The use and value of cultural historical activity theory in institutional educational technology policy

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Abstract
Institutional educational technology policies in Higher Education Institutions can help or hinder the objectives of faculty and administration staff. In many national contexts, these policies typically result from a top-down unilateral canonical decision-making process and/or retroactive heuristic models of investigation. However, research utilizing and advocating multilateral non-canonical approaches and more sociocultural models of investigation in institutional educational technology policy decision-making are novel.

This paper stems from a project which used a formative Change Laboratory intervention to affect real meaningful change in institutional educational technology policy at one university in South Korea. Participants, including Korean faculty, international faculty and administration staff participated in multilateral, non-canonical workshops over a period of 7 months to explore and redesign their own activity.

Central to this formative Change Laboratory intervention was Engeström’s Cultural Historical Activity Theory (CHAT). The study utilized CHAT as a practical lens/toolkit to expose/examine contradictions and collectively transform institutional educational technology policy-practice activity. CHAT’s activity system models helped participants identify, shape and question ‘normal’ or ‘routine’ practices in shared...
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activity. As a result, participants realized how unilateral canonical policies inhibiting research and pedagogy objectives might be questioned and changed for the better. This paper reflects on the use and value of CHAT as a more sociocultural approach to institutional educational technology policy. Rather than presenting a paper that just ‘happens’ to use activity theory, this paper discusses my reasons for using CHAT, how it was used, how I collected and analysed data, my experience of using it, and prevailing criticisms. This paper will be of particular interest to researchers who are interested in using CHAT to conduct research on topics related to technology enhanced learning.

1. Introduction

In Higher Education Institutions (HEIs) today, information and communication technology (ICT) “serves as the backbone” to many “activities, operation and functions” (Polly et al., 2020, p. 2). ICT has brought many positives to faculty, staff, and students, but it has also brought some barriers (complexity of tools, lack of sufficient training, time commitments etc.) which may be preventing HEIs “from leveraging technology in ways to support their mission, goals, and objectives” (Polly et al., 2020, p. 2). To deal with these barriers and others, there is a need for HEIs to tailor ICT and ICT policy, to proactively bring about change which considers specific contexts and the need/wants/concerns of its users.

However, institutional educational technology policy decision making is usually unilateral, canonical and top-down, and when it is not, when employees are asked to contribute ideas, decision making is commonly based on retroactive heuristic models investigating implementation, evaluation, and usability satisfaction (Doll & Torkzadeh, 1988; DeLone & McLean, 2003; Noiwan & Norcio, 2000; Nielson, 1995; Pierce, 2005; Kostaras & Xenos, 2007; Astani & Elhindi, 2008; Lee et al., 2009; Hasan, 2013, and Toit & Bothma, 2010). These retroactive approaches, using either the Technology Acceptance Model (Davis, 1986) or Innovation Diffusion Theory (Rogers, 1995), are more top-down than bottom-up, more quantitative than qualitative, and more technically laden than social. That is, the importance and use of the tool is more important than the user and the quality of their experience. These heuristic approaches to problem-solving use “a practical method or various shortcuts in order to produce solutions that may not be optimal but are sufficient given a limited timeframe or deadline”, leading to “poor decision-making based on a limited data-set” (Chen, 2021). Taking the form of prescriptive quantitative/qualitative surveys, these heuristic models may lead to change in institutional educational technology; however, the outcomes and the approach are often not inclusive, nor reflective of end-user needs and fluid contexts.

To challenge this status quo and overcome tensions in institutional educational technology policy and practice concerning research and pedagogy object-oriented activity at one university in South Korea, a multilateral non-canonical formative Change Laboratory intervention was undertaken. This intervention is a collective change effort, a “direct attempt to foster expansive learning” with people working “together to re-imagine the object of their activity”, to ascend from the “abstract to the concrete” (Bligh & Flood, 2015, p. 142). In the project, the intervention methodology offered a more appropriate toolkit, systematic steps, and a safe democratic environment for change in a HEI setting.

Central to this formative Change Laboratory intervention was Engeström’s Cultural Historical Activity Theory (CHAT). Engeström’s CHAT model provided a systematic way to explore systemic policy/practice problems in activity. This systematic way, founded on core principles of object-oriented analysis, multi-voicedness, historicity, contradictions, expansive transformation, and social context painted a very accurate picture of the sociocultural landscape being researched (St. Clair Browne, 2011). By utilizing the intervention’s principles of double stimulation, participants were able to expose/examine, and challenge tensions/contradictions found across activity systems.

This paper reflects on the use and value of CHAT in the project as a sociocultural approach to institutional educational technology policy. This paper discusses my reasons for using CHAT, how it was used, how I collected and analysed data, my experience of using it, and prevailing criticisms.

2. What is CHAT?

As a philosophy, CHAT emphasises the relationship between activity and consciousness, positing that ‘conscious learning emerges from activity (performance), not as a precursor to it” (Jonassen & Rohrer-Murphy, 1999, p. 62). As a psychology, CHAT is concerned primarily with how the personality is formed by the social situation in which the person grows up and lives”, it is an understanding that “societal entities and individual personalities mutually constitute and form one another” (Blunden, 2010, p. 171). Thus, human activity is “the fundamental building block of individual consciousness via a process of internalizing the societal” (Snowden, 2018, p. 22). As a practical lens, CHAT is “an activist and interventionist” epistemology (Sannino,
It has “long been associated with intervention-research on social practice and the developing agency of those involved” (Moffitt & Bligh, 2021, p. 6). It generates new practices and promotes change in activity through the “study of dynamic and complex sociocultural environments through a strong and sustained emphasis on the notions of objects, history, tensions and contradictions which are embedded in a sociocultural landscape” (St. Clair Browne, 2011, p. 42).

With its roots in the early German philosophy of Hegel and Kant, and later in Marx and Engels, CHAT was born out of Soviet Marxist psychology, with the psychologist Sergei Rubinstein (1889–1960) laying much of the foundation work for Lev Semyonovich Vygotsky’s (1896 – 1934) first generation of activity theory. Both Rubinstein and Vygotsky thought, like Marx, that human activity was situated, systemic and an important component in trying to approach/understand the complexity of human existence. In what he termed “dialectical-materialism” (Bligh & Flood, 2015, p. 144), Marx believed that “the relationship between the internal and external is dialectical, that one influences the other” (Van der Riet, 2010), that we, as individuals, are “constituted by our practical activity, particularly by our participation in social, cultural and historical practices. We are the products of our own activity” (Van der Riet, 2010). In a sense, “we are who we are because of the activity we engage in the world” (ibid.).

For Marx, human activity was based on a “system of social practices, inclusive of the individuals enacting them and their conditions of their existence, and he makes the material production of people’s needs the archetypal activity” (Blunden, 2011, p. 462). This allowed Marx to move beyond the ‘thought forms’ of Goethe and Hegel’s work on Gestalt theory before him, to propose that it was “not the consciousness of men that determines their existence, but their social existence that determines their consciousness” (Marx & Engels, 1987, p. 263).

### 2.1 First generation activity theory

The first generation of activity theory developed by Vygotsky in the 1920s and 1930s drew from and evolved Marx’s dialectical materialism, into the idea that individual human action is object-oriented and mediated by cultural artefacts (Figure 1).

