

Article type

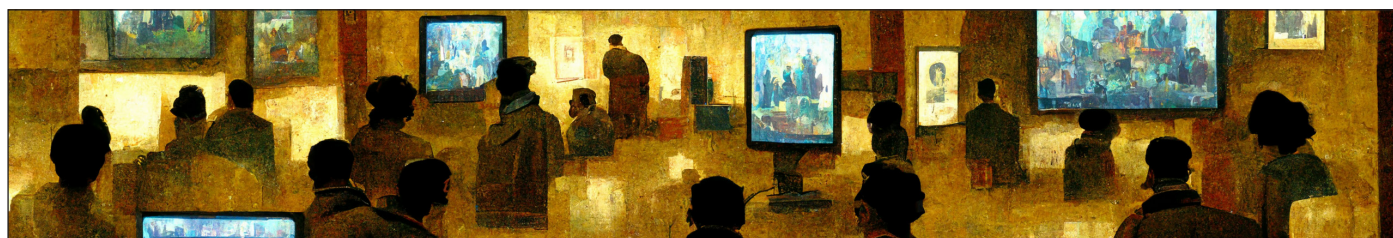
Full paper, double-blind peer review.

Publication history

Received: 06 September 2021. Revised: 06 March 2022.
Accepted: 10 March 2022. Online: 21 November 2022.

Cover image

Badly Disguised Bligh via flickr.



Special issue Activity theory in technology enhanced learning research | More at <https://doi.org/10.21428/8c225f6e.cbaae672>

Using a Change Laboratory to voice students' lived experience of moving from face-to-face to online instruction

Geraldine Gorman^{1, 2}

¹Department of Business, Atlantic Technological University, Sligo, Ireland

²Department of Educational Research, Lancaster University, Lancaster, United Kingdom

Keywords

CHAT; student experience; online
Covid-19 experience; change
laboratory

Citation

Gorman, G. (in press). Using a Change Laboratory to voice students' lived experience of moving from face-to-face to online instruction. **Studies in Technology Enhanced Learning**, 3(1), 1-23.

<https://doi.org/10.21428/8c225f6e.e2fe26bd>

Abstract

Now that the grace period defined as “emergency” in the context of the mass move to online teaching has passed, students are less tolerant going forward of institutional failings that occurred during this time of remote learning not being remedied. Students are frustrated with a lack of their own voice in decisions at institutional level that affect them in all aspects of their online experience including, in educational change initiatives for the future.

This study gave students the opportunity to voice their own experiences of the transition during this time, and their experiences of the new online environment since the new semester from September 2020. It attempts to document the effects of this changing environment on student experience by using Cultural Historical Activity Theory, and one on-line synchronous Change Laboratory as the methodology to collaboratively co-create and document the experiences of students. It explores how useful the students found this process to help give them the agency to express their own experience giving them a voice within educational change initiatives in the future. The findings demonstrate as we move forward to our new normal, that sub-standard online experiences will not be tolerated by students once they have an option to choose, and this will have a detrimental effect on institutions hoping to capitalise in this new online environment.

1. Introduction

The Covid-19 pandemic forced higher education institutions to rethink traditional pedagogy and modalities relative to teaching content. Current research on these issues has emphasised approaches such as flipped classrooms (Nerantzi, 2020; Zheng & Zhang, 2020), peer learning (Hamad et al., 2020), and peer teaching (Jeong et al., 2020) cited in (Parker et al., 2021). The move to remote emergency learning was made without precedent to follow as higher education administration, faculty and students attempted to figure out how to organize, teach, learn, and maintain a campus atmosphere through a remote learning platform (Parker et al., 2021).

Studies are conflicting to date as to student preference on whether to return to face to face (in person) or online (remote learning) after the pandemic. As Parker observed in her study, remote learning has many positives, but cannot replace face to face teaching (Parker et al., 2021). This was after a previous study by Branquinho et al of medical students at Duke University, where over two thirds of the participants expressed a desire to return to face-to-face learning (Branquinho et al., 2020).

The myriad of problems faced by students during this emergency period has been briefly researched to date, however there is some shortcomings in the current literature, in my view, in ongoing experience, particularly student experience, after this emergency period as we move forward with online learning as the new normal.

The effects of this quick shift had implications for all stakeholders especially students who are one of the main stakeholders in higher education. Recent research has looked at some of the effects on students such as performance, motivation (Aguliera & Nightengale-Lee, 2020) and perceptions during this shift. However, there are also shortcomings in the literature in terms of how students can reflect on their experiences and project their own voices. This study aims to give this valuable insight to enable institutions to hear the voices of their most important stakeholders, learn from past mistakes, and improve educational offerings going forward.

This study looks at the experience of a group of accounting students moving from a face-to-face in person delivery to full online remote delivery. While the accounting body is a standalone professional accounting institute, its courses are also delivered throughout Further and Higher Educational institutes around the country. The external situation caused an authentic setting as these students are affiliated to two

institutions one for course delivery through a further/higher educational setting, and the professional accounting institute for exam purposes, but previously the students would have only studied directly through the Further/Higher educational setting.

The accounting institute historically operated classes in brick-and-mortar settings through partner colleges throughout Ireland. They also have an online offering directly from the accounting institute itself for students. Nevertheless, all students, whether studying face to face in person or remote online, were still required to sit the same professional exams in an invigilated exam hall setting pre Covid-19. This had to be dramatically changed when Covid-19 struck two months before the exam schedule. While the face to face in person students had to come to terms with changing delivery and assessment methods, all students (in person and studying remotely online) had to contend with moving from invigilated exam centre exams to open book online exams.

The students in this study traditionally attended in person, for weekly classes throughout the academic year, and then registered with the accounting institute to sit their professional exams. However, when it was not possible to attend in person due to the worldwide emergency, the further/higher education college that these students are affiliated to did not have any structures or support in place to move this course online. Fortunately for them they were a partner college with the accounting institute, which has a demonstrated history of teaching online students for approximately fifteen years, so they were able to leverage this partnership to their advantage. As a result, these students got access to asynchronous recordings for the duration of the course delivered by the accounting institute directly. However, as time progressed these students experienced greater dissatisfaction with the current online remote offering. For example, the accounting institute had changed their exam policy twice in the last year in the online environment, and this study will demonstrate how this added to feelings of stress and frustration for the students during an already stressful time. In addition to this a lack of clear and timely communication in relation to these new processes coupled with the introduction of new technology for exams, in an environment that was, in the students' experience, already overloaded with too many new platforms to grasp, produced many hurdles that students had to overcome to try and achieve their goals of passing professional exams.

2. Motivations for the study

The idea for this study came from the participants themselves. The researcher is also the tutor for the participants for the academic year from September to April for the last two years. The researcher currently teaches the synchronous component of the course (Appendix A). The participants communicated their dissatisfaction with the current online remote learning experience on a weekly basis to the researcher/tutor.

The researcher then asked the students if they would be willing to voice their concerns through this study. This was one of the deciding factors that led the researcher to select elements of an online synchronous Change Laboratory, as a suitable method for allowing the students to voice their issues. Although this method has had limited use online previously in an asynchronous environment, there is no published work available to the researcher, at this time, of its use in a synchronous online session. This method was used by the researcher to enable live interactive discussions from participants collectively, in a time when face to face access to participants was not an option. This methodology would also allow the researcher as interventionist an opportunity to provide a space for students to voice their frustrations and tensions particularly in relation to being bound by strict rules in relation to exams, and inequitable practises such as forcing students to learn to type, introducing new, and unfamiliar technology just weeks before an exam and how unequitable, in my view, these practices are.

3. Literature review

This literature review focuses on student experience from moving from face-to-face in person instruction to a full remote online environment in response to the Covid-19 crisis. This abrupt and temporary shift (Shin & Hickey, 2020; Youmans, 2020) to remote online learning due to crisis circumstances was described as emergency remote teaching (ERT) (Aguliera & Nightengale-Lee, 2020; Gelles et al., 2020; Kyne & Thompson, 2020; Petillion & McNeil, 2020). While none of the research reviewed specified the length of “temporary”, there has been a general acceptance that we have now moved from this temporary state to a possible new normal (Day et al., 2021; Pather et al., 2020).

While Covid-19 caused a major large-scale disruption to higher education, it is not the first time a crisis has prompted the shift to online learning.

Academic continuity disruptions have occurred as a result of natural disasters such as hurricanes, earthquakes, large-scale student protests, and war and conflict, which have also resulted in a temporary and sometimes long-term shift to online remote learning (Gelles et al., 2020). The current situation is however unique in magnitude (Shin & Hickey, 2020).

Several papers discuss the impact of the speed of the transition to the online environment (Day et al., 2021; Kyne & Thompson, 2020; Novikov, 2020; Parker et al., 2021; Pather et al., 2020; Petillion & McNeil, 2020; Youmans, 2020). This would present challenges in itself as a mutual readiness for collaboration was non-existent between stakeholders (Gelles et al., 2020). This speed highlighted common themes throughout the literature reviewed – mandated online learning removing choice from both providers and students, challenges encountered with the speed of transition, lack of communication between institutions and students, and issues associated with the presumption of access to technology.

3.1 Not by choice

The emergency in ERT can thus be seen as describing both (1) the speed at which the transition is made and (2) the circumstances surrounding the transition. Both of these influenced the pedagogical decisions made during the spring 2020 semester (Youmans, 2020). While this method of teaching may not have been desirable for a myriad of reasons, students and faculty had no choice when it was state-mandated (Gelles et al., 2020; Parker et al., 2021).

Institutions had to develop and implement adjusted course content that was not designed for online delivery, which in many cases resulted in a rushed course design. There was also little to no time to address technological needs, and course work was being redefined in real time, leaving everyone a bit adrift (Gelles et al., 2020; Shin & Hickey, 2020; Youmans, 2020).

3.2 Challenges encountered

Students encountered several challenges with this emergency move and more particularly students who were taught previously in a face-to-face in person environment. One study carried out by Day et al looked at six institutions across three countries found most students who register for face-to-face classes prefer not to be taught online (Day et al., 2021). Since September 2020, students pursuing their courses feel they have no choice but to deal with remote

online learning in contrast to making a decision to take an online class (Gelles et al., 2020).

Universities around the world are still struggling to determine the most appropriate and effective course of action for all stakeholders, therefore it is prudent to continue to gather data from all affected parties, including students (Parker et al., 2021). This study will contribute to this data collection as the participants in this study question and reflect on their experiences, including their institutional experiences, to give some insight as to the effects on students of these dramatic changes.

