

10.9Combined Contradictions

This was presented to the participants as a hand out in Meeting 1

Summer 2019 Focus Group	Spring 2018 Focus Group	Fall 2018 Focus Group (post observation)
Are we just teaching to the test or are we teaching English and the skills they need for BAS?	Teachers are not using the prescribed materials but constantly developing their own.	Students are not explicitly taught / instructed how to collaborate.
Materials are usually in house and simple worksheets.	There are minor pedagogical disagreements over teaching vocabulary.	Teachers, students and management have different expectations over collaboration in class.
A lot of time is spent developing materials as students get bored quickly. Materials also need to be adapted to cater for the levels and also repeating students.	Students have poor keyboard skills which hinders writing.	Teachers are not deploying laptops in a way that promotes collaboration.
Rules are stricter at the start of the semester, but teachers give up as the year progresses.	Laptops are often used inappropriately.	Student behaviour sometimes prevents classroom collaboration - they either won't work together or become disruptive.
Rules are not uniform between teachers.	For management the course is remedial, while teachers see it as more developmental.	
Pair / group work takes place, but rules and roles are rarely explicit.	Mobile phones are a major distraction in class.	

Teachers want to be communicative but classroom management prevents it. The teachers' background also plays a part.		Students expect to be spoon fed while teachers want independent learners.
Teachers do all the work, e.g. keeping notes in OneNote while students are passive.		Students don't do any work and are just sitting in class, killing time until the next exam.
Students are generally on task with laptops.		Open access means we take students, e.g. SEN and very low level, who will never succeed.
Mobiles are a major distraction.		Smart classrooms are a major distraction - lights and desktops constantly going off, for example.
Students react well to game-based apps but get bored quickly.		
Sometimes paper is more efficient.		
Management is largely invisible but wants unrealistic pass rates and can be a latent threat.		
We take too many SEN students and are not prepared for this.		
Students fail because of ability, desire, motivation and lack of actual need.		

11 Appendix 2: First and second stimuli used during the Change Laboratory

11.1 Session 2 First and Second Stimuli

11.2 Session 3 First and Second Stimuli

11.3 Session 4 First and Second Stimuli

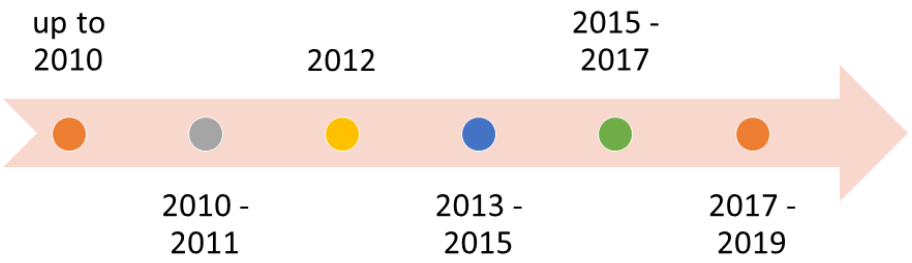
11.4 Session 5 First and Second Stimuli

11.5 Session 6 First and Second Stimuli

11.6 Participant Survey post Change Laboratory

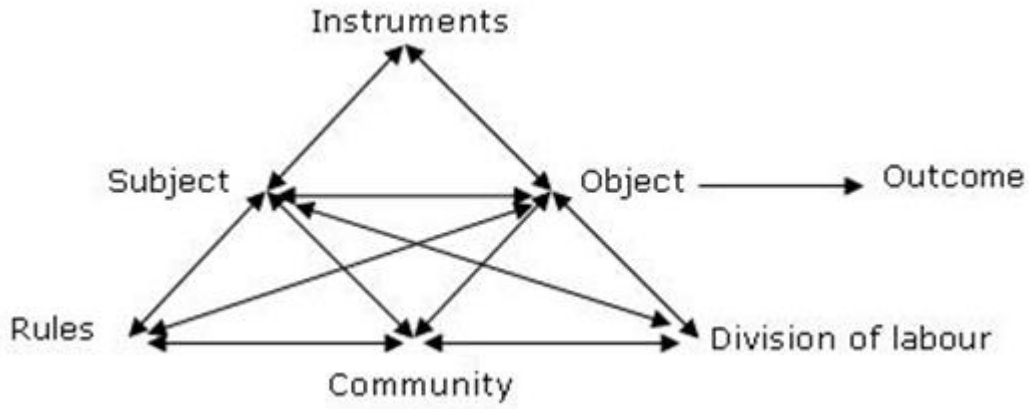
11.1 Session 2 First and Second Stimuli

Figure 11.1: First stimulus timeline stimulus for participants



This timeline represents key moments in the recent history of the English preparatory course