As with Marx, when Vygotsky made “the material production of people’s needs the archetypal activity” (Marx & Engels, 1987, p. 263), the “object-orientatedness of action” becomes “the key to understanding human psyche” (Engeström, 2001, p. 134). Individual human action is motivated by an object. This object may be an individual or socially determined need. To realize this object, individuals use physical tools or signs (psychological tools) - artefacts which are socially, culturally, and historically formed.

These artefacts “through which subjects make sense of the object, mediate the subject’s relationship to the object of the activity” (Snowden, 2018, p. 43). This concept of “mediated action” (Bligh & Flood, 2015, p. 145) sees individuals as active participants making meaning of their world, while trying to realize their needs. When necessary, individuals can advance the realization of their objects/needs by modifying or creating actions that “trigger transformations” in existing artefacts, objects, and themselves (Scribner, 1997 as cited in Yamagata-Lynch, 2010, p. 16). It is the relationship between subject, artefact and object which constitutes practical human action, and gives us an insight into “who is doing what, why and how?” (Hasan & Kaslauskas, 2014, p. 9).

Vygotsky’s first generation focused solely on the individual, and was more concerned with cultural mediated action, than cultural mediated activity. In an attempt to bridge or tie the needs/objects of the individual action and the social activity, Alex Leontiev expanded on Vygotsky’s cultural mediated action, to explicate “the crucial difference between an individual action and a collective activity” (Engeström, 2005, p. 60). For Leontiev (Figure 2), “an activity is an objectively existing system of actions with a social motive, whereas actions are the finite actions of individuals directed towards their personal goal, which all, thanks to the organization of labour, contribute to the achievement of the object of the activity” (Blunden, 2010, p. 172).

This hierarchy of human activity, moving from operation to action to activity, hopefully results in the achievement of both individual and social objects. But is this as straightforward as it seems? Surely, the realization of objects is not as linear (I almost said triangular) as picking up a chisel and...
carving out a statue? What tools are available, what is the object, for whom, for when, for where, for what purpose? In reality, the realization of objects is dependent upon social, cultural, and historical contexts. No mediated operation, action or activity is a subject-artefact-object island.

2.2 Engeström’s CHAT

Engeström’s CHAT (Figure 3) attempts to give a more expansive understanding of human activity. It augments Vygotsky’s culturally mediated action and Leontiev’s culturally mediated activity in an attempt to understand everyday human activity in the real world (Kaptelinin & Nardi, 2006). He develops cultural mediated activity beyond the subject, object, mediating artefact relationship, to show that “not only do cultural artefacts mediate human activity, but so does the social context in terms of institutionalized social structures” (Prenkert, 2010, p. 643). Engeström’s CHAT considers “an entire activity (or work) system to include all of its component parts and how they interact” (Cleland & Durning 2019, p. 49).

In his CHAT model, the subject is a person or persons engaging in an object-oriented activity. This activity is mediated by artefacts (physical tools or signs (psychological tools)). The object is the individual or socially determined need/goal of the activity. The outcome is the intended or unintended long-term consequences of this realized need/goal. The activity is regulated by implicit or explicit rules, either internal or external. The community element is made up of a wider group of people who have an interest in, a connection to, and are affected by the activity. The division of labour element describes the horizontal or vertical hierarchy of roles or responsibilities people have across the activity.

Engeström’s CHAT is concerned with practical application, “empirical grounding” than “endless conceptual” exercises (Engeström, 1999a, p. 27). It is seen as a suitable framework to investigate and change social practices within an organization (Blackler 1993, Engeström 1999a, Virkkunen & Kuutti 2000, Suratmethakul & Hasan 2004), as it “can help make explicit the history and culture of groups and systems” and “examine how the component parts of a system interact” (Cleland and Durning, 2019, p. 46). CHAT is concerned with providing a “rich holistic understanding of how people collaborate, i.e., carry out purposeful collective activities, with the assistance of sophisticated tools (information systems) in the complex dynamic environments of modern organizations” (Waycott et al. 2005; Hasan 1999 as cited in Hasan and Kazlauskas, 2014, p. 12). CHAT serves “to collect manifestations of tensions as data. It is through the identification of tensions/contradictions, and their resolution, that innovation occurs within the activity of a group or a community” (Laferrière, 2018, p. 2).

The foregrounding of practical application was important for the project, as his activity system model provided a systematic way to explore systemic policy/practice problems in activity. This systematic way was founded on core principles of object-oriented analysis, multi-voicedness, historicity, contradictions, expansive transformation, and social context.

2.2.1 Object-oriented analysis

Human activity (both individual action and collective activity) is motivated, coordinated and directed by/toward objects. To understand the object, one needs to analyse the whole activity system and vice versa. Human activity is a system of actions with both an individual and social motive,
Figure 3. CHAT Model (adapted from Engeström 1987, Bligh & Flood, 2015, p. 149)

**Artefacts**
Items used by subjects; items may be more or less material and used more or less consciously.

**Subject**
Vantage-point for the model: an individual or sub-group acting with social-historical experience.

**Rules**
Collective conventions and regulations: may be more or less enforced or voluntary, and used more or less consciously.

**Community**
A wider social formation of people from whom subjects are drawn; having some perception of common identity, mutual aid, and individuals contributing to something bigger than themselves.

**Object**
Idealised aim of the activity: a vision of a future state in the objective world.

**Outcome**
Actual empirical results produced by the whole activity system.

**Division of Labour**
Organisation of people through agreement, conflict, coercion, habit: horizontal divisions by specialty, vertical divisions by authority.
both contributing to the “achievement of the object of the activity” (Blunden, 2010, p. 172). To achieve the object of their activity, subjects must make sense of the system they are in, analyse it, adapt to it, navigate it and possibly when needed push for qualitative change; change which would better facilitate the achievement of objects/objectives.

2.2.2 Multi-voicedness

An activity system has a multitude of interrelated internal and external elements, a symphony of historically engraved components working together or at times against one another to realize individual and social objectives. Some of these objects are hard to achieve, for many different reasons. To know what these many reasons are, it is imperative to cross learning boundaries - to listen to other people’s problems, perspectives, to ask why something is happening and to see how this can be best resolved through collaboration, with resulting changes being mutually beneficial for all concerned. A multi-voicedness of subjects is required, a diverse set of subjects who can speak from personal perspectives and experiences.

2.2.3 Historicity

Activity systems are not something you pull out of thin air; they have a developmental legacy. They are evolving systems, moving through developmental cycles, with each cycle building upon previous stages of development. Just like its subjects, activity systems have frames of reference, maybe even developmental baggage, and just like its subjects, this developmental baggage, whether negative or positive, constitutes part of the existing system. Any attempt to understand and evolve an activity system, should involve an in-depth exploration of past forms, so that those questioning current systems and proposing future renditions have a thorough understanding of how their current system came about, why it came about and what can be done in the future to improve upon it.