3.3 Lack of good communication around changes to teaching and assessment

A phenomenological study conducted at the University of British Columbia's Okanagan campus in Canada, recommended that clear communication and flexible assessment methods are imperative to accommodate the assorted complications currently faced by our students (Petillion & McNeil, 2020). Good communication between students and faculty is important (Lord 2011; Slinger-Friedman et al. 2015; Hildebrand 2017; Tull, Dabner, and Ayebi-Arthur 2017) cited in (Day et al., 2021). Particularly in an online environment where we lack physical face to face interaction. The abrupt transition to remote online learning caused widespread confusion for students, which was exacerbated by the conflicting communication from universities (Gelles et al., 2020). Students are more concerned about lack of communication about assessment instructions and deadlines, while the teachers are more concerned about student collusion and the difficulty with implementing assessment invigilating (Gelles et al., 2020). Changes in assessment also caused undue stress and anxiety (Petillion & McNeil, 2020) for students, particularly in relation to the use of online test proctoring (Novikov, 2020; Parker et al., 2021; Petillion & McNeil, 2020).

3.4 Access to technology

The pandemic has made teaching and learning through virtual tools a necessity and not a choice (Parker et al., 2021). This can be problematic for students where access to technology becomes an issue. Family computers may have to be shared between siblings completing schoolwork, and parents working remotely (Youmans, 2020), and reliable internet connectivity is not guaranteed.

This can have a knock-on effect on students' abilities to complete work on time, and to meet virtually during classes, and consequently the students grades also suffered, not to

mention their online learning experience (Shin & Hickey, 2020).

This study focuses primarily on what happened after this emergency period, when entering a new semester in September 2020, whereas most of the literature to date covered the experiences, predominantly institutional and teacher experiences, from 12 March 2020 to 30 June 2020. This review demonstrated to the researcher that there was a clear need for more up-to-date information, at a time when face-to-face access to students was not possible and decided on a novel way to participate in research that allowed them to safely question and voice their experiences.

4. Research questions

This study will address the following research questions to highlight the purpose of the project and the literature review:

- RQ1: How do accounting students voice their own experience in an online synchronous Change Laboratory in moving from face-to-face instruction to full online instruction after the emergency period?
- RQ2: How useful the participants found this process?

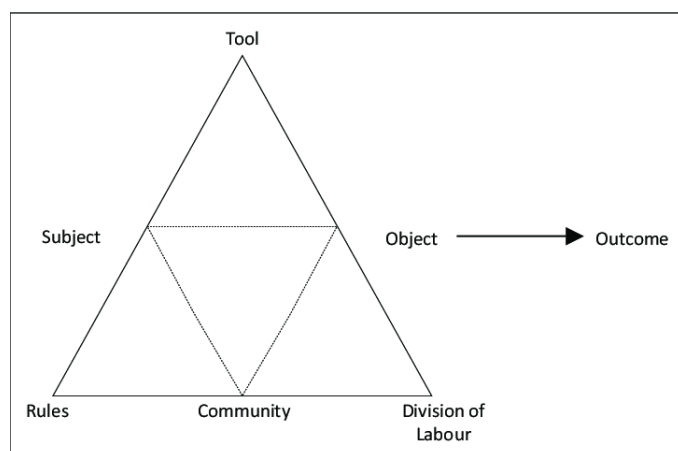
5. Ontology and epistemology

The ontological and epistemological beliefs of the researcher heavily influence the methods adapted by the research. Coming from a relativism perspective where they are many truths, and that truths are ever changing due to varied circumstances.

This research holds true for a snapshot in time. It is based on empathy and understanding the perspectives of research subjects and giving them an opportunity to have their voices heard on their lived experiences.

6. Theoretical framework

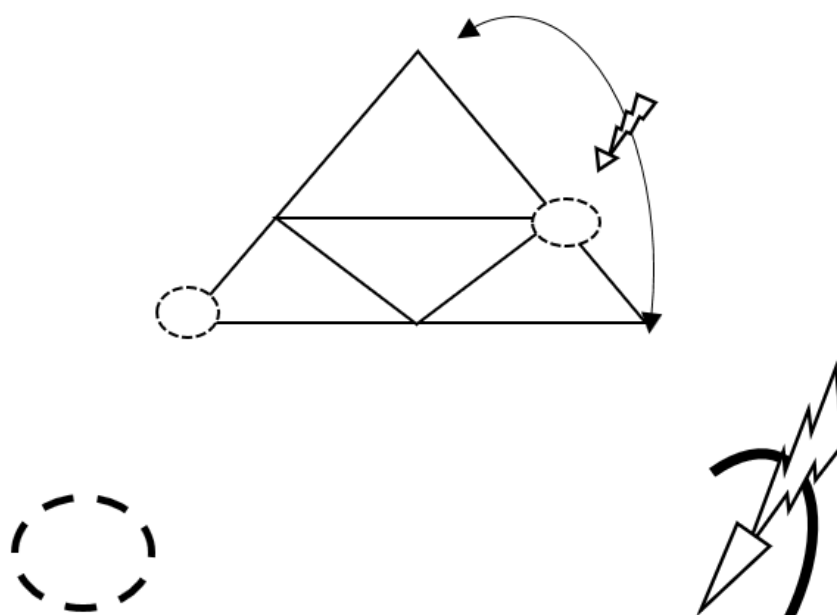
This research uses Cultural Historical Activity Theory (CHAT) framework for analysing the historic face to face activity system (Figure 1), and the new online activity system. CHAT explains human activity as an object-oriented, culturally mediated system with six interconnected components: subject, object, tools, community, rules and division of labour (Augustsson, 2020).

Figure 1. Engeström's (1987/2015) Activity System Model

This framework can be valuable for qualitative researchers who investigate issues related to real world complex learning environments (Yamagata-Lynch, 2010). CHAT takes historically formed systemic contradictions as the starting point of the analysis (Engeström & Pyörälä, 2020). This framework was used as a starting point to help analyse change and to analyse how experiences are located in practices. This study emphasised starting with the object and related outcomes. The main object for participants was passing their exams and, on their journey, to achieving this, directly affected the outcomes experienced. The relationship

between the students as subject and obtaining the object is mediated by tools - resources available, and influenced by rules on the program, and the community that supports the students as subjects. The division of labour, often outside of control of the subject, directly influences the object, tools, and the experiences of the subjects. Therefore, all the elements of the system are interrelated and either directly or indirectly influence obtaining the object. However, the presence of unintended outcomes is quite usual when analysing experiences of a system using CHAT. These unintended outcomes can be categorised as contradictions. Contradictions, in this context, can be categorised and identified, in the current system, to allow for possible solutions to be co-created. This often leads to creation of a new activity system(s) which will in due course give rise to a new set of contradictions. There are four systematic contradictions identified within and between activity systems (Engeström, 1987/2015) (Figure 2):

- Primary contradictions that occur within one element.
- Secondary contradictions that occur between elements.
- Tertiary contradictions occurring between systems and the attempt to apply to a new model.
- Quaternary contradictions between neighbouring systems.

Figure 2. A graphical representation of primary and secondary contradictions, based on Bligh and Flood (2015, p.152)

Primary contradiction within elements

Secondary contradiction between elements

Given the scope and time-limit of this study the researcher focuses on primary contradictions and secondary contradictions in one system of activity. Although the researcher acknowledges that a unit of activity does not operate in isolation and is usually affected by the operation of multiple activity systems.

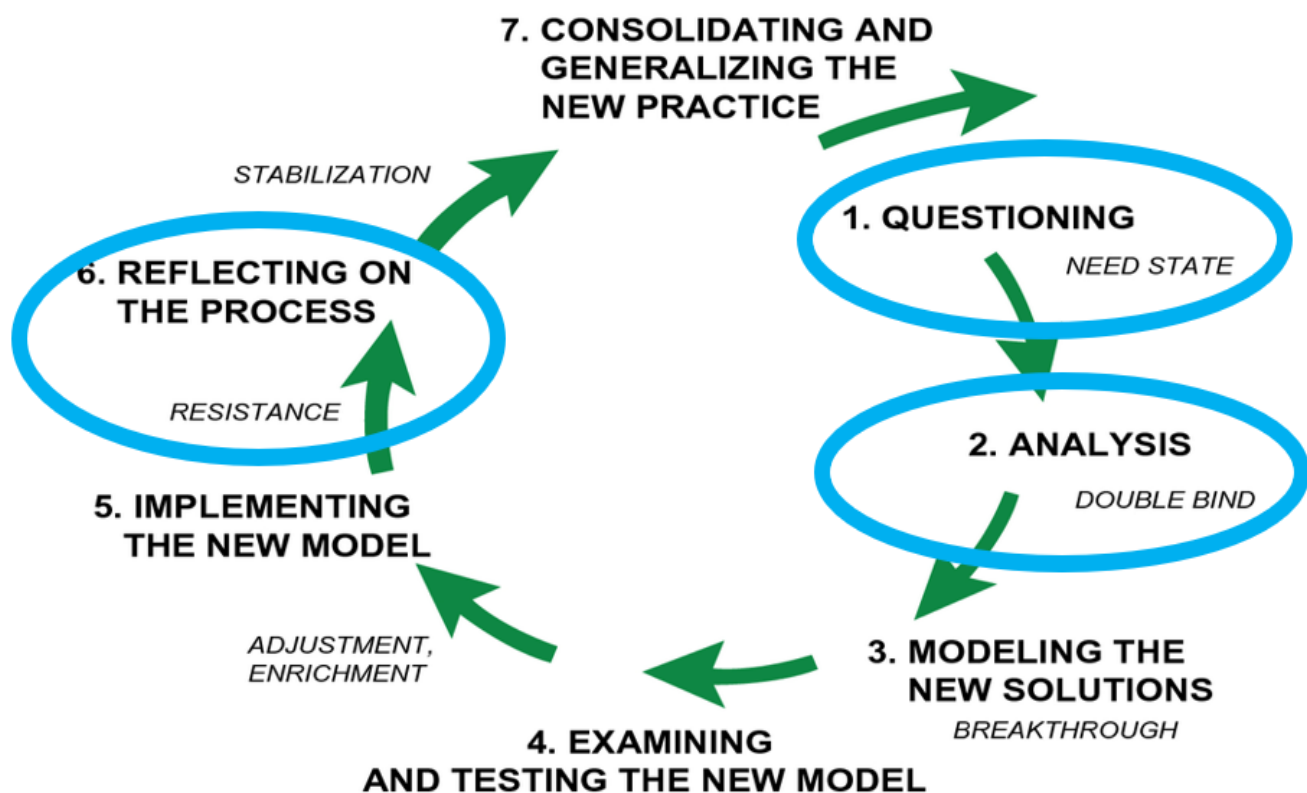
7. Methodology

Grounded in CHAT, the Change Laboratory (CL) is a formative, interventionist, research methodology that allows participants to work jointly with a researcher-interventionist to shape an Activity System (Botha, 2017; Engeström & Sannino, 2010). Participants move from an individual position to develop collective transformative agency (Virkkunen, 2006), ultimately shaping their own activity system without the researcher-interventionist(s) (Morselli, et al., 2014). They do this by critically examining existing practice, identifying and formulating any tensions and contradictions within the activity (Englund & Price, 2018). Analysing and

solving contradictions forms the basis of Engeström's (2001) theory of expansive learning, on which the CL is based (Engeström, 1987). In this methodology the end results of learning are not predetermined by researcher/interventionist. The outcomes are designed by participants as they work out expansive solutions to developmental contradictions in their activity systems (Sannino et al., 2016).