Figure 11.2: Second stimulus activity system model



11.2Session 3 First and Second Stimuli

Figure 11.3: First stimulus meeting one coding hierarchy chart

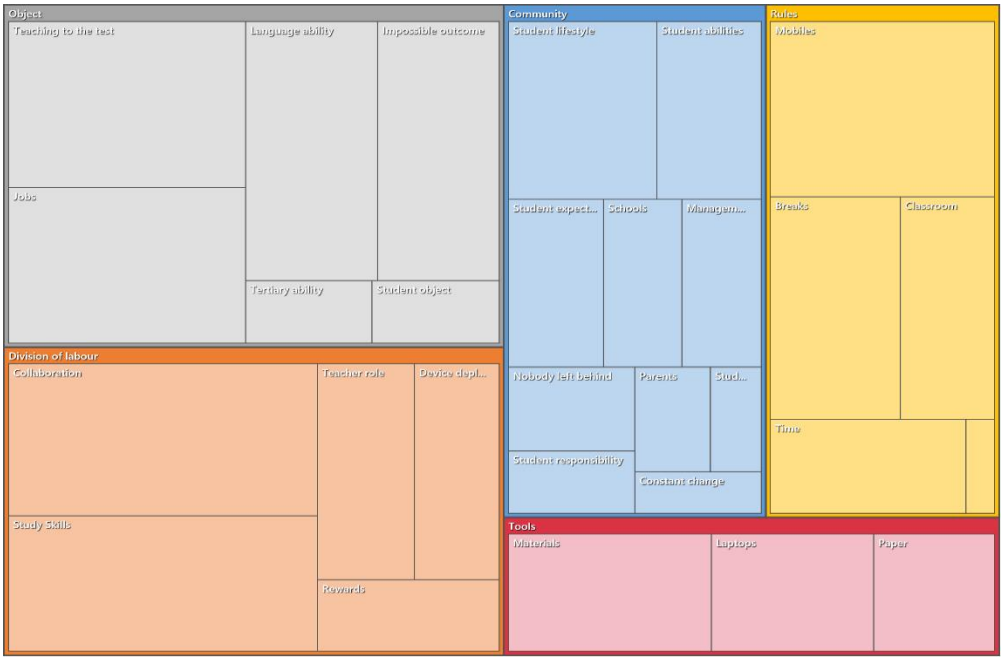


Figure 11.4: First stimulus historical activity system

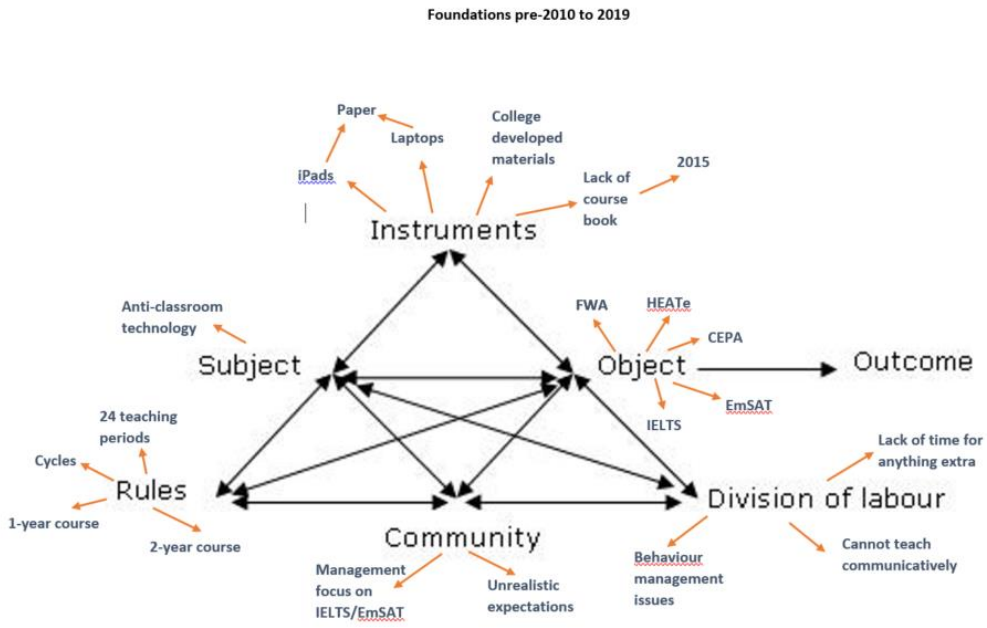