2.2.4 Contradictions

As described above, to activity theorists human activity is object-oriented. The object is a given need, and its realization is not always straightforward because sometimes tensions found in activity systems get in the way. These tensions, referred to as contradictions, are the “drivers for change” (Bligh & Flood, 2017, p. 6), and their purposeful exposure, aggravation, resolution or attempted resolution not only facilitates object attainment, it also evolves and changes the activity system (Putnam 2013). When contradictions are exposed, participants question them and attempt to resolve them. This leads to subtle or dramatic changes in object-oriented activity. Issroff and Scanlon (2002), Engeström (2001) and Putnam (2013) see contradictions, “while causing obstruction and conflict” (Kim & Park, 2020, p. 10) as opportunities for development and change. Thus, the analysis of contradictions helps researchers reimagine activity. These contradictions become “known only through a historical analysis of changes in the structure of the activity and an actual empirical analysis of their manifestations in the practitioners’ daily actions and their coordination” (Virkkunen & Newnam, 2013, p. 52). So, where can these contradictions be found? Engeström (2001) locates contradictions in 4 places across activity systems, calling them primary, secondary, tertiary, and quaternary contradictions (Figure 4).

2.2.5 Expansive transformation

Activity systems are not static, they are constantly evolving, moving through “relatively long cycles of qualitative transformations” (Engeström, 2001, p. 137). For Engeström, a full cycle of expansive transformation (as realised in the seven stages of the expansive learning cycles found in the formative Change Laboratory intervention) can be “understood as a collective journey through the zone of proximal development of the activity - the distance between the present everyday actions of the individuals and the historically new form of the societal activity that can be collectively generated as a solution to the double bind potentially embedded in the everyday actions” (Engeström, 1987, p. 174). A formative Change Laboratory realizes expansive transformation. As mentioned earlier, it is a “direct attempt to foster expansive learning” with people working “together to re-imagine the object of their activity”, to ascend from the “abstract to the concrete” (Bligh & Flood, 2015, p. 142). Figure 5 below outlines this project’s twelve Change Laboratory sessions aligned to the seven stages of Engeström’s Expansive Learning Cycle.

2.2.6 Social context

An activity system is linked to its unique social context, it is an attempt to understand a specific sociocultural environment. It needs to make sense “to all the parties concerned in their own terms” so that the actions which are “required of people as part of the project” make “sense to everyone” and everyone has “a means of understanding what others were trying to do” (Blunden, 2010:251). Therefore, the identified elements, the contradictions found, the resolutions offered, and the people affected are unique to that activity system, and while the triangular model can be used in different contexts, the outcomes may not be wholly transferable,
“a system of actions cannot be plucked from one cultural context into another” (Blunden, 2010:250). CHAT allows participants to zoom in and out of contexts (Yamagata-Lynch et al., 2015), to get a better grasp on how each policy/practice problem found in object-oriented activity is not an isolated incident, that both problems and solutions have a cause/effect relationship. Being able to witness these relationships across the activity system, helps participants see the consequential effects of their discussions/decisions – how change in one context affects others and so on.

CHAT’s activity system model and its six core principles offer a sustained collaborative heterogeneous approach to understanding people, tools, and objectives, bearing in mind the weight of historical, social, and cultural contexts. This is one reason why I used CHAT in the project, below are some more.

Figure 4. Primary, Secondary, Tertiary, and Quaternary Contradictions

Type 1: Primary Contradictions – located within elements of an activity system.
Type 2: Secondary Contradictions – located between elements as they interact within the same activity system.

Type 3: Tertiary Contradictions – between different versions (i.e., past, present, and future) of the same activity system.

Type 4: Quaternary contradictions - contradictions between different neighbouring activity systems that interact with each other.
Figure 5. Seven Stages of the Expansive Learning cycle (adapted from Engeström, 1999b, p. 384) aligning to the project’s Twelve Change Laboratory Sessions
3. My reasons for using CHAT

My epistemological stance is influenced by dialectic social constructionism, social constructivism, and interventionism. I believe that learning and development are socially situated activities, and employees or other practitioners collaboratively engaging in maintaining and sustaining their own work activity can transform place, people, policy, and practice for the better. Unfortunately, in a South Korean context, but not limited to, these “collective change efforts” (Haapasaaari et al., 2016:232) on the shop floor are seldom evidenced in organisations. Decisions are normally handed down by upper management, then pushed down upon employees by middle management (Gee, Hull, and Lankshear, 1996), with the needs of the societal, outweighing the needs of the social or the individual. This one-way-street can result in employees (depending on cultural norms) questioning their status and voice within their workplace.

In private HEIs in South Korea, canonical prescriptive policies are the norm, “most administrators seldom open communication networks to faculty members or students both in school administration and in decision-making process” (Lee, 2001:15). Both the text and discourse of policies emanate from age-old top-down structural forces, so decision making involving those outside the ‘power blocks’ is seldom encouraged (Prichard, 2000). For Korean faculty, international faculty, and low-rank administration staff in South Korean Higher Education, having a say in institutional educational technology policy and practice is uncommon, if unheard of. However, being on the receiving end of a top-down decision-making process and all that comes with this, is the norm.

In reality, organisations are messy, and institutional educational technology policy inhibiting/advancing research and pedagogy activity is a complex minefield. Policy outcomes are “contextually contingent”, there are “unanticipated consequences” and “divergence” from initial objectives is “inevitable because of the complexity of reality on the ground” (Trowler 2002, p. 5).

CHAT activity system models help interventionists comprehend the complexity of institutional educational technology policies. They enable participants to socially identify and confront for themselves the contradictions found in activity. As a sociocultural lens, CHAT helps practitioners “identify, shape and ask questions about ‘normal’ or ‘routine’ practices in object-oriented activity. The specific intention is to see how societal policies and practices across activity systems inclusive of social, material, cultural, contextual, and historical elements “might be questioned and changed for the better” (Kahlke et al., 2019:117-118). This is achieved by untangling the complexity of human activity and instigating change in object-oriented activity, by exploring and resolving contradictions within and between interwoven elements (subject, artefact, object, rules, community, and division of labour) in activity system models.

CHAT and the intervention were chosen to project the value of other voices, and other models of investigation in institutional educational technology policy decision-making. Both were chosen in this project to challenge the status quo and overcome tensions in shared work practice. Together, they allow for transformational change in activity, where people collectively “challenge the management rhetoric” (Haapasaaari et al., 2016, p. 233) and take purposeful actions to jointly change their work activity (Engeström & Virkkunen, 2007). They both promote a symbiotic consideration of components and mindfulness of social and cultural contexts (St. Clair Browne, 2011), resulting in improved decision making, policy, governance, task performance, and intrinsic/extrinsic attainment.

Both result in “organisations” being “changed, concepts developed, and participants empowered” (Bligh & Flood, 2015:19). This red thread was the core narrative woven throughout the project. In their study of 59 empirical research papers using CHAT as a theoretical framework, Bligh and Flood (2017:12-13) extracted 11 prospective reasons for the use of CHAT in higher education research. Overall, my reasons for using CHAT in the project align to all eleven prospective reasons. Table 1 below names the eleven reasons, their description, and my personal epistemology.