The principle of double stimulation is central to promoting expansive learning (Englund & Price, 2018). The starting point of double stimulation is confrontation with a problematic situation which triggers a paralyzing conflict of motives – the first stimulus (Engeström & Sannino, 2020). Mirror data are then introduced by the researcher, in trying to capture evidence of problems. The second stimulus then allows participants to make meaning of these problems, giving them an outlet to express and discuss collectively to ascertain how it shapes their thinking. CL interventions have been carried out in many different fields of activity (Virkkunen, 2013) however examples in higher education research are embryonic but promising (Bligh & Flood, 2015).

Figure 3. Sequence of learning actions in an expansive learning cycle (adapted from Engeström & Sannino 2010, p.8)



This study focused on three steps in this expansive learning cycle (Figure 3) due to limitation in scope and timeframe:

- Step 1 – *Questioning*. What is totally inadequate in the current system?
- Step 2 – *Analysis*. Look at the present way of doing things and how they were done in the past. Why are they like this right now?

Research participants having analysed the past activity system went on to construct their own activity system of the new online environment. This led to a questioning and analysis of the new versus old system.

- Step 6 – *Process Reflection* (Augustsson, 2020). Participants were asked to reflect and document their experiences two weeks after participating in the CL to ascertain their experiences of this process.

The purpose of using a once off online synchronous change laboratory was to give participants the opportunity to question and voice their experience of their new online remote learning situation in a collaborative, live environment. This was the only time they had met the researcher in an environment that was not a synchronous teaching class, so this facilitated a more open discussion focusing more on their experiences rather than course content.

The first task was to label the old face to face in person system using the CHAT framework to give them an appreciation of the different components in action within a system, then to use this knowledge to construct their current online remote activity system. This enabled an understanding as to how complex the new activity system was currently. They then discussed and documented their experiences of the old and new system through the components of Activity Theory.

8. Research methods and design

A CL intervention is typically conducted in a pilot unit, the participants of this study, of an activity (Virkkunen, 2013). The division was 60/40 between female and male participants, all mature students (over 23 years). All these students had attended face to face in person classes for most of their first year of the program, which was moved fully online at the end of the first academic year of this course in March 2020 and finished in June 2020. The second year of this program, September 2020 to June 2021, was full online remote delivery, with synchronous classes provided by the further/higher education institution through the tutor/re-

searcher, and asynchronous recordings from a different live class and different tutor through the accounting institute. This resulted in a disjointed pedagogical effort that contributed to an unacceptable negative student experience.

These students were invited to take part in this research through a channel set up in their class team (Figure 4). Microsoft OneNote was used as the collaborative tool and tabs within this were set up for each participant (Appendix B). This software was also used during the live session to formulate each participant's history walls (see section 8.2) which was then discussed during the change laboratory. The synchronous once off laboratory session was conducted through Microsoft teams. A separate channel within this team was created for the research, and all participants read and consented by replying in this channel before team invitations were sent for the session. The two-hour session was recorded and later transcribed verbatim to support the findings.

This CL started with participants being presented with their current tensions expressed previously to the researcher about their experience of the new system throughout the year (Figure 5). This information was presented to the participants as the first stimulus to start the process. They were then asked to label the old and the new activity system, using the CHAT framework, by the researcher providing a blank activity system and discussing the different components within the system. This was used as the mirror data. Then participants documented this experience further on their history wall (Figure 6) and these were discussed and shared with each other. This process was the second stimulus. This method allowed for participants to express their experience and give them a voice of been heard among each other and with the researcher/interventionist.

8.1 Mirror Data – 1st Stimulus

Students continuously voiced problems throughout the synchronous weekly classes about the current online delivery. These were informally jotted down by the researcher at this time. This data was then used as mirror material which allowed the researcher to provoke collaborate effort by Change Laboratory participants (Englund & Price, 2018) at the start of the change laboratory session by assuming the role of interventionist by using previous data.

Figure 4. Change Laboratory channel with Microsoft Teams class

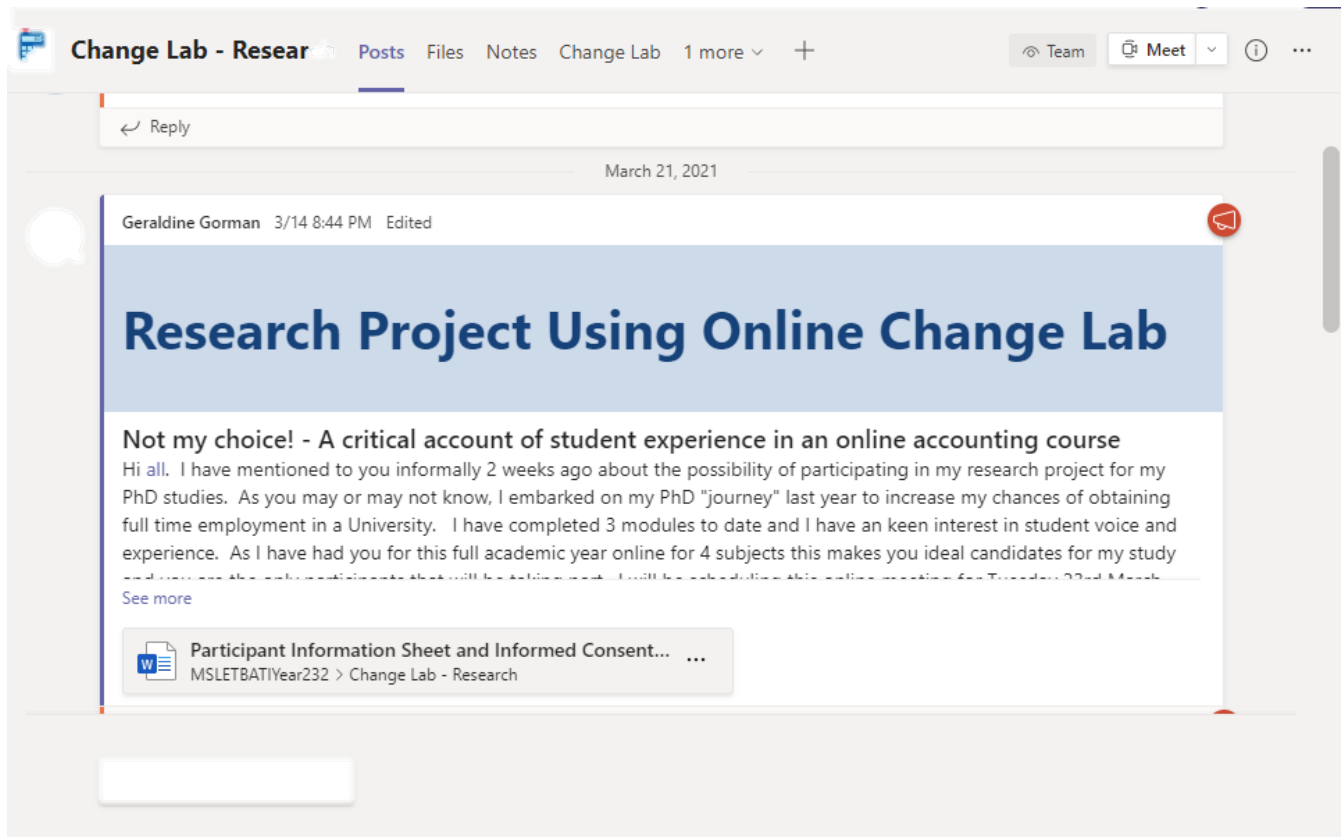


Figure 5. Timeline of the set-up, process, and reflection of the once off Change Laboratory

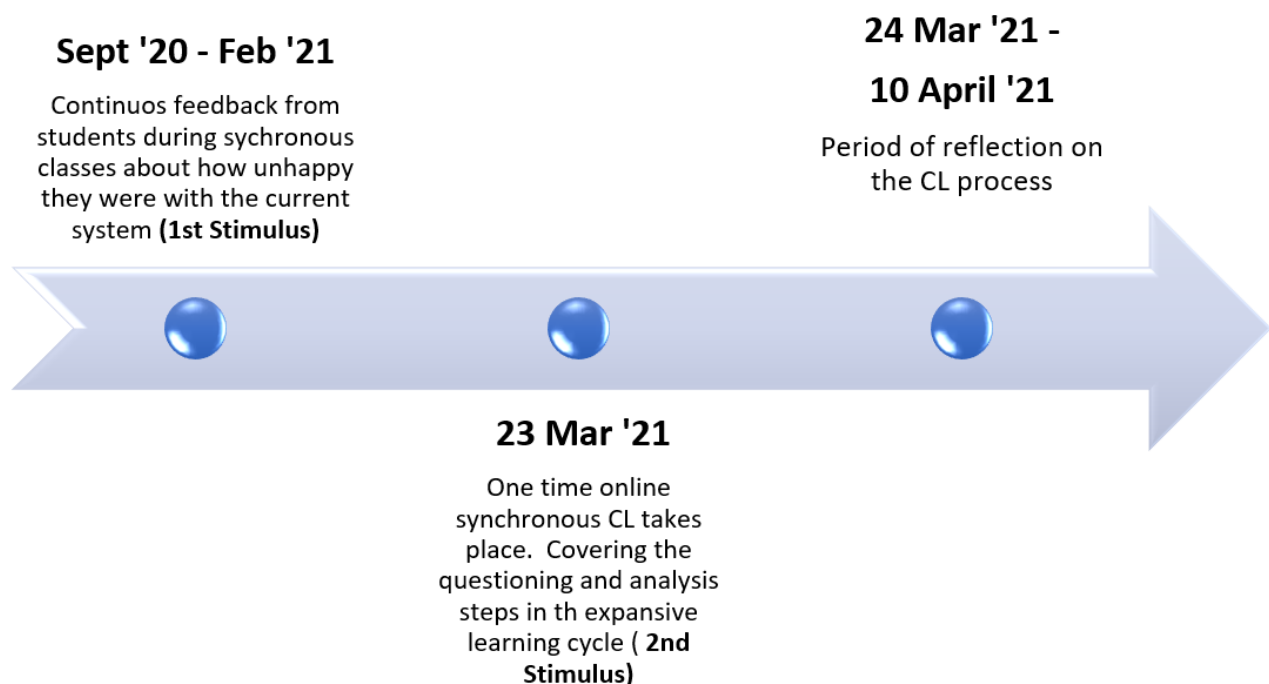


Figure 6. Sample of History Wall extracts by participants during the synchronous Change Laboratory

If it were only the accounting online course and books, it would be a bit lonely. It is motivating to have the tutor come along on the evening and push me along with the course, hands down if it wasn't for the tutor support last year and the peer group support, I don't think I would have done the exams. I would have chickened out and then be annoyed with myself. Autumn would come around and I would have been wondering will I bother and probably would have said "ah no, I leave it until next year". So here we are with two months to go before exams and at times it seems very overwhelming but doable.