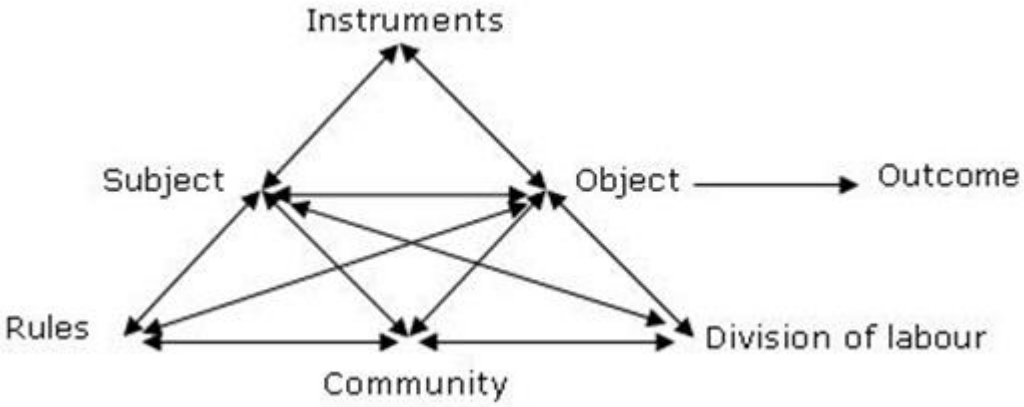


Figure 11.5: Second stimulus activity system model



11.3Session 4 First and Second Stimuli

Figure 11.6: First stimulus current activity system

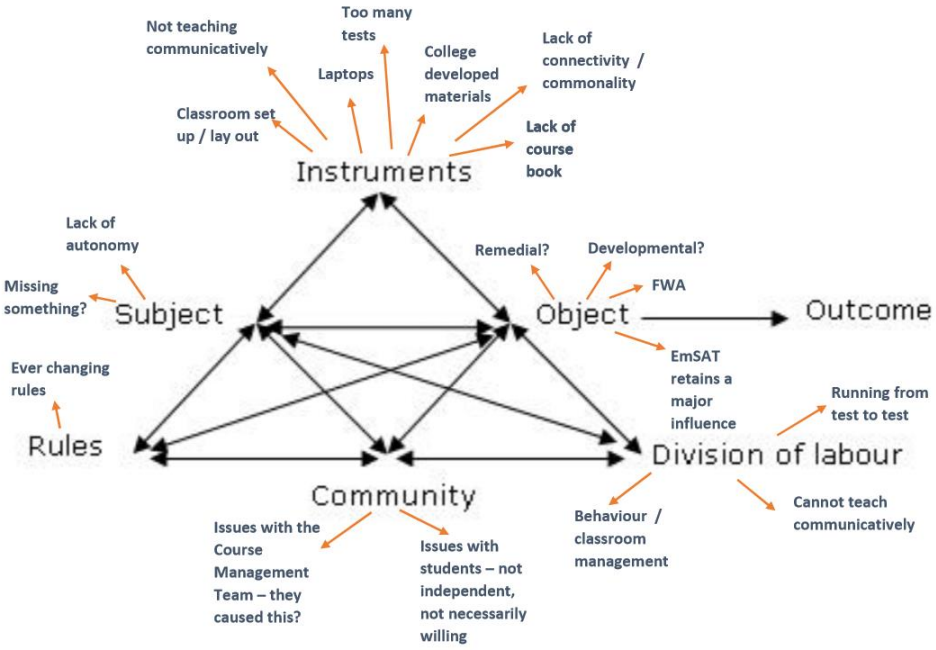
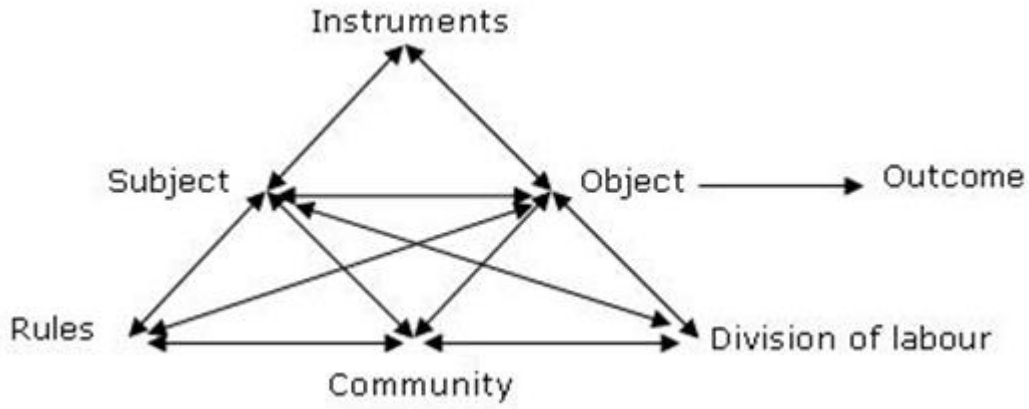