4. When and how were CHAT models used

As a toolkit, a formative Change Laboratory intervention realising expansive learning (Figure 5) supports multi-level analyses of past, present, and future activity systems. The intention of the analyses is to expose, aggravate, and resolve contradictions in object-oriented activity. Task designs which employ mirror data and Vygotskyan double stimulation (first and second stimulus) techniques aid and direct this process (Table 2).
Table 1. Eleven reasons for using CHAT, their description, and my personal epistemology. Adapted from Bligh and Flood (2017, p. 12-13)

<table>
<thead>
<tr>
<th>#</th>
<th>Reason</th>
<th>Description</th>
<th>Personal Beliefs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Contextual Situation</td>
<td>CHAT can locate research objects within some context or structure</td>
<td>Context should be at the forefront of explaining and using activity theory so that participants can better grasp their situation and tasks with each context being unique to each activity system.</td>
</tr>
<tr>
<td>2</td>
<td>Complexity Apprehension</td>
<td>CHAT can grasp the complexity of the researched situation</td>
<td>Organisations are messy. The CHAT framework helps practitioners comprehend the complexity of the organisation, and it provides a systematic way to untangle and analyse this complexity.</td>
</tr>
<tr>
<td>3</td>
<td>Developmental Focus</td>
<td>CHAT can highlight how practice does or might change</td>
<td>CHAT enables interventionists to trace change in/to activity systems over time. Knowledge of current and former practices can lead to future change in activity.</td>
</tr>
<tr>
<td>4</td>
<td>Epistemological Agreement</td>
<td>CHAT is compatible with author's epistemological commitments</td>
<td>CHAT is compatible with my ontological and epistemological beliefs – dialectic social constructionism, social constructivism, and interventionism.</td>
</tr>
<tr>
<td>5</td>
<td>Accumulation</td>
<td>Accumulation is a desire to contribute to the body of knowledge already conceptualized using CHAT</td>
<td>This project contributes to literature on CHAT and institutional educational technology policymaking in HE.</td>
</tr>
<tr>
<td>6</td>
<td>Comparative Advantages</td>
<td>CHAT has advantages over some alternatives</td>
<td>Numerous methodologies were considered for the project, including Participatory Action Research, Ethnographic Research, Actor Network Theory, Complex System Modelling, Technology Acceptance Model, Innovation Diffusion Theory and Design-based Research. However, these methodologies were dismissed for numerous reasons: a lack of historical analysis of activity systems, a focus on description, a pre-determined problem, a lack of focus on human agency and transformative change, and an emphasis on an end-product.</td>
</tr>
<tr>
<td>7</td>
<td>Question Bestowing</td>
<td>CHAT is useful for formulating research questions</td>
<td>CHAT enabled me to look at elements and contradictions in more depth, from an individual and collective perspective, helping me formulate questions related to collective transformative agency, institutional governance, concrete change, and the value of sociocultural models of inquiry.</td>
</tr>
<tr>
<td>8</td>
<td>Methodologically Appropriate</td>
<td>CHAT matches well the chosen methodology</td>
<td>CHAT is the theoretical toolkit to the practical toolkit of the chosen methodology – a formative Change Laboratory intervention realising expansive learning – a well suited match.</td>
</tr>
<tr>
<td>9</td>
<td>Concept calibration</td>
<td>One or more activity-theoretical concepts are intuitively relevant</td>
<td>For example, when explaining and using concepts, such as identifying, locating, and resolving contradictions = an attempt to develop, change and decrease tensions in an organization.</td>
</tr>
<tr>
<td>10</td>
<td>Acclaim</td>
<td>Activity theory is respectable and popular</td>
<td>The project claims that CHAT is a useful sociocultural change inquiry model.</td>
</tr>
<tr>
<td>11</td>
<td>Investigate the theory</td>
<td>A desire to examine how useful activity theory is for investigating the research object</td>
<td>One reason was to show how useful CHAT models are, especially in relation to existing top-down unilateral canonical decision-making process and/or heuristic models of investigation.</td>
</tr>
</tbody>
</table>
Table 2. Mirror-data & double stimulation tasks: Adapted from Bligh & Flood (2015, p. 157) and Moffitt & Bligh (2021, p. 10)

| Mirror-data: materials used to represent practice-problems and contradictory situations to participants |
| First stimulus: the task specification - questions and problem statements participants are asked to focus on |
| Second stimulus: the analytical tools or methods to be used for addressing the first-stimulus task |

The principle of double stimulation was key to building “practitioner’s will to transform their activity system” (Virkkunen 2006 in Morselli, 2019, p. 48). Sannino (2011, p. 584) sees double stimulation as “the mechanism with which human beings can intentionally break out of a conflicting situation and change their circumstances or solve difficult problems.” In practical terms, within a given task, mirror data is provided to give participants some background knowledge, and the first stimuli are usually questions, representations (provided by the researcher-interventionist) of “important problems in work practices that the participants are confronted with” (Morselli, 2019, p. 47).

Mediating artefacts (Vygotsky, 1978), conceptual tools such as activity system models (Engeström, 2015) are used as second stimuli (provided by researcher-interventionists and possibly participants) to help participants analyse and overcome the problems represented in the first stimuli. Double stimulation provides “support for decision-making” (Moffitt & Bligh, 2021, p. 8). By employing task-designs based on double stimulation, participants collectively identified and attempted to transform systemic policy and practice problems in their shared work practice. This “mediated action” (Bligh & Flood, 2015, p. 145), the volition of the group to challenge the status quo and collaboratively find new models and practices to overcome contradictions and transform “artefacts, tools, and people in their environment” (Scriber, 1997 as cited in Yamagata-Lynch, 2010, p. 16) is seen as “collective transformative agency” (Morselli, 2019, p. 48). This collective transformative agency empowered employees and produced more relational, democratic, practical, and meaningful institutional educational technology policies reflective of authentic realities faced by faculty and administration.

In this project, CHAT activity system models were used as second stimuli / mirror data across sessions 3 - 8 (actual empirical analysis, historical analysis, and future modelling). Table 3 below is a record of the main double-stimulation tasks carried out across the intervention. Session 3-8 are highlighted as these are where CHAT models were primarily used by participants to expose/examine contradictions, and collectively transform activity.

As an example of when and how CHAT models were used, I will give a short overview of Sessions 3-5. The goal of Sessions 3 to 5 was to go deeper into the problems found in session two, using Activity System models to position the identified problems and investigate their cause/effect across the systems. The expansive learning intention of these sessions was for participants to collectively explore these existing problems in greater depth from varying perspectives (with a certain degree of empathy), and in doing so, this new knowledge would assist in their later thinking about re-framing and reforming shared work practice for all involved.

With all three units of analyses, Research, Pedagogy and Administration activity (with differing objects), participants used the listed problems from session two as mirror data. Both Tasks 1 and Tasks 2 are repeated for each unit of analyses. In Task 1, for the first stimulus, participants were asked: Where are the identified problems located, and what are their cause/effect across the systems? To help participants think this out, as the second stimulus, they were given markers and large sheets of white paper with blank Activity System models drawn on them, to label elements and identify primary and secondary contradictions.