In online learning I find it very hard to connect with other students and because the live class is infrequent. I can have a question and end up forgetting it. It takes too much time until the next live class. Last year I completed this course full time in a classroom environment more work could be done whether it was homework or practice questions. It meant I could finish a chapter and revise it and get enough questions done with the tutor in the class. I also have internet challenges that I face which makes it hard finish all the online work on time.

The current situation with online learning and exams is far from ideal for me. I am not confident from an IT perspective, and I feel that I am at a disadvantage before the exam begins as this brings additional stresses. If I had known that the delivery was online, I would not have signed up for the course which has left me demotivated. I find the current teaching method far more time consuming and difficult to fit into a work/life balance. To keep up with the class involves weekend study which I cannot motivate myself to do. The changes in the exam structure from open book to closed book has been disappointing and unfair when the second-year students last year were afforded this option.

I lack the discipline to study properly without some degree of structure. Having it entirely online removes any real structure for me. I miss interaction with classmates/tutor (s) in person. I lack an area to study effectively. This is also leaving me easily distracted when I try to study. I am a bit annoyed by the closed book exams but not surprised either. General motivation going down regarding the course having done courses online before with a different company I knew going into online I would struggle as I hated their format up sitting in front of a computer listening to audio recordings and working from there.

The reason I finally started to study as an accounting student was that it was being delivered in a classroom. I previously investigated it, but it was online and the idea of spending two years looking at a computer screen was not for me. Now it's all just one I get up to study for an hour at the kitchen table go to work three days a week at the kitchen table then have lectures three nights a week at the kitchen table and get some study done at the kitchen table. I feel that the providers have led us down the way the course has been delivered. You are neither a member of the partner college or you're neither a member of the training providers to have access to online course and not being able to ask questions as you come across a problem as madness, they say you can listen back to the recordings but if you don't understand something listening to the same things you couldn't understand doesn't mean you will get it. When you were with a lecturer, especially in the smaller classes we began in, you develop a rapport the lecture picks up on stuff you are confident in sees where you are struggling and can support you in your studies. I don't find that in the online recorded lectures. The live lectures are a great benefit, but I have an issue and I have to wait 2 weeks to discuss it that does not support my learning. It slows me down the camaraderie of the face-to-face lectures where you sit down for a 10-minute cup of tea and realize you were not the only one struggling is gone so it's a much lonelier learning experience.

Tools. Although we have arguably more tools available to us this year it is absolutely been too much for me. It is daunting trying to keep up with lectures especially not being able to ask questions in real time. Our weekly sessions with the live lecture are the most beneficial to me. The advantage from last year is that they are recorded so I can go back and look again at something I am unsure of. Having got to know the lecture in year one there is also rapport and understanding. The weekly recordings would be better if they were just pure teaching listening to inane questions from people you don't know is boring and frustrating and makes me turn the lecture off.

Subject. I have struggled this year keeping motivation going. Only the Wednesday evening sessions with our tutor have kept me engaged. I would have given up if I had only been looking at recorded online lectures.

Rules. Not having to sign into a class each week has allowed me to get behind at times. I am not enjoying online learning to this extent. The change to the exam format this year is unfair, and I feel we are the guinea pigs for a new system coupled with the pressure of learning in a new way with less live face to face support than any other previous cohort of students.

8.2 Analysis of Current System and History Wall Construction – 2nd Stimulus

Then participants were presented with the historical face to face activity system (Figure 7). Each node on the system was discussed. The students completed a reflective learning log (history wall) (Sannino, 2020) for the year (Figure 6). This tool was used to help the researcher and the participants document the first steps of the expansive learning cycle of questioning and analysis. Participants and the researcher as interventionist then read each other's walls and contradictions and tensions were discussed. This was a good example of live member checking in action.

Then the last step of the expansive cycle - reflective practice, was covered using an open-ended questionnaire (Appendix C). The questionnaire was sent to participants after participating in the CL to allow them time to reflect on the experience. There was a 100% reply rate from nine participants.

9. Insider research

The researcher took an investigator role that can be described as "observer as participant" (Yamagata-Lynch, 2010). A good relationship was previously established with these students, having taught these students for the full academic year, and this relationship of trust was imperative to the success of the one-off CL. Although this insider-Change Laboratory scenario seems poorly documented in the literature (Bligh & Flood, 2015), the researcher is aware that the notion of insider is not always favoured (Brannick & Coghlan, 2007) and can influence the power dynamics (Kontinen, 2004) in research. The researcher acknowledges the possibility that participants might be hesitant to critique the synchronous classes as delivered by the researcher as tutor, due to the direct involvement of the tutor as researcher in this study. However, participants did critique the frequency of the synchronous class delivery which may suggest that it did not heavily influence the findings of this study.

10. Ethical issues

Ethical approval was sought and granted as part of my doctoral studies at the University of Lancaster by the module tutor under the rules of the programme.

Prior consent was obtained from all participants which documented an assurance of anonymity throughout the

research process, and detailed information on withdrawal from the research was provided.

11. Data presentation

After constructing their own labels for the new remote online system, participants were able to appreciate to some degree, a more complex environment in the online setting. This also highlighted areas of tensions and contradictions between different components that students expressed through recorded discussion, that was transcribed and coded as part of these findings and construction of their history wall analysis.

Participants were presented with a blank activity system (Figure 1) and asked to fill in and explain how they experience the current online remote learning system (Figure 7). Each participant then looked at the description of their peers' systems and this was observed and discussed. Each participant moved in and out of each other's systems noting similarities and differences. This online space where participants can move easily in and out of each other contributions support the notion of orchestration of togetherness (Ryberg et al., 2018).

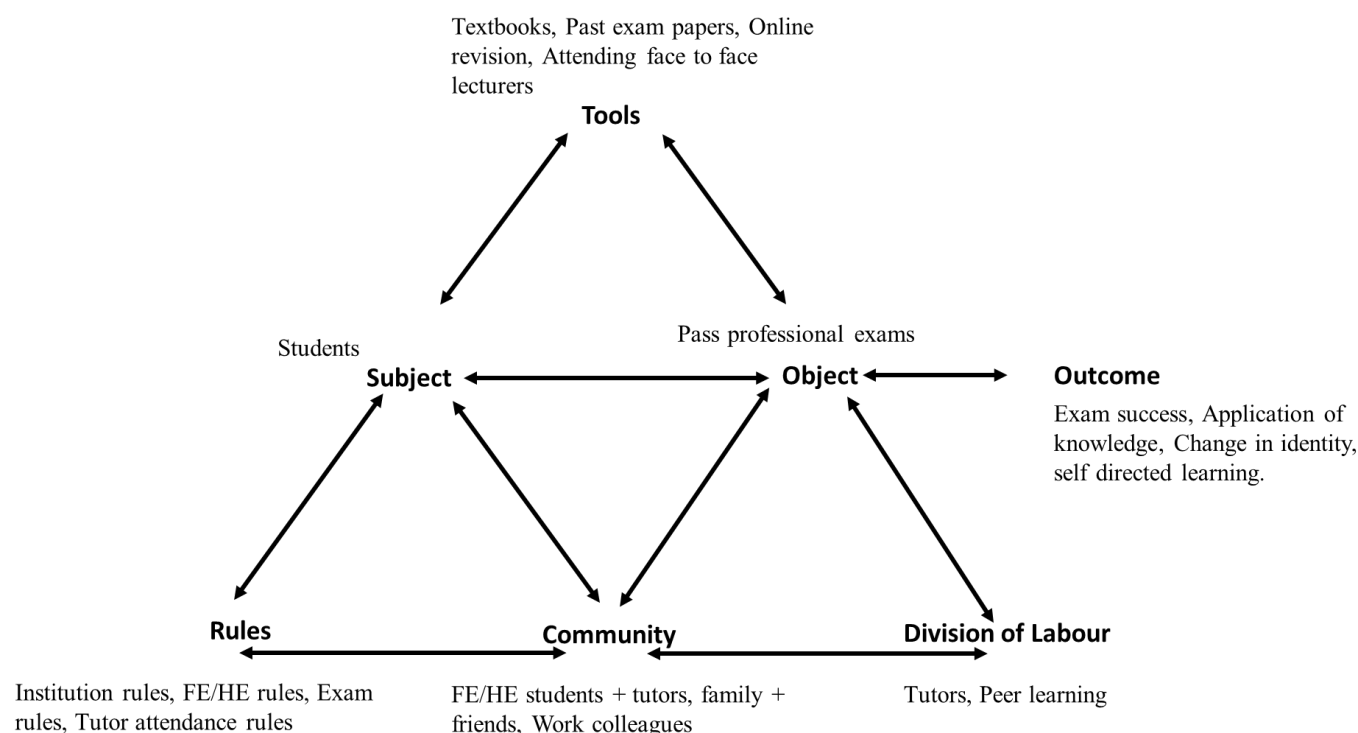
By looking at the historical face-to-face in person system (Figure 7) in comparison to the new remote online system (Figure 8) we can see more variables being added as participants recognise a more complex system at play in the online remote environment. This will give rise to extra tensions and contradictions as more variables are added. Tensions can affect the subject's ability to attain the object and present as an obstacle, making it difficult for the subject to attain the object (Yamagata-Lynch, 2010).