Figure 11.7: Second stimulus activity system model



11.4Session 5 First and Second Stimuli

Figure 11.8: First stimulus future activity system locally

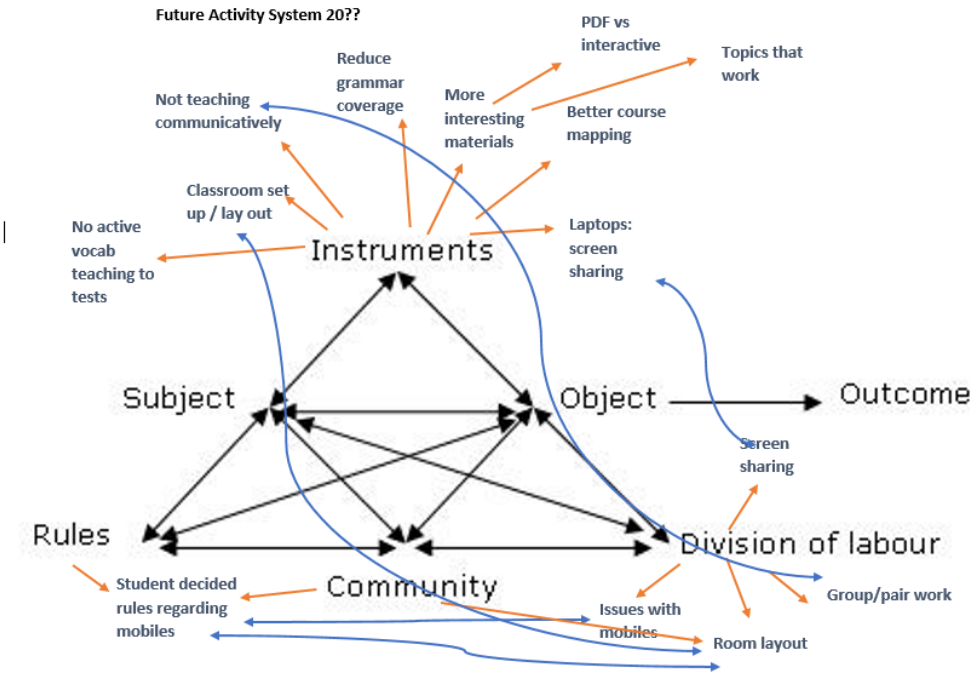


Figure 11.9: First stimulus future activity system for the institution

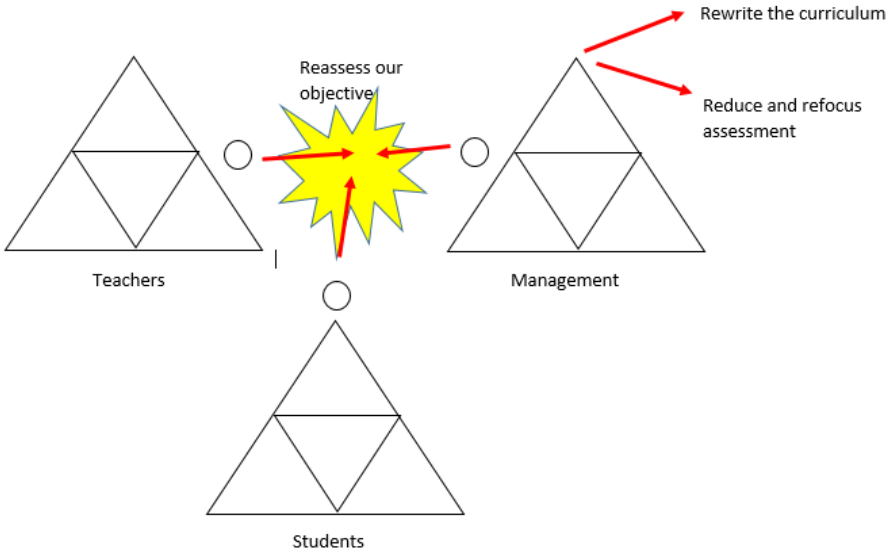


Figure 11.10: Second stimulus graphic of language points

11.5 Session 6 First and Second Stimuli

Figure 11.11: First stimulus emerging activity system

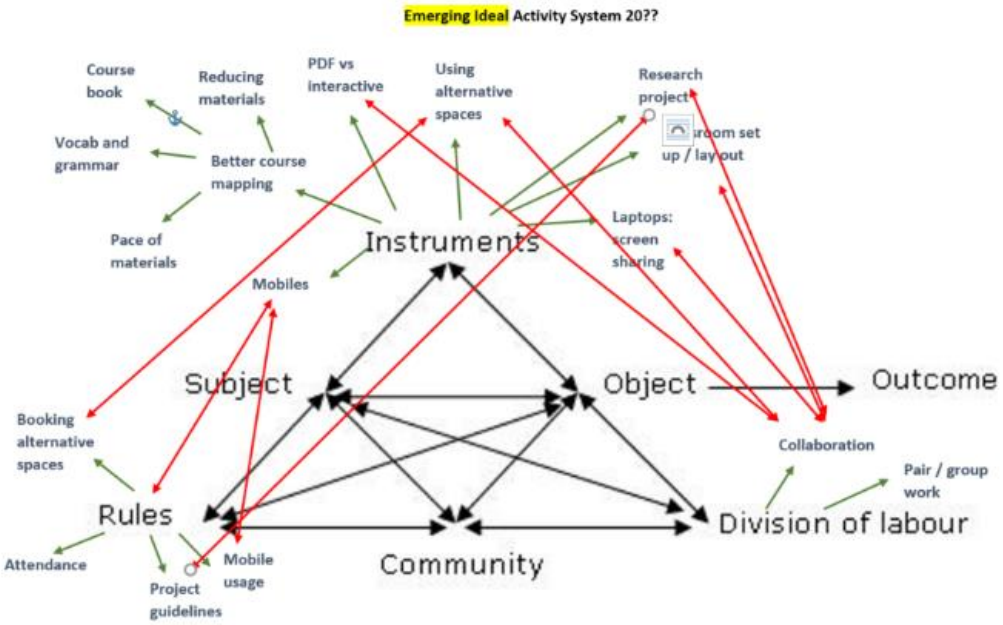


Figure 11.12: Second stimulus graphic of language points (reused from previous meeting)

11.6 Participant Survey post Change Laboratory

#	Question
1	What are your overall reflections / impressions of the project, both positive and negative?
2	The Change Laboratory is strongly rooted in theory, in this case Activity Theory. I mentioned this several times throughout the project, and we also used the Activity Theory diagrams (the triangles) in our discussions. Can you describe how you feel about the theory? Is it something you understand? Was the theory helpful or irrelevant?
3	How would you describe your attitude to classroom technology? Has this changed or been affected by the Change Laboratory?
4	Tell me about how you use laptops, materials, phones etc. in the classroom. Has this changed or been affected by the Change Laboratory?
5	Have your classroom rules been affected at all by the project? If so, how?
6	What, if any, effect does the wider community of colleagues, management, students and their families have on your teaching? Has the Change Lab affected this at all?
7	Has there been any change in how you divide labour in the classroom? In other words, who is doing the work? Has the project had any influence on this?
8	We mentioned several times - and this is a major issue – that we are teaching to the test. Do you still feel this is the case? Has the project affected this at all, or any other external (or internal) factors? Is the object / aim of your teaching the same? Different? Altered in any way?
9	If you had to advise a new teacher about to walk into one of our classrooms, someone who had limited experience of teaching with laptops in a technology rich environment, what advice would you give them? What tips and tricks would help them teach effectively, both in the short and long term?
10	Finally, is there anything you would like to add or feel that I have not covered?