In Task 2, participants were asked: Is there anything you want to further discuss/ add/challenge to the models? To help participants respond to this first stimulus, the mirror data (the listed problems from session two & the completed Activity System models) were put on a whiteboard, with participants using board markers and all the models (sheets of paper) as a second stimulus to discuss/add/challenge their findings.
Table 3. Session 1-12: expansive learning stages, tasks, stimuli and mirror-data

<table>
<thead>
<tr>
<th>Session</th>
<th>Expansive Learning Stage</th>
<th>Task</th>
<th>First-stimuli</th>
<th>Second-stimuli</th>
<th>Mirror-data</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Questioning</td>
<td>1</td>
<td>What online services for Research, Pedagogy, Administration, and Information are in need of change?</td>
<td>Feedback from pre-intervention surveys</td>
<td>University online services supporting Research, Pedagogy, Administration, and Information (open webpages)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>What could we achieve in 7 weeks?</td>
<td>The expansive learning cycle and a blank activity system model</td>
<td>University online services supporting Research, Pedagogy, Administration, and Information (open webpages)</td>
</tr>
<tr>
<td>2</td>
<td>Actual Empirical Analysis</td>
<td>1</td>
<td>What problems exist in current online support dealing with “Research”, Pedagogy” and “Administration”?</td>
<td>Board markers and large sheets of paper to discuss and list ‘what’ positives and problems they (from their individual perspective) experience with current online policy and practice regarding “Research”, “Pedagogy” and “Administration”</td>
<td>Visuals of the online tools facilitating “Research”, “Pedagogy” and “Administration” activity.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>Is there anything you want to further discuss/ add/challenge to the lists?</td>
<td>Board markers and large sheets of paper on whiteboard to discuss/ add/challenge the lists.</td>
<td>Visuals of positive/negative lists</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>What unit/s of analysis/analyses would you like to focus on?</td>
<td>Large sheets of paper on whiteboard to narrow down the focus of the project.</td>
<td>Visuals of positive/negative lists and Visuals of the online tools facilitating “Research”, “Pedagogy” and “Administration” activity.</td>
</tr>
<tr>
<td>3-5</td>
<td>Actual Empirical Analysis</td>
<td>1</td>
<td>Where are the identified problems located, and what are their cause/effect across the systems?</td>
<td>Large sheets of paper with Activity System Models drawn on them</td>
<td>The listed problems from session two &amp; blank activity system sheets</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>Is there anything you want to further discuss/ add/challenge to the models?</td>
<td>Board markers and all models (sheets of paper) on the whiteboard to discuss/add/challenge the information</td>
<td>The listed problems from session two &amp; completed models</td>
</tr>
</tbody>
</table>
Table 3. (cont.) Session 1-12: expansive learning stages, tasks, stimuli and mirror-data

<table>
<thead>
<tr>
<th>Session</th>
<th>Expansive Learning Stage</th>
<th>Task</th>
<th>First-stimuli</th>
<th>Second-stimuli</th>
<th>Mirror-data</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Historical Analysis</td>
<td>1</td>
<td>How did we work in the past?</td>
<td>Map historical timeline changes, identify elements and explore key contradictions between past and present Research and Pedagogy systems</td>
<td>The listed problems from session 2, Pedagogy/Research activity system sheets, the 25 suggested changes to Pedagogy and Research policy, and past/present visuals of systems</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>What changes happened?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>When did the changes happen?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Why did the changes happen?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>How did these changes affect present systems?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Future Modelling</td>
<td>1</td>
<td>What effect would the future suggested changes have on people, policy, place, and practice, as well as other activity systems?</td>
<td>Group rationale, Perceived University Resistance, Likelihood of Acceptance</td>
<td>Previous Activity models, Past/Present timelines, Ranked proposed changes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Is there anything you want to further discuss/ add/challenge to the lists?</td>
<td>Board markers and all sheets of paper on the whiteboard to discuss/ add/challenge the lists</td>
<td>Previous Activity models, Past/Present timelines, Ranked proposed changes, the work on rational, resistance and acceptance</td>
</tr>
<tr>
<td>8</td>
<td>Future Modelling</td>
<td>1</td>
<td>What do we need/want the new tool (Research Website) to do?</td>
<td>A whiteboard and board markers</td>
<td>Previous Activity models, the university’s CMS system, examples of research websites from seven Korean universities and one UK university, their ranked list of 13 proposed changes to Research activity.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Developing and Examining New Activity</td>
<td>1</td>
<td>What ideas concerning function, content, design and delivery are important for the new “Research” homepage and International Faculty Portal?</td>
<td>Numerous renderings of the tools</td>
<td>Session 8 whiteboard work, list of 25 proposed changes, numerous renderings of the tools</td>
</tr>
</tbody>
</table>
## Table 3. (cont.) Session 1-12: expansive learning stages, tasks, stimuli and mirror-data

<table>
<thead>
<tr>
<th>Session</th>
<th>Expansive Learning Stage</th>
<th>Task</th>
<th>First-stimuli</th>
<th>Second-stimuli</th>
<th>Mirror-data</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Implementing &amp; Consolidating New Activity</td>
<td>1</td>
<td>How can we bring the new tools to the university?</td>
<td>The Ideas/Suggestion Space, Office &amp; Contact Information across campus</td>
<td>The written set of 12 Pedagogy proposed changes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Who can we bring them to?</td>
<td></td>
<td>The written set of 13 Research proposed changes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>In what format should we bring these new tools?</td>
<td></td>
<td>The new Research Website in English</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The written set of 13 Research proposed changes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>What ideas/questions/themes are needed on the survey for the pilot run?</td>
<td>Pre-Intervention Survey &amp; the survey tool (Qualtrics)</td>
<td>The new International Faculty Portal</td>
</tr>
<tr>
<td>11</td>
<td>Reflecting on the Intervention</td>
<td>1</td>
<td>Can we/you identify factors which supported or restricted expansive learning?</td>
<td>8 Individual Reflection Questions and Feedback from 4 Korean faculty (individual interviews)</td>
<td>A table of all completed sessions and the expansive learning cycle</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>How have you changed your thinking about the new work activity?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Thinking about: Cycle of expansive learning</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Models developed through transformative agency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Reflecting on the Intervention</td>
<td>1</td>
<td>8 Individual Reflection Questions</td>
<td>The written set of 12 Pedagogy proposed changes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The written set of 13 Research proposed changes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The new Research Website in English</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The new International Faculty Portal</td>
<td></td>
</tr>
</tbody>
</table>
Table 4. Session 3-5: Tasks, stimuli, and mirror-data

<table>
<thead>
<tr>
<th>Session</th>
<th>Task</th>
<th>First-stimuli</th>
<th>Second-stimuli</th>
<th>Mirror-data</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-5</td>
<td>1</td>
<td>Where are the identified problems located, and what are their cause/effect across the systems?</td>
<td>Large sheets of paper with Activity System Models drawn on them</td>
<td>The listed problems from session two &amp; blank activity system sheets</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Is there anything you want to further discuss/add/challenge to the models?</td>
<td>Board markers and all models (sheets of paper) on the whiteboard to discuss/add/challenge the information</td>
<td>The listed problems from session two &amp; completed models</td>
</tr>
</tbody>
</table>

As an example of what developed in Session 3 and 4, when questioning current Research activity (see Figure 6.), participants labelled the various elements of the model and spent a long time looking at primary contradictions found within the Rules element (university rules - limits on where to publish, deadlines, grant restrictions, lack of financial support for conferences, points system, lack of paid journal subscriptions, timing of research credits and government regulations - journal database centralization). Participants’ analysis highlighted that these primary contradictions within the rules element resulted in secondary contradictions between rules/subjects and rules/object/objectives (no access to recent research for Korean faculty and international faculty, lack of knowledge on publishing, points, and internal grant information for international faculty).

In addition, participants discovered that the lack of skilled human resources in the Research office, a primary contradiction found within the Division of Labour element, was a significant obstacle affecting staff in the research office, in particular the one person responsible for internal grant applications and all communications with international faculty. The lack of skilled staff is resulting in secondary contradictions between division of labour/subject (no translations being done or emails in English being sent out to international faculty re grants etc., tensions being felt between international faculty and administration staff) and division of labour/object (slow internal grant process for all subjects).