12. Findings

After discussing both activity systems participants were then asked to document their experience to date with particular focus on:

- What is totally inadequate in the current system?
- Look at the present way of doing things and how they were done in the past. Why are they like this right now?

During this process participants discussed and jointly observed tensions and contradictions in the online remote learning experience. While the participants in this study were six weeks away from completion of their course, they

Figure 7. Historical face-to-face system as constructed by accounting students

were still able to use the CL as an opportunity to voice past experiences in face-to-face in person settings, with the current practice of full remote online learning.

To assist with answering RQ1 – How do final year accounting students voice their own experience in an online synchronous Change Laboratory in moving from face-to-face instruction to full online instruction after the emergency period? – the following themes were extracted from the data in relation to tensions and contradictions in the current system:

- Change in assessment rules
- Lack of institutional support and understanding
- Mismatched course design
- Students lack voice

This activity highlighted the presence of contradictions within the activity system (Engeström, 1987). Contradictions is the interaction of opposing tendencies within a system (Ollman, 2003). Elements develop in ways that block or undermine the development of other elements (Bligh & Coyle, 2013).

12.1 Student frustration with new imposed rules where no justification was given for the change

Last year, during the emergency period, was the first time the accounting institute, in this study, conducted online exams and decided on an open book approach. This was generally well received by the participants. Even though they had never studied online before and had an array of new technologies and new ways of learning to overcome, the burden was somewhat eased moving from exam hall invigilated exams to open book, online non-proctored exams. Participants would complete their exam in the same format had they been present in an exam hall and scan and upload their written answers in pdf format into Moodle.

This year, June 2021, the accounting institute have changed the rules in relation to their online exam setting (Figure 9). The first change was a new platform layout for the submission of answers. Using this platform, the participants had to use excel as a means of submitting some of their answers, with the remaining questions typed up answers were compulsory. Participants were then, just before the exams were scheduled to be sat, informed that their exams this year would be closed book, proctored exams.

Figure 8. Current online activity system as constructed by accounting students

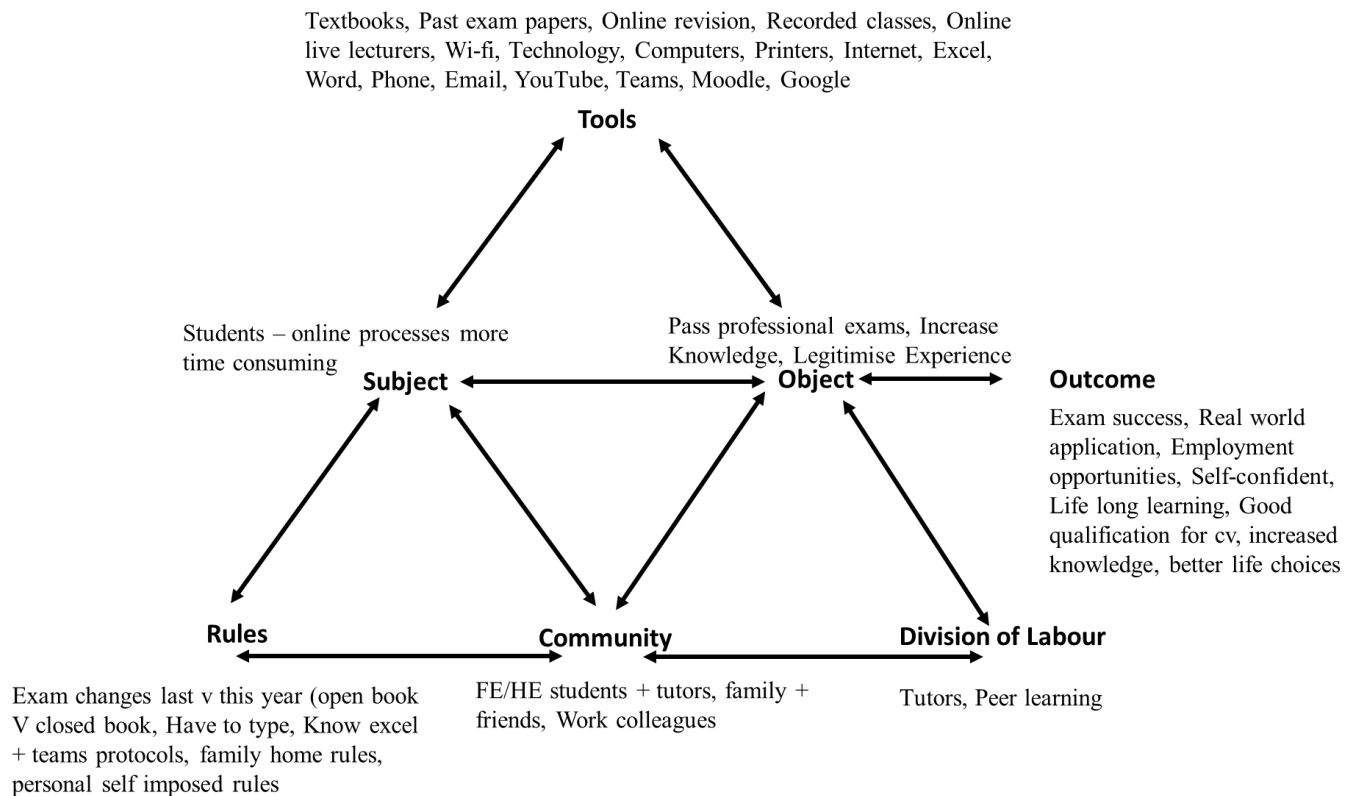
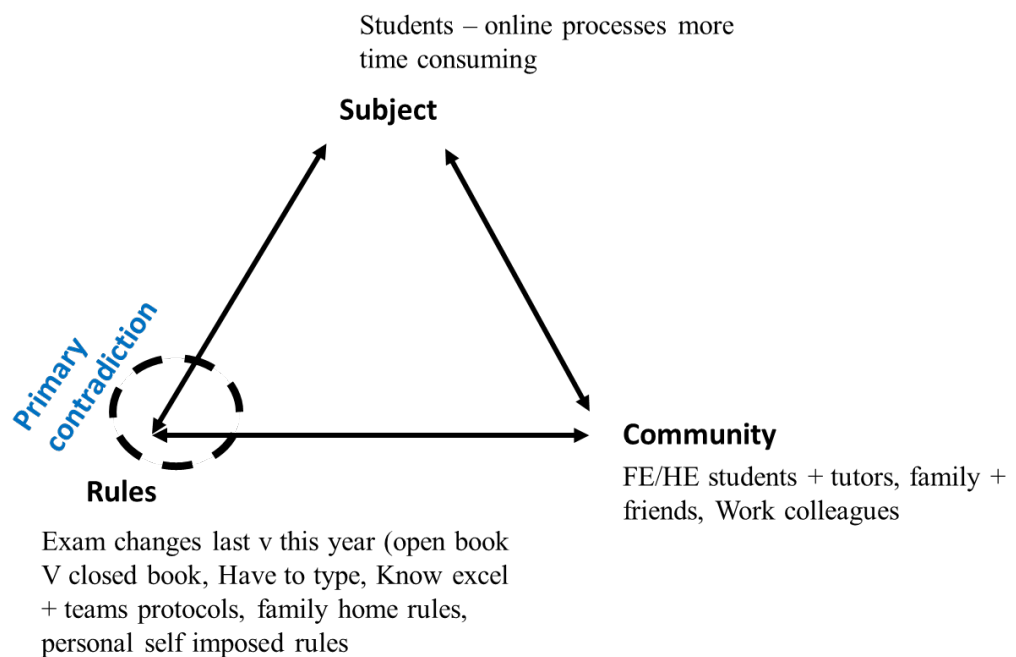


Figure 9. Change in Assessment Rules – Primary Contradiction



This was not well received by the participants, and it became clear that these imposed new rules were contradicting the goal of the students passing their exam. Participants described these changes as “unfair”. The accounting institute did not communicate these changes to the students until 8 weeks before the exam date. This left students extremely anxious at an already stressful time for a prolonged period (i.e. September 2020 to March 2021). These findings support the literature on the focus of students cheating and student collusion (Gelles et al., 2020) by introducing proctored online exams:

“I think it’s unfair, we do not want open book because we want to cheat, in these subjects you cannot cheat, with so little time you would not be able to look topics up on the day if you did not know them”

Other participants had an issue with being forced to type when they could not type:

“I have reservations about having to type the exam this year. I do not understand why we were allowed write last year. Is it just so it’s easier for correctors? What about the students?”

Here again we can see because of a lack of information as to why the institute decided on invigilated exams this year was not communicated, participants formed their own reasoning. In this situation it was suggested that by introduc-

ing this new rule would make it easier for the corrections of assessments rather than having the student at the forefront of the decision-making process.

Even though the accounting institute allowed an extra 20 minutes for typing the exam this is still unsatisfactory as one participant stated:

“... it takes more than 20 minutes when you cannot do it. We are at a distinct disadvantage”.