12 Appendix 3: Examples of data analysis

12.1 Example transcript highlighting potential discursive manifestations

12.2 Example further analysis using Microsoft Excel

12.3 Example of contradictions classified and quantified

12.1 Example transcript highlighting potential discursive manifestations

Transcript section, highlighted using nVivo software.

[redacted] 6:06	And the thing is, we can't really get to know the students and what are their issues? Behind not passing?	
[redacted] 6:13	Yeah,	
[redacted] 6:14	we can't we don't have that time. Unfortunately. I don't know if the numbers of the students are this, would that make a difference? If we had less students in class we can know. There.	**We don't have the time to get to know students and their needs – too many in class, not enough time** Rhetorical question?
[redacted] 6:25	We usually do have less students at the end of the year, but by then, they're...not the best students	**By the time we have fewer students, they are the worst students**
[redacted] 6:30	the worst students we have the worst students that don't really care. Yeah. Should we go through every point? Are we guessing?	
[redacted] 6:46	With discussing these points in relation to why they fail, there's one here, it says students are generally on task with laptop.	
[redacted] 6:55	No, they're not.	**Students are off-task with laptops**
[redacted] 6:56	Yeah that's a bit strange	
[redacted] 6:57	They're rarely on task with laptops. I think I think the laptop although it's an amazing tool, but it is a distraction. More than a	A few 'buts' here suggesting dilemma, though other language makes it stronger

12.2 Example further analysis using Microsoft Excel

XXX 26:54	I found it really hard. I just didn't know how to integrate it into the classroom without losing absolute control I was barely controlling them anyway, you know, and these are the some of these are girls. Boys was something different. It was [Yeah.] I found it really tough.	Strong narrative
XXXXX 27:11	It was like Giving them a giant mobile because	Metaphor
XXX 27:13	It was. And these guys came from the mountains. So they didn't have WiFi up there. And then they'll give me an iPad with WiFi. and that was it They just they just and then they go back home to the mountains in their trucks. So	Conflict here with tech and student background
XXXXXX 27:31	I remember what Yeah, that's true. I remember a lot of my students used to say that we don't have internet connection at home. [Yeah.] So. And it was a hassle. To be honest, it was a hassle. Because we didn't know how to use we know how to basically service the iPad for our search engine or reading a magazine or whatever. But we didn't know how to use it in class.	Cluster of 'buts'. It was a hassle Negative language

12.3 Example of contradictions classified and quantified

Object	Five different exits since 2010 (IELTS, CEPA, EmSAT etc.)			DB	0				These items were mapped to Activity System post original meeting
	Pre 2010 not driven by assessment	C		CC	7				
	Developmental vs remedial expectations	C		C	7				
	Impact of the strands	CC		D	5				
	Changes to exams and impact	CC							
Tools	Paper, laptops, IPads								
	Materials - coursebook vs own materials								
	Soft impact of laptops pre-2010	D							
	Impact of iPad overall	CC							
	Impact of iPads on materials - sometimes usable, sometimes not	D							
	Poor textbooks - need to create own materials	D							
	IELTS - paper vs tech	CC							
DOL	Behaviour management issues								
	Lack of time for anything else								
	Cannot teach communicatively								
	Motivation - holding room for IELTS	D							
	Behaviour management issues - especially due to Stra	C							
	Used to have more time / better relationship	D							
Rules	Changes to length of courses								
	Changes to length of courses	C							
	Changes to hours linked to management	CC							
Community	Management expectations around IELTS / EmSAT								
	Unrealistic expectations								
	Management doesn't know what it is doing	CC							
	Management hates us	CC							
Subject	Autonomy	C	Make these separate??? Stand out??						
	Power	C							
	Attitude to technology	C	PDF disagreement						