Within the Artefacts element, participants noted that the lack of system integration was causing secondary contradictions - duplication of tasks, redundancy, and confusion for all subjects. In addition, the artefacts were not seen to be promoting community, resulting in secondary contradictions of disconnect between artefacts/subjects and artefacts/community. With the primary language of the artefacts being Korean, there is added confusion between artefacts/subjects for international faculty.

As some participants were absent from sessions 3/4, findings were typed up and sent out via google docs to all participants with the intention of further (more inclusive) input. Figure 7 reflects the updated Post-Sessional Present Research Activity System Model considering perspectives from all participants.

With the aid of the intervention’s double stimulation principle, participants were able to voice their concerns (mostly criticisms) about institutional educational technology policy in the context of research, pedagogy, and administration activity on campus. Interestingly, the elements of rules, artefacts and division of labour drew most of the participant’s attention, a common behaviour found across all the units of analyses. Session 3-5 saw participants sharing individual and collective concerns and being contemplative and empathetic of other viewpoints, something which in the context of this study has not happened before. The sessions also helped participants to begin thinking about change, not just as an abstract idea, but as a concrete endeavour.

This brief example shows the value of task design and double stimulation in unearthing primary contradictions, how participants were encouraged to recognise and aggravate contradictions in the activity examined; providing people with the recognition of the necessity for change, for enacting and sustaining change as further contradictions are uncovered. The contradictions found were drivers of agentic change and were vital for the sustenance and development of empowering participants and their activity. This process was not as simple as identifying contradictions and moving on; the developmental potential of contradictions in activity, the local manifestations of contradictions for participants, and the impetus for change were a direct result of lengthy
Figure 6. In-session present research activity system model
Figure 7. Post-sessional present research activity system model

- **Present Model: Research**
  - Elements =
  - Primary Contradictions =
  - Secondary Contradictions = writing between elements

- **Artefact (Tool)**
  - Edward System
  - Groupware
  - Library
  - Research Homepage

- **Subject**
  - Korean Faculty
  - International Faculty
  - Administration Staff

- **Object**
  - Published Work
  - Rehiring
  - Promotion
  - Conferences / Presentations

- **Outcome**
  - No integration of systems
  - Limited interactive forms
  - Clunky
  - Does not promote community
  - Language is primarily Korean

- **Rules**
  - University Rules
  - Limits on where to publish
  - Deadlines
  - Problems with Grant information/limits
  - Lack of financial support (conferences)
  - Unclear points system
  - Lack of journals – paid subscription
  - Timing of research credits

- **Community**
  - Researchers
  - University
  - Journal
  - Academia
  - Employers (Present/Future)

- **Division of Labor**
  - horizontal hierarchy – lack of English speaking staff / staff rotation / more work
  - vertical hierarchy – final decision by the president

- **Research Office**
negotiation, compromise, conflict, and complex social/historical/cultural and political processes, traits which the project espoused. Indeed, policy decision-making should be the result of broad “negotiation, compromise and conflict than of rational decisions and technical solutions, of complex social and political processes than careful planning and the incremental realization of coherent strategy” (Trowler, 2002, p. 5).

5. How I collected and analysed CHAT data

One value of the activity system models is that participants write on them – they identify the elements, map contradictions, so if everything went the way you planned (and it rarely does), you will have past, present and future models with plenty of written data to analyse. Of course, these models are not ‘all’ the data, but they are a written testimony of individual and collective transformative agency. In the project, data from the actual-empirical, historical, and future modelling actions of the intervention were specifically coded as this is where contradictions inhibiting object-oriented activity were brought to light, and changes advancing object-oriented activity were suggested. These chosen intervention actions were central to research questions of the project because they illuminated the individual and collective transformative agency of participants as they explored and re-designed their own activity.

I chose a latent thematic analysis approach to the analysis of data sets from the empirical and historical actions (sessions 2-6) and the future modelling actions (session 7 & 8) of the research intervention. This approach, also undertaken by Hasted (2019), is somewhat unconventional, as data is coded in a way that is different from how other Change laboratory projects have generally been coded (St. Clair Browne, 2011; Morselli, 2014; Snowden 2018; and Moffitt, 2019 etc.).

This approach was taken for two reasons. First, a latent thematic approach aligns to my epistemological beliefs, in that it “seeks to theorize the sociocultural contexts, and structural conditions, that enable the individual accounts that are provided” (Braun and Clarke, 2006, p. 85), both reflecting reality and unpicking or unravelling “the surface of ‘reality’” (Braun and Clarke, 2006, p. 81). Second, the approach not only identifies, analyses and reports patterns within the data, it also allows for interpretation of various aspects of the research topic, allowing the analyst to be both a cultural member and cultural commentator (Braun and Clarke, 2006), something which reflects the nature of the research and my position in the research project - as both an insider-researcher, and research-interventionist.

By employing latent thematic analysis, I identified main themes and codes (contradictions & suggested changes) in specific areas of investigation (areas of interest discussed/highlighted by participants) concerning research and pedagogy activity, highlighting what areas of investigation were important for participants, what contradictions were found/what changes were suggested, what themes these contradictions & suggestions represent, who the contradictions affected, how they came to be, and to what extent participants saw these contradictions/suggested changes inhibiting/advancing the realization of objectives. This approach allowed for interpretation of various aspects of the research topic, allowing myself as the analyst to be both a cultural member and cultural commentator. The analysis tried to be inductive in nature, allowing for the data to speak for itself, but as rightly pointed out by Braun and Clarke, “researchers cannot free themselves of their theoretical and epistemological commitments, and data are not coded in an epistemological vacuum” (2006, p. 84). With this in mind, I avoided bringing my own preconceptions of the analysis to the table, while at the same time ensuring that my voice was evident in the analysis of the data.

Latent thematic analysis analyses, reports, describes and interprets a rich set of data. It can be achieved through a six-stage analysis procedure moving from data familiarization, initial coding, initial themes, reviewing themes, defining, and naming themes to producing a report (Table 5).

In general, a latent thematic approach allowed me to move from a larger data corpus to data sets, where codes (contradictions) were analysed, and themes gleaned. These themes, reviewed, defined, and named, “capture something important about the data in relation to the research question, and represent some level of patterned response or meaning within the data set” (Braun and Clarke, 2006:82). To help with the analytic claims, the questions in Table 6 were considered during the thematic analysis.

The analysis moved beyond surface level findings, to focus on latent levels, moving beyond the semantic content of the data to “identify or examine the underlying ideas, assumptions, and conceptualizations - and ideologies - that are theorized as shaping or informing the semantic content of the data (Braun and Clarke, 2006, p. 84). As such, data is analysed at both semantic and latent levels, with the latter level allowing for a more in-depth and insightful story. As a sample from the actual-empirical analysis of research
Table 5. Phases of thematic analysis (taken from Braun and Clarke (2006, p. 87))

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description of the process</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Familiarizing yourself with your data</td>
<td>Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.</td>
</tr>
<tr>
<td>2. Generating initial codes</td>
<td>Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.</td>
</tr>
<tr>
<td>3. Searching for themes</td>
<td>Collating codes into potential themes, gathering all data relevant to each potential theme.</td>
</tr>
<tr>
<td>4. Reviewing themes</td>
<td>Checking if the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic ‘map’ of the analysis.</td>
</tr>
<tr>
<td>5. Defining and naming themes</td>
<td>Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme.</td>
</tr>
<tr>
<td>6. Producing the report</td>
<td>The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.</td>
</tr>
</tbody>
</table>

Table 6. Taken from Braun and Clarke (2006, p. 94)

What does this theme mean?  
What are the assumptions underpinning it?  
What are the implications of this theme?  
What conditions are likely to have given rise to it?  
Why do people talk about this thing in this particular way (as opposed to other ways)?  
What is the overall story the different themes reveal about the topic?

artefacts, codes such as lack of integration / complex and clunky / limited interactive form were assigned. Following this, the list of codes and their associated transcriptions were looked at in more detail to consider themes. Themes such as Complexity, Exclusion, Impotence, Obfuscation, etc., were selected based on two things: keyness and prevalence. The former related to the importance of the codes, and the latter to how often the codes were articulated (individual occurrences) across the sessions.