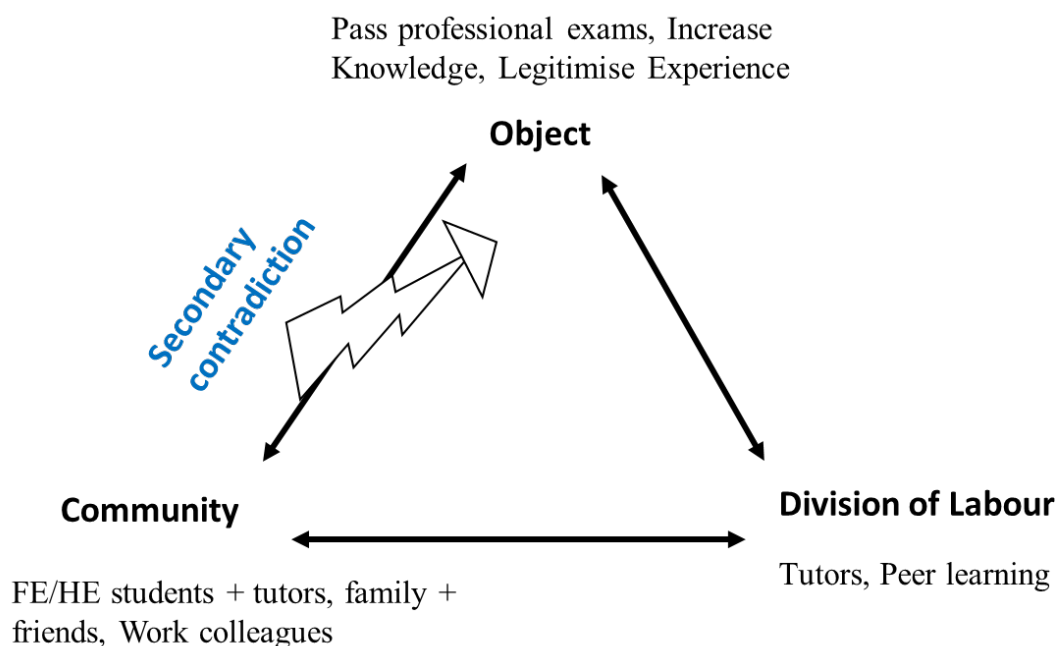
Here is another contradiction (tertiary) in that in the previous year participants were not required to type or use Excel, again an assumption that these skills are possessed by all students is unequitable. When one participant contacted the accounting institute to inform them that they could not type competently they were informed by email -

“You have the option to defer your June sitting to August and perhaps you could learn to type during this time”.

12.2 Institutions supporting their own agenda

When participants were asked to label the community component of their online remote activity system (Figure 8) there was a notable exclusion of both institutions that they were part of. This supported the findings that participants felt that they were an inconvenience to both institutions and that they did not belong (Figure 10). A sense of belonging

Figure 10. Lack of institutional support and understanding – Secondary Contradiction



is important to build communities which can be more difficult to achieve in an online environment. Participants felt isolated by the online experience even though they still met synchronously every week. This was where the CL gave participants an opportunity to share experiences and to identify similarities and contradictions in the system. It allowed for the building of community and even though it was not an aim of the study to model new solutions, new solutions were witnessed. After the CL one participant started a weekly sharing of resources that they had compiled themselves in the team's space, which had never happened previously. The opportunity of the CL allowed and helped strengthen the comradery between them and they finished with a sense of:

| "... we are in this together and we will get through it".

When participants operated in the face-to-face environment the division of labour was very straightforward. You attend class and you had your class tutor. The lines became very blurred when this moved online. The education facility running this course last year would typically cater for trades and apprenticeships, so a course of this high calibre was quite new for them. As one participant observed:

| "There's a complete lack of understanding. I don't want to belittle any other class that they run, but you know, this is a professional course and external exams. We're not learning how to bake cakes. I find that massively frustrating, it's a lack of understanding from them as to

how in depth this course is, the effort that's required for it."

However, most participants did find some comfort in having the weekly synchronous class and they found it beneficial with more than half stating they would have given up without it. Passing a professional exam is no mean feat. All participants had successfully passed last year, which is a requirement to progress to this year, and with that came a sense of achievement. The sense of togetherness was also discussed during the Change Laboratory:

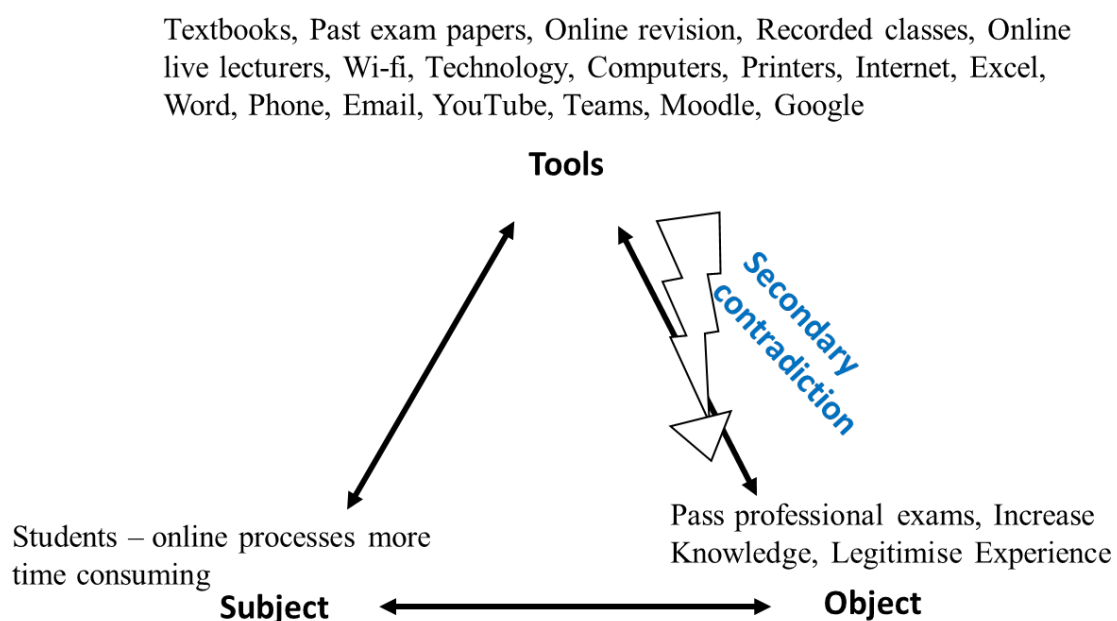
| "Don't worry we will show them all up when we pass".

This demonstrated an adopting of an *against the odds* attitude. They felt that if they did not proceed online, against their wishes, to their final year, then completing last year would have been wasted.

12.3 Disjointed delivery across two institutions

These participants only had limited access to the accounting institutions recordings of other live online classes, and they were not afforded the opportunity to attend these sessions synchronously but only to watch back the recordings. While the findings suggest participants were grateful to have the option to watch back classes, they reported an unsatisfactory learning experience when reviewing a previous live class (Figure 11).

Figure 11. Mismatched course design – secondary contradiction



From not hearing student questions, to a lack of awareness from the tutor that other students would be watching back the recording, with one participant voicing their frustration

“There is a lack of discipline in these recordings, students are allowed ask what they want, some questions are not about the course at all. The tutor talks gibberish, some of them are impossible to watch. They are a nightmare. I’ve almost stopped watching them.”

Another participant stated that these recordings were not helpful at all, and they just resorted to using the book and teaching themselves.

They were however provided with a synchronous class once a week with their tutor, who is also the researcher. One year on and this same set up, is causing a lot of stress and anxiety for participants. They feel they are neither FE/HE students nor accounting institute students. They are falling between the cracks of this mismatched union.

“We are neither one or the other, we’re not a full online class and were not a full live class. We are a bit of this and a bit of that. FE/HE does not want us, and the accounting institute does not want us”.

Assessing the new online remote activity system (Figure 8) we can see that more tools and artefacts were available to participants to assist them with their objective of passing the exams. However, the findings from this research found that providing an array of resources with no instruction on how to navigate these resources in a coherent manner, leaves students confused on how to use these best to achieve their objectives.

12.4 Lack of student autonomy to choose mode of study

The components of the activity system that dominated the findings were the relationships and tensions between the student and tools/artefacts, the student and rules particularly new imposed rules in the online setting and the student and division of labour with emphasis on course delivery between two providers, each in turn blocking their success at achieving their object – passing the exams (Figure 12).

Students enjoyed the face-to-face in person classes previously due to interaction with peers and tutors. There was a consensus that the decision to study this qualification was not taken lightly. Online options before the Covid-19 pivot were considered but were not deemed suitable. Hence

participants chose the face-to-face in person mode of study, knowing that classroom attendance was part of the commitment.

“The idea of spending two years looking at a computer screen was not for me”.

While some participants looked forward to the prospect of moving online stating it may be a more flexible, self-paced approach, other participants felt demotivated, a lack of discipline, and a general blurring of the boundaries of work/life balance with one participant stating

“In the past I done this course away from my family. I had my work life, my college life and my family life. Now it’s all just one. I work, study and have lectures at the kitchen table.

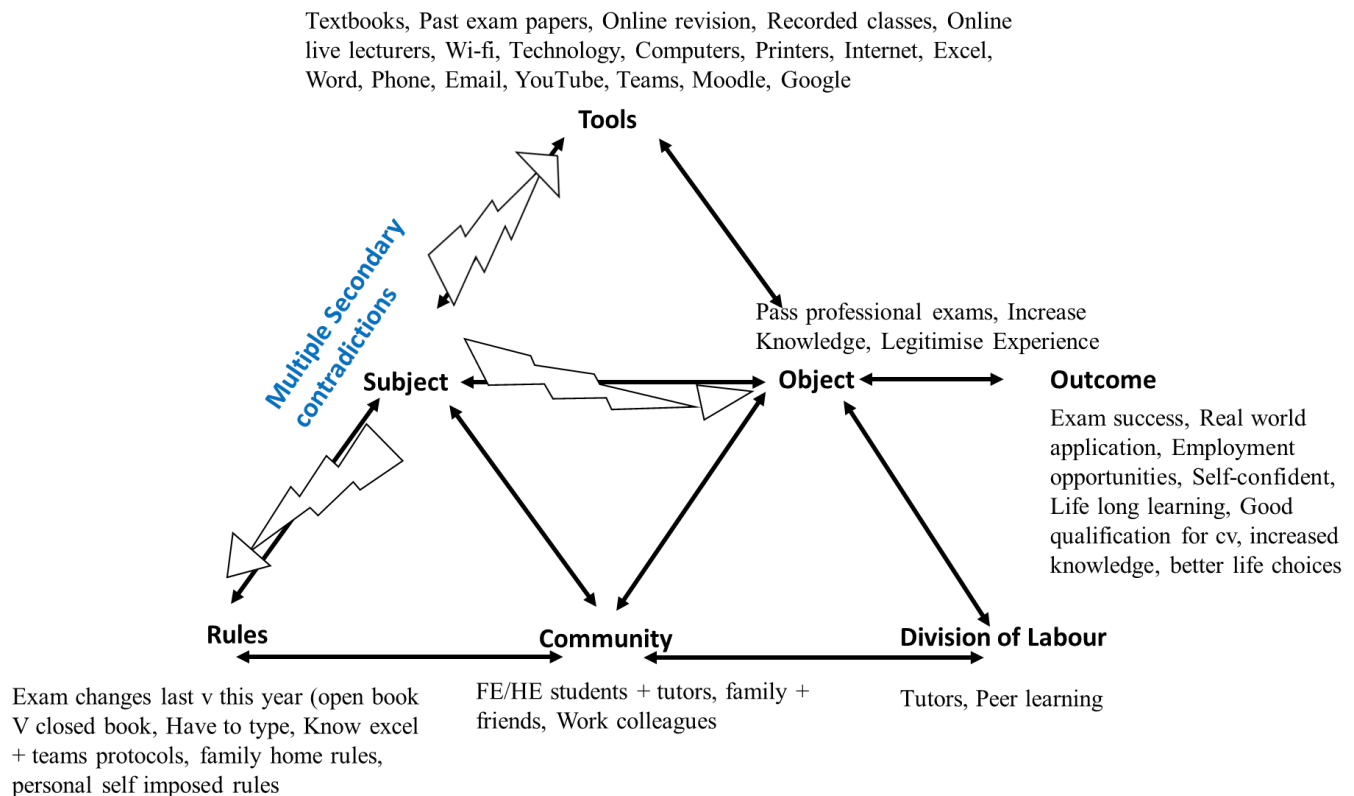
This was the first contradiction noted in the study – these students lacked the agency to decide their mode of study. In the historical system this was a choice that they weighed up heavily before commencing the course. In this new system they had to pursue this remote online option to achieve their objective. As none of the participants had any previous experience with studying online at this professional level, they were frustrated by the assumptions made by both institutions and felt it hindered their chances of achieving their object – passing the exam.