A subsequent research exercise involved the production of initial thematic charts (Figure 8), developed thematic charts (Figure 9), and final semantic data thematic charts (Figure 10). Table 7 shows the relationships between areas of investigation, themes, contradictions between elements of activity, and the affected groups. The tabulated data summarises how participants were able to enact practical changes, negotiate the acceptability and consequences of proposals, and collaboratively confront top-down institutional educational technology policy decision-making. They made and sustained qualitatively meaningful change.

6. My experience of using CHAT

I would agree that CHAT’s “dense terminology” is “unforgiving on newcomers” (Bligh & Moffitt, 2021). This is true for both researcher and intervention participant. An issue with the unforgiving dense terminology of CHAT is that it tends to preclude a more philosophical/psychological
Figure 8. Empirical analysis of research activity – initial thematic chart

Present Research Activity – Initial thematic map

- Artefact issues
  - complex processes/procedures
  - internal grant applications
  - lack of integration
  - limited interactive forms
  - no collaboration boards

- Money
  - Financial support for conferences

- Timing
  - Research credits from publishing

- Language & Information
  - emails in Korean
  - library, research office
  - internal/external grants, grant management
  - unclear information
  - points system, grant restrictions

- People
  - Lack of people (who speak English) in Research Office
  - hierarchy issues
  - Vertical – one decision maker
  - horizontal – one initial decision maker

- No promotion of community

- Access
  - journal databases
  - national rules restrictions, centralization, tier system
Figure 9. Empirical analysis of research activity – developed thematic chart

Present Research Activity – Developed thematic map/chart

- Research Artefacts
  - lack of integration
  - limited interactive forms
  - complex and clunky
  - surface level English

- Grants
  - no information online in English regarding internal/external grants
  - emails on grants only in Korean
  - complex grant application/management procedures/procedures

- Journal Access
  - database centralization – limited/complicated access
  - emails only in Korean (from library)

- People
  - vertical and horizontal hierarchy issues
  - no promotion of community
  - lack of people (who speak English) in Research Office

- Publishing
  - unclear points system

Figure 10. Empirical analysis of research activity – final semantic data thematic chart

### Areas of Investigation

<table>
<thead>
<tr>
<th>Areas of Investigation</th>
<th>Complexity</th>
<th>Exclusion</th>
<th>Division</th>
<th>Disconnect</th>
<th>Obfuscation</th>
<th>Impotence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Artefacts</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grants</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Journal Access</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human Resources/Hierarchy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Publishing/Points</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Main Themes

- (Inhibiting) Research Objectives
  - Published Work
  - Rehiring
  - Promotion
  - Conferences/Presentations
### Figure 11. Empirical analysis of research activity – final latent data thematic chart

<table>
<thead>
<tr>
<th>Areas of Investigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Artefacts (Edward, Groupware, Library, Research Homepage)</td>
</tr>
<tr>
<td>Grants</td>
</tr>
<tr>
<td>Journal Access</td>
</tr>
<tr>
<td>Human Resources/Hierarchy</td>
</tr>
<tr>
<td>Community</td>
</tr>
<tr>
<td>Publishing/Points</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Main Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complexity, Exclusion, Division, Disconnect, Obfuscation, and Impotence.</td>
</tr>
<tr>
<td>Complex and clunky (Edward, Groupware, Library, Research Homepage)</td>
</tr>
<tr>
<td>Limited interactive forms</td>
</tr>
<tr>
<td>Complexity, Exclusion, Division, Obfuscation Impotence</td>
</tr>
<tr>
<td>Database centralization - limited/complicated access</td>
</tr>
<tr>
<td>Impotence</td>
</tr>
<tr>
<td>Vertical hierarchy issues – final decision by president</td>
</tr>
<tr>
<td>Horizontal hierarchy issues - lack of people (who speak English) in research office</td>
</tr>
<tr>
<td>Impotence</td>
</tr>
<tr>
<td>Obfuscation Impotence</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Codes (Contradictions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>lack of integration</td>
</tr>
<tr>
<td>complex and clunky (Edward, Groupware, Library, Research Homepage)</td>
</tr>
<tr>
<td>Limited interactive forms</td>
</tr>
<tr>
<td>no information online in English regarding grant type/application/management</td>
</tr>
<tr>
<td>emails on grants only in Korean</td>
</tr>
<tr>
<td>complex grant application/management processes/procedures</td>
</tr>
<tr>
<td>Vertical hierarchy issues – final decision by president</td>
</tr>
<tr>
<td>Horizontal hierarchy issues - lack of people (who speak English) in research office</td>
</tr>
<tr>
<td>Obfuscation Impotence</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Element (location of sub-theme)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A = Artefact</td>
</tr>
<tr>
<td>S = Subject</td>
</tr>
<tr>
<td>R = Rules</td>
</tr>
<tr>
<td>C = Community</td>
</tr>
<tr>
<td>DOL = Division of Labour</td>
</tr>
<tr>
<td>O = Object</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Accentuated Tensions between elements (+ sign denotes quaternary contradictions: tensions between neighboring systems)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KF, IF, AS</td>
</tr>
<tr>
<td>IF</td>
</tr>
<tr>
<td>IF</td>
</tr>
<tr>
<td>KF, IF</td>
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<td>KF, IF, AS</td>
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<table>
<thead>
<tr>
<th>Affected Group/s</th>
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<tbody>
<tr>
<td>KF = Korean Faculty</td>
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<td>IF = International Faculty</td>
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<tr>
<td>AS = Administration Staff</td>
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<tr>
<th>Contradiction</th>
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<tbody>
<tr>
<td>1 = Primary</td>
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<tr>
<td>2 = Secondary</td>
</tr>
<tr>
<td>3 = Tertiary</td>
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<td>4 = Quaternary</td>
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discussion of the issue. From my experience of using CHAT, intervention participants used it more as a practical lens for developmental change in complex social contexts. They quickly dispensed with the philosophical/psychological and got down to brass tacks. Whether one sees this as a positive or negative is open for debate. This more practical application was found to be revealing, relevant, and relational. Both I and the participants found these characteristics to be far more favourable for policymaking than unilateral canonical decision making or retroactive heuristic models of investigation.

CHAT made use of the existing skills and knowledge of participants to reveal genuine problems people faced in institutional educational technology policy concerning research and pedagogy object-oriented activity. The initial engagement of labelling elements and locating contradictions in present activity led people to realise not only the complexity of their context and the issues at hand, but that each decision made resulted in intended or unintended repercussions/ripples across the activity system/s. By exploring past activity, CHAT allowed participants to trace activity breadcrumbs across space and time, revealing historic positives, negatives, and no change in activity. By modelling future activity, participants were able to surmise/realise practical changes and consider reasons for their acceptance/non acceptance and the consequences of such.

The intricate problem-solving mechanism of CHAT systematically and collaboratively untangled the complex intertwined narratives of artefacts, objects, subjects, and their social, historical, and cultural contexts, resulting in concrete nuanced institutional educational technology policies reflective of real issues concerning Korean faculty, international faculty, and administration staff. The outcomes of CHAT were relevant, practical, and directly applicable to participants and their social context. One of the problems with top-down institutional educational technology policy decision-making is that the resulting rational-purpose policies bear little relation to the day-to-day realities encountered by faculty and staff. As a sociocultural model of investigation, CHAT is relevant. The problems revealed, the social contexts described, and the solutions offered are relevant and meaningful for participants.

CHAT is relational. Intervention participants were able to see how elements, contradictions, and systems were related, and that change to one caused ripples across activity. CHAT enabled participants to relate to each other, to see each other’s problems and to work together to develop solutions. CHAT outcomes were related to upper management, with both the process and outcomes building ties (Stensaker et al., 2006) between upper management, faculty, and administration.

7. Criticisms of CHAT

CHAT is “often valued for its ability to grasp the dynamics of complex social situations and place phenomena in context” (Bligh & Moffitt, 2021). It is useful for “technology enhanced learning researchers”, as it “foregrounds the role of ‘technologies’ as being central to everything that humans do” (Bligh & Moffitt, 2021). However, CHAT does have its critics (Bakhurst (2009), de Souza (2008), Wheelahan (2004), Minnis & Steiner (2001) etc. In this section, I would like to briefly present, discuss and challenge two criticisms of CHAT: western modelling and ontology/philosophy traditions, and over-socialization.

In his paper “Reflections on Activity Theory” David Bakhurst (2009), discusses the dichotomy between two strands of activity theory: the philosophy and psychology bound strand of its early Russian founders and the modern western strand of methods or models to analyse activity systems. While Bakhurst is supportive of Engeström’s CHAT and its attempt at analysing complex activity systems, he, as a philosopher laments the ever-increasing gap between its philosophical origins and its modern-day inception. CHAT has become a practical tool to map out activity, an “empirical method for modelling activity systems” (Bakhurst, 2009, p. 197), rather than an attempt to explain “our place in the world, the nature of consciousness, or personality” (Bakhurst, 2009, p. 202).

Throughout the project, I found myself questioning practical application versus ontology. While I do agree that in the project, practical change was foregrounded, and the unforgiving terminology of CHAT precluded a more philosophical/psychological discussion on issues, CHAT still carried with it the “practical ethos” (Bakhurst, 2009, p. 209) of its original philosophical and ontological traditions, especially Marx’s belief in dialectical-materialism. Participants were very much aware of the dialectical relationship between the internal and the external, the affect the societal had on their individual and collective consciousness and vice versa.

In addition, I would argue that the more practical application of CHAT with its “activist and interventionist history” (Sannino, 2011, p. 580) is a direct attempt by the individual or the social (the group) to affect change in societal (organisational) policy, practice, and consciousness. CHAT is and
The use and value of cultural historical activity theory in institutional educational technology policy

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has always been practical, philosophical, and psychological in that sense. While the gap to some may be increasing, I believe that the more practical strand of CHAT is still, in ethos, tethered to its traditions.

A common criticism raised about CHAT is its propensity for over-socialisation. In CHAT, activity is seen as collective sustained human effort with a social object/motive. On the surface, this seems reasonable, but there are two problems that have arisen in the literature on CHAT that I will look at: individual identity and individual agency.

In this project, individual participants crossed professional, cultural, and historic boundaries to collaborate and collectively change/develop object-oriented activity. Multi-voicedness is a core principle of CHAT, people with different perspectives and different experiences (professional, cultural, historical etc.) work together to change activity for the better. However, the problem with CHAT is that the identities behind these voices are rarely explored. For Billett (2006:67), “an individual's ontogenies and ontogenetic development are unique, any one person's prior experience is not and cannot be the same as others as it is individually negotiated through a lifetime of interactions with the social world”. There is a concern that we are negating the individual's unique identity and personal work history in this collective human effort, “though the social context may be similar for all members of a community, the positioning of each individual within it is distinctive” (Larkin, 2014).

Blunden goes further stating that CHAT “can and must shed light on identity-formation, interpersonal relationships such as solidarity, loyalty; friendship, ethical commitment, respect for law, pursuit of science, political affiliation, religious identity, ability to cooperate with others, the acquisition of cultural competences and so on” (Blunden, 2010:227). A relational approach to interplay between participants may add to the dialectical ontology of CHAT. These prerequisites would not only complement the collaborative process of CHAT, allowing the researcher-interventionist and practitioners to better know each other, they would also allow for insights into both collective and individual development. However, the project did not focus on individual identity, and while the relational approach may have helped facilitate the collaboration process of the intervention, collaboration itself was not under investigation.

Regarding individual agency, further criticism can be readily found in the literature on CHAT, describing the consideration of solely collectives at the subject level (Larkin, 2014; Daniels, 2008; Billett, 2003, 2006; Wheelahan, 2004; Valsiner & Van Der Meer, 2000). The collective social object/motive outweighs the individual social object/motive. Larkin (2014) argues that to “understand my individual experience of perturbing practices within the Activity Systems I have depicted, an accounting of my active agency and also the influence of particular workplace affordances (Billett, 2006) is critical.” This is reflected again in the work of Wheelahan when she argues that the individual is not merely a social construction, “society's gift”, individuals are “relatively autonomous of the activity systems” and if this is not seen, then “we privilege learning in the activity system, and conflate the learning needs of individuals with the skill needs of their organisation or enterprise” (Wheelahan, 2004:7).

In this project, the participants characterized the subjects, and their active agency and personal work histories were able to be voiced. Other subjects not sitting at the table were also able to have their stories told, primarily through quantitative/qualitative surveys and interviews pre and post the intervention. So, to a point I disagree with this criticism. Both individual and collective agencies are fostered in CHAT.

8. Final reflections

This paper reflected on the use and value of CHAT as a more sociocultural approach to institutional educational technology policy. This paper discussed my reasons for using CHAT, how it was used, how I collected and analysed data, my experience of using it, and prevailing criticisms.

The foregrounding of CHAT’s practical application was important for the project, participants were adamant that the project needed to have practical outcomes; they did not want it to be another exercise in academic enquiry. Engeström’s CHAT provided a systematic way to explore systemic problems in shared activity. This systematic way, founded on core principles of object-oriented analysis, multi-voicedness, historicity, contradictions, expansive transformation, and social context empowered employees and produced more relational, democratic, practical, and meaningful institutional educational technology policies reflective of authentic realities faced by faculty and administration. CHAT, as a more sociocultural approach to institutional educational technology policy, was found to be extensively more revealing, relevant, and relational, more so than unilateral canonical approaches to policymaking and/or retroactive heuristic models of investigation.

While there are criticisms of ontology and over-socialization, I believe that CHAT’s practical application for developmental change in complex social contexts is of great use and value not just for practitioners and researchers who are
interested in topics related to technology enhanced learning, but to anyone engaged in learning and developmental studies.

References


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