While the outcome of passing Year 1 exams and the goal of passing Year 2 exams had lots of positive attributes (see Figure 8 above- Outcomes), participants voiced that they felt like “guinea pigs” in a process that was being tested on them for our new normal that was mentioned earlier (Day et al., 2021; Pather et al., 2020). This description attributes to a common theme that was apparent in the findings. Due to lack of consultation from the students in relation to such dramatic changes from Year 1 to Year 2 they voiced being confused in relation to the reasoning behind some of the changes, so in the absence of this information formed their own opinions on the reasoning behind it.

“They had all summer to get feedback from us in between Year 1 and Year 2 but once again we heard nothing. I then assumed it was going to be the same procedures as during the emergency period which was ok as I had all summer to think about it.”

The motivation of achieving a goal, in this case the object of passing the exam, is linked to the buy-in of the goal from the students. The more they are part of the process the more likely they are to agree to changes made. However not

Figure 12. Student perceptions and lack of voice – Secondary contradictions



seeking out their voices in relation to this goal demotivated them. This is a problematic contradiction with both institutions involved implementing measures possibly to stay afloat during this time, without considering the effects of this on student experience.

To assist with answering RQ2 – How useful the participants found this process? – an open-ended questionnaire was used (Appendix C) to get insight on if the CL benefited the participants. This questionnaire was sent two weeks after the change laboratory.

13. Benefits of participation in an online synchronous CL

The replies show an overarching validation of experience that allowed participants to realise that they all shared similar issues, an overall feeling of *being let down by course providers*, and that there was a level of reassurance that they were not alone. As a result of this, in some instances, participants mentioned that the Change Laboratory helped them focus on what worked for sitting exams last year and

reminded them to implement the same practices this year. They also came to understand the benefits of sharing experiences of coping with change. This will make it easier going forward, by using shared strategies on studying between now and the exam.

One participant emailed the researcher after the exams had finished and commented on how participating in the Change Laboratory kept them motivated to complete their exams.

“Just wanted to say a huge thank you for everything you’ve done especially this year. Even being involved in your study project helped me when I was really struggling to keep going”.

13.1 Better understanding of the contradictions and tensions in the current system

The mirror data provided by the researcher/interventionist seemed to ignite the tensions of the gap between the FE/HE institution and the accounting institutions combined delivery of the course.

The “local tutor”, who is also the researcher/interventionist, was mentioned as bridging the gap somewhat to help students in navigating this new environment, but they also mention the lack of communication, both to participants and the local tutor alike from the institutions, as a serious concern.

“This is a business course. What do you do in a crisis, get out in front and communicate, this is shocking from such providers? They’re handling of the situation goes against everything we are being taught.”

13.2 Influence of Change Lab on future practices

The researcher/interventionist did not expect any change from participants given that there is only six weeks left on the course, however only 2 participants stated that the change laboratory did not influence them in any way with one stating:

“I am a mature student with my own way of studying which I would be afraid to change at this stage”. This response aligns to the process of self-conditioning which is hard to change (Sannino et al., 2016), which describes students often reluctance to change how they do things especially in times of turbulence.

However, the remainder of replies show that the CL had a positive influence on the attitudes of the students moving forward. The remainder of the participants mention feeling grateful for the opportunity of the session to realise how beneficial it is to have the support of their local tutor, and their fellow students with one participant making a clear decision that this support was going to be their focus going forward, with less regard and time spent viewing the accounting institute recordings with one participant stating

“Ok. I have ascertained now that I am not the only one feeling this way about the recorded classes. We are all feeling the same about time wasted. I have made the decision for the next couple of weeks I am not going to bother with them anymore”.

This is an example of what Vygotsky termed mediated action. He introduced this as a concept to explain the semi-otic process that enables human consciousness development through interaction with artifacts, tools and social others in an environment and result in individuals to find new meanings in their world (Yamagata-Lynch, 2010).

Another notable observation by one of the participants was that there was not enough time to bring about change,

however the researcher observed the same participant, since the CL, posting additional material into the group which they had never done previously. Whether this is directly connected to the experience of the change laboratory is unknown, but it would suggest a raised awareness, because of the process, that we all need to help each other out as much as possible in these difficult times.

14. Discussion

In answering RQ1, it was understood that the pivot would undoubtedly have some teething problems which were generally accepted due to unprecedented times, but over one year later there was a general expectation that institutions should have ironed out most of these issues.

As the speed of the transition to on online remote environment could not have been forecast or prepared for in any great detail in advance of the situation, the challenges experienced in this study by the participants, as Gelles et. al., (2020) stated earlier, was initially problematic where the readiness for collaboration between the two institutes in this study was non-existent. The knock-on effect of this disjointed delivery affected student agency, identity, lack of online community and sense of belonging, leaving them feeling isolated and unsupported. It also left little time to address technological needs initially but going into the new semester in September 2020 participants in this study were not as understanding as during the emergency period for lack of preparedness of these institutions in providing them with adequate tools and training to navigate their new online remote environment.

The findings of this study also supported the notion that students who register for face-to-face in person classes prefer not to be taught on-line (Day et al., 2021), however when they had no choice but to go online having an experience like the participants in this study, would not encourage any of them to opt for online study in the future. Institutions need to realise that offering substandard online learning experiences will not increase their student intake going forward, and unless they seek continuous feedback from students and implement improvements it will damage their intake numbers. The literature reviewed in this paper does not acknowledge the shortcomings made by institutions during this time and how those shortcomings impacted on student learning and experience. If shortcomings are not acknowledged, then they cannot be investigated or rectified to improve experiences moving forward, which will have a negative effect on institutions hoping to capitalise on this new online environment.

While a lack of communication was apparent in the emergency period, this study highlighted the frustrations of students when this issue continued into the new semester, especially in relation to communication about changes in assessment strategy. This supports Gelles findings (Gelles et al., 2020) and also highlights the difficulties institutions face as they are more concerned with implementing assessment invigilating. When the accounting institute forced students to use excel and insisted on answers being typed as opposed to written and, not giving students an option, this strategy really backfired on this institute in a negative way. After this study was conducted, on the first day of the accounting institute exams in June 2021, the invigilated exam platform crashed, and students could not start their first exam. This resulted in 100 s of students feeling very angry. This was felt by students as an ultimate failure and resulted in over 200 negative comments on social media platforms on the first day of exams. This resulted in the accounting institute reverting, after this first day, to their original setting during the emergency period, open book, Moodle submission exams. Students could now submit as they wished (written or typed) and all the complications in implementing the new rules seemed to have caused unnecessary stress and tensions for nothing. This should be a learning experience for this institution and other institutions thinking of drastic changes in exam assessment in the remote online environment. They should be carefully planned, tested, and have sound pedagogical reasoning that can be communicated to students as to why this is the most suitable method of assessment going forward.

In answering RQ2, by providing the CHAT framework at the start of the change laboratory and explaining the different components of the system allowed the participants firstly to have an understanding as to how a system operates with many different elements within that system. Secondly to allow a sense of structure as to how contradictions in one area of an activity directly or indirectly affect other components in the system. We can see this assisted participants with communicating their experiences as it can be seen that one participant used the component headings of CHAT to record their history wall reflections (Figure 6).

Participants also observed a sense of community in participating in the CL which they felt was lacking throughout the year on the course. While a sense of community and belonging has been well documented in online research, it was non-existent in the literature reviewed, for this study, during the emergency period. Perhaps this was due to the speed of the transition and building a sense of community may have been at the bottom of the list of priorities during

this time. However, as this research highlights, it is an important facet of online learning that leads to a better student experience.

15. Conclusion

By using the CHAT framework, this gave students a starting point on which to assess their historical face to face in person activity system and their current online remote activity system. It gave them an awareness of the different variables at play in a system and how they interact, connect and how tensions form, both inside and outside the system that can hinder achievement of the objectives and outcomes within an activity. The findings demonstrate that offering substandard online remote learning experiences will not promote future online learning initiatives by institutions. This study also supports previous findings from Duke University, supporting the notion that students want to return to face-to face study, especially when they have had a negative experience during the emergency period. It also gives important insights on student experience beyond the emergency period of Covid-19, that afforded a period of reflection on what has happened since in relation to their teaching and learning experiences online. The overarching themes in this study are critical of the way institutions are now operating in the new normal online space particularly in ignoring student voice in relation to decisions that directly affect student experience and institutional policies going forward. This paper shows the value of individual and collective transformative agency in student experience moving to the online environment. The researcher acknowledges the absence of the main decision makers from both institutions as a shortcoming of this study. This is something that will be considered by the researcher for inclusion in further research to enable a more robust study.

References

- Aguliera, E., & Nightengale-Lee, B. (2020). Emergency remote teaching across urban and rural contexts: perspectives on educational equity. *Information and Learning Sciences*.
- Augustsson, D. (2020). Expansive learning in a change laboratory intervention for teachers. *Journal of Educational Change*, 1-25.
- Bligh, B., & Coyle, D. (2013). Re-mediating classroom activity with a non-linear, multi-display presentation tool. *Computers & Education*, 63, 337-357.

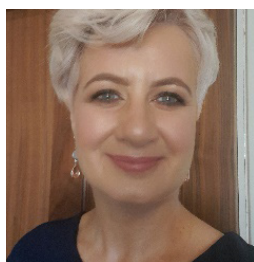
- Bligh, B., & Flood, M. (2015). The change laboratory in higher education: Research-intervention using activity theory. In *Theory and method in higher education research*: Emerald Group Publishing Limited.
- Botha, L. (2017). Changing educational traditions with the change laboratory. *Education as change*, 21(1), 73-94.
- Brannick, T., & Coghlan, D. (2007). In defense of being “native”: The case for insider academic research. *Organizational research methods*, 10(1), 59-74.
- Branquinho, C., Kelly, C., Arevalo, L. C., Santos, A., & Gaspar de Matos, M. (2020). “Hey, we also have something to say”: A qualitative study of Portuguese adolescents’ and young people’s experiences under COVID-19. *Journal of Community Psychology*, 48(8), 2740-2752.
- Day, T., Chang, I.-C., Chung, C., Doolittle, W., Housel, J., & McDaniel, P. N. (2021). The immediate impact of COVID-19 on postsecondary teaching and learning. *The Professional Geographer*, 73(1), 1-13.
- Engeström, Y. (1987). An activity-theoretical approach to developmental research. Helsinki: Orienta-Konsultit Oy.
- Engeström, Y. (2001). Expansive learning at work: Toward an activity theoretical reconceptualization. *Journal of Education and Work*, 14(1), 133-156.
- Engeström, Y., & Pyörälä, E. (2020). Using activity theory to transform medical work and learning. *Medical Teacher*, 1-7.
- Engeström, Y., & Sannino, A. (2010). Studies of expansive learning: Foundations, findings and future challenges. *Educational research review*, 5(1), 1-24.
- Engeström, Y., & Sannino, A. (2020). From mediated actions to heterogenous coalitions: four generations of activity-theoretical studies of work and learning. *Mind, Culture, and Activity*, 1-20.
- Englund, C., & Price, L. (2018). Facilitating agency: the change laboratory as an intervention for collaborative sustainable development in higher education. *International Journal for Academic Development*, 23(3), 192-205.
- Gelles, L., Lord, S., Hoople, G., Chen, D., & Mejia, J. (2020). Compassionate flexibility and self-discipline: Student adaptation to emergency remote teaching in an integrated engineering energy course during COVID-19. *Education Sciences*, 10(11), 304.
- Hamad, S., Iqbal, S., Alothri, A., Alghamadi, M., & Elhelow, M. (2020). “To teach is to learn twice” Added value of peer learning among medical students during COVID-19 Pandemic. *MedEdPublish*, 9.
- Jeong, L., Smith, Z., Longino, A., Merel, S., & McDonough, K. (2020). Virtual peer teaching during the COVID-19 pandemic. *Medical Science Educator*, 30(4), 1361-1362.
- Kontinen, T. (2004). Intervention negotiated? Production of shared object and power relations in the planning of a development co-operation project. Development Intervention. *Actor and activity perspectives*. Helsinki: University of Helsinki, 82-104.
- Kyne, S., & Thompson, C. (2020). The COVID Cohort: Student transition to university in the face of a global pandemic. *Journal of Chemical Education*, 97(9), 3381-3385.
- Morselli, D., Costa, M., & Margiotta, U. (2014). Entrepreneurship education based on the Change Laboratory. *The International Journal of Management Education*, 12(3), 333-348.
- Nerantzi, C. (2020). The use of peer instruction and flipped learning to support flexible blended learning during and after the COVID-19 Pandemic. *International Journal of Management and Applied Research*, 7(2), 184-195.
- Novikov, P. (2020). Impact of COVID-19 emergency transition to on-line learning onto the international students’ perceptions of educational process at Russian university. *Journal of Social Studies Education Research*, 11(3), 270-302.
- Ollman, B. (2003). Marx’s dialectical method is more than a mode of exposition: A critique of systematic dialectics. In *New dialectics and political economy* (pp. 173-184): Springer.
- Parker, S., Hansen, M., & Bernadowski, C. (2021). COVID-19 Campus Closures in the United States: American Student Perceptions of Forced Transition to Remote Learning. *Social Sciences*, 10(2), 62.
- Pather, N., Blyth, P., Chapman, J., Dayal, M., Flack, N., Fogg, Q., . . . Meyer, A. (2020). Forced disruption of anatomy education in Australia and New Zealand: An acute

- response to the Covid-19 pandemic. *Anatomical sciences education*, 13(3), 284-300.
- Petillion, R. J., & McNeil, W. S. (2020). Student experiences of emergency remote teaching: Impacts of instructor practice on student learning, engagement, and well-Being. *Journal of Chemical Education*, 97(9), 2486-2493.
- Ryberg, T., Davidsen, J., & Hodgson, V. (2018). Understanding nomadic collaborative learning groups. *British Journal of Educational Technology*, 49(2), 235-247.
- Sannino, A. (2020). Transformative agency as warping: How collectives accomplish change amidst uncertainty. *Pedagogy, Culture & Society*, 1-25.
- Sannino, A., Engeström, Y., & Lemos, M. (2016). Formative interventions for expansive learning and transformative agency. *Journal of the Learning Sciences*, 25(4), 599-633.
- Shin, M., & Hickey, K. (2020). Needs a little TLC: examining college students' emergency remote teaching and learning experiences during COVID-19. *Journal of Further and Higher Education*, 1-14.
- Virkkunen, J. (2006). Dilemmas in building shared transformative agency. *Activités*, 3(3-1).
- Virkkunen, J. (2013). *The Change Laboratory: A tool for collaborative development of work and education*: Springer Science & Business Media.
- Yamagata-Lynch, L. C. (2010). *Activity systems analysis methods [electronic resource]: understanding complex learning environments*: Springer.
- Youmans, M. K. (2020). Going Remote: How Teaching During a Crisis is Unique to Other Distance Learning Experiences. *Journal of Chemical Education*, 97(9), 3374-3380.
- Zheng, B., & Zhang, Y. (2020). Self-regulated learning: the effect on medical student learning outcomes in a flipped classroom environment. *BMC medical education*, 20, 1-7.

Acknowledgements

This paper draws on research undertaken as part of the Doctoral Programme in E-Research and Technology Enhanced Learning in the Department of Educational Research at Lancaster University.

The theoretical framework and methodology chosen was influenced by Geraldine's module tutor at the time, a keen activity theorist and change laboratory salesperson.



About the author

Geraldine Gorman is a professional accountant with 20+ years' experience in industry with 15 of those years also in education. She has been responsible for the implementation and delivery of many online courses since 2008 for several providers, primarily focusing in the areas of business and accounting. Geraldine's main research interests are in digital skills for students in preparation for the working world and getting student/educators voices heard in relation to policy and practice. Geraldine is a PhD student with the Department of Educational Research, Lancaster University, Lancaster, UK.

✉ Email: g.gorman@lancaster.ac.uk

ORCID: [0000-0003-3775-743X](https://orcid.org/0000-0003-3775-743X)

🐦 Twitter: [@gormangerig77](https://twitter.com/gormangerig77)

Open Access (CC BY 4.0)

© 2020 The Authors. This article is distributed under Creative Commons Attribution 4.0 International licence.



You are free to

- Share — copy and redistribute the material in any medium or format
- Adapt — remix, transform, and build upon the material for any purpose, even commercially.

Under the following terms:

- Attribution — You must give appropriate credit, provide a link to the license, and indicate if changes were made. You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.
- No additional restrictions — You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits.

The full licence conditions are available at: <https://creativecommons.org/licenses/by/4.0/>

Appendix A. Old and new instructional methods adapted from Youmans (2020)

	Instruction Pre Covid	Both Institutes - Students Sept 2020 - April 2021	
Feature	Face to Face with FE/HE	Remote Online with accounting institution	Remote Online with FE/HE
Course structure	2 tutors for 4 subjects	4 tutors for 4 subjects	1 tutor 4 x subjects
	2 nights per week	4 asynchronous recordings	1 night per week
Delivery Platform	In centre	Moodle	Teams
Content Delivery	In-class lecture	Recording of a live class	Synchronous Class
	Hands-on Inquiry	No access to tutor	Limited access to tutor
Learning Activities	Demonstrations	PowerPoint notes for recordings	Past Exam questions
	In-class problems	Past questions and answers pdfs	(Flipped approach)
	In-group work		
	Past question analysis		
High-Risk assessments	3 x class assessments	None	Mock Exam
	Mock Exam		
Low-Risk assessments	Topic questions	None	None
	Additional exam questions	None	None
Communication	Face to face weekly	No access to forums	Tutor email
	Email	No access to ATI Tutor	Teams' announcements
		Limited email	

Appendix B. Opening of the Change Laboratory session using OneNote through Microsoft Teams

Change Laboratory

Saturday, March 20, 2021
8:51 PM

The change laboratory is as method based on the theory of **expansive learning** (Engeström 1987). The outcomes are designed by participants as they work out expansive solutions to developmental contradictions in their activity system.

Focus	Problems	Solutions
Invisible systematic structure of the collective activity	2. Disclosing the systemic Causes of the visible Problems in the activity	3. Finding a way to Overcome the problems by expansively reconceptualising the idea of the activity
Immediately visible events and problems in individuals actions within the joint activity	1. Identifying the obvious (visible) problems	4. Taking new kinds of Action : implementing New instruments, rules, ways of dividing labour and collaborating

Engeströms Six Steps of Expansive Learning

1. Charting the situation - something must be done, rejecting established wisdom, commitment to change
2. Analysing the situation - how did we work in the past (history)? What are our present troubles and contradictions?
3. Creating a new model - how do we want to work next year and beyond
4. Concretising and testing the new model - what changes do we want to try now?
5. Implement the new model - putting into practice the first steps. Pushing for the next steps. Extending and enriching the model.
6. Reflecting on the process - Evaluating the current process. Teaching others what we have learnt.

Questioning

What is currently totally inadequate in the current system ?

Analysis - Look at the present way of doing things and how they were done in the past.

Why are they like this right now?

What was your experience of change before ie moving from open book exam to closed book exam.

Reflection -

Appendix C. Questionnaire on reflections of CL experience

1. What benefits (if any) did you experience from attending an online change laboratory?
2. Did the experience give you a better understanding of the critiques and tensions in the current system or a better understanding of anything else? Please explain.
3. Did your contribution to this Change Lab change your thinking or influence your approach in anyway while studying for the remainder of the course? If yes, please explain.

