Dissecting Disruption in Academia: An Activity Theory Lens on Teaching Transition Amidst COVID-19

Natalia Gajdamaschko
Simon Fraser University

Sally Vinden
Vancouver Island University

This study examined the effects of the coronavirus pandemic on academic life at a British Columbia university. Analyzing professors' and graduate students' views using Q methodology and guided by activity theory, this study focused on the shift to emergency remote teaching. Participants ranked and sorted a 51-statement concourse, revealing a solution that reflected the shared values and beliefs held by those clustering together in each of four factors: Digitally Overwhelmed, Digital Optimists, Non-Digital Traditionalists, and Digital Empaths. These diverse perspectives offer valuable insights, enabling educational leaders to better adapt to support students and educators in a rapidly changing academic environment.

Keywords: activity theory, Q-methodology, pandemic teaching, digital pedagogy, online

INTRODUCTION

This study provided a comprehensive understanding of the effects of the coronavirus disease 2019 (COVID-19) pandemic on academic life by exploring the perceptions of professors and graduate students in the Faculty of Education at a comprehensive university in British Columbia, Canada. The sudden outbreak of the global pandemic in March 2020 necessitated an immediate shift to emergency remote teaching (ERT) approaches mandated by provincial health orders (Government of British Columbia, 2020). In response, professors enacted ERT approaches with minimal warning and, in some cases, without prior knowledge or experience of such practices (Gurung, 2020). Consequently, in-person classes abruptly ended, and graduate students were thrust into virtual classrooms and learning management systems (LMSs). This study explored the perceived impacts of this transition by adopting an activity theory (Engström, 1987) perspective, considering academia as an activity system disrupted by the move to ERT. Our hypothesis suggests each participant experienced unique impacts, but we also anticipated that shared contradictions experienced by academics would converge around the components of the activity system. Activity theory provides a rich theoretical foundation to understand how the pandemic and ERT approaches influenced higher educational settings. By examining the various components of the activity system, tools, rules, community, division of labor, and outcomes (Engström, 2000), we sought to uncover the multifaceted impacts experienced by professors and graduate students.

We combined Q methodology (Watts & Stenner, 2012) with Engström's (2000) activity theory theoretical framework to investigate academics' perceptions regarding the impact of the pandemic-related shift to ERT. While the framework of activity theory offers a comprehensive lens to analyze the complex interplay between subject, tools, rules, community, division of labor, and outcomes in academic life during this global crisis, Q methodology enabled us to capture and analyze the participants' subjective viewpoints within the activity system components.

Engström's (2000) activity theory framework was used to guide the literature search for this study and structure the Q method concourse. A relevant concourse is an array of ideas, attitudes, feelings, values, and perceptions (Ramlo, 2016) that academics may associate with changes in teaching and learning experiences during the pandemic. A 51-statement concourse was extracted from the literature review to be ranked and sorted by participants. A combination of 39 professors and graduate students from the Faculty of Education at a comprehensive university in British Columbia rank sorted the 51-statement concourse using Q Method Software (n.d.). Our hypothesis considered individual experiences while anticipating shared contradictions within the activity system. A four-factor solution emerged, which we found reflected the shared values and beliefs held by those clustering together in each factor. The factor names are as follows: Digitally Overwhelmed, Digital Optimists, Non-Digital Traditionalists, and Digital Empaths.

LITERATURE REVIEW

From an activity theory perspective, the abrupt transition to remote online learning significantly disrupted academic teaching systems (Engström, 2001; Wernimont, 2020). Emerging literature on applying activity theory to study the impact of the pandemic revealed widespread contradictions and tensions in educational systems at all levels across the globe (Greenhow, Lewin, & Staudt Willet, 2021). Contradictions are central to activity theory, being "historically accumulating structural tensions within and between activity systems" (Engström, 2001, p. 137).

We agreed with Greenhow et al. (2021) in their assertion that activity theory is well suited for the analysis of rapid transformations of educational systems because it considers teaching and learning activities as dynamic systems that are constantly changing in response to tensions and contradictions (Engström & Sannino, 2010). During the pandemic, educational systems underwent rapid and expansive transformation (Engström, 2001), with previously dominant practices immediately dropped to address the need to socially distance. Greenhow et al. (2021) reported significant changes to teaching occurred throughout the pandemic and, as a result, the system of activity was changed. For example,

> pedagogic goals were enacted with fewer rules, an increasing reliance on new tools and artifacts, and significant changes to the division of labour. These rapid changes to schooling motives meant that schools had to constantly review and refine how they continued to deliver the curriculum (or not) to their students as new contradictions emerged. Cultural norms such as school attendance requirements, timetables, and assessments no longer constrained system changes as they had done previously (Engström et al., 2002). In addition, the multivoiced nature of systems (Engström, 1987; Engström et al., 2015) meant that community members (including professors, administrators, and students) understood the object of the new system differently, affecting levels of engagement in remote learning by all stakeholders. (Greenhow et al., 2021, p. 9)

In addition, Adedoyin and Soykan (2023) pointed to several challenges that impacted online teaching and learning, including technology, socio-economic factors, human and pet intrusions during the Zoom classes, digital competence, assessment and supervision, heavy workload, and compatibility with different subjects of study (different for social sciences compared to engineering and medical sciences with needs for hands-on experiences). Among the opportunities, they pointed to research innovations and technological innovations for online teaching and learning (Adedoyin & Soykan, 2023).

The abrupt transition from face-to-face teaching approaches to ERT in March 2020 reportedly led to much confusion, uncertainty, anxiety, worry, and stress for professors and students alike (Bond, Hodges, Lockee, Moore, & Trust, 2020; Gurung, 2020). For some, the increase was caused by an urgent need to acquire digital skill sets during a global pandemic, and while the academic community quickly provided resources to support professors and students in navigating this unparalleled pedagogical shift (Bortolin, 2020b), many noted the online experiences instructors offered their students needed to be more fully featured or well-planned, raising concerns about suboptimal implementation (Bond et al., 2020; Carey, 2020). For example, professors unfamiliar with Zoom virtual meeting rooms and LMS reported that the workload of grading and providing feedback on assignments while trying to build an online course, deliver it, and keep up with marking was overwhelming (Bessette, 2020; Vinden, Flinn, & Carson, 2021). Similarly, Adedoyin and Soykan (2023) noted low digital competence led instructors and students to fall behind in the online learning environment. For some, the lack of digital competence was coupled with challenges associated with accessing technology, wi-fi, and suitable learning environments (Buttler, George, & Bruggemann, 2021; Supiano, 2020). Reports of students accessing wi-fi from parking lots and sharing the discomfort of having others see their vehicles or homes while in the virtual space were plentiful (Supiano, 2020; Vinden et al., 2021).

ERT highlighted concerns for higher education about access and equity, noting students experiencing technology challenges were disproportionately low-income and people of color, and these learners were also more vulnerable to dropping out (Anderson, 2021; Carey, 2020). Alternatively, others argued that ERT provided an opportunity to embed accessibility into course design from the start using universal design of learning (Bond et al., 2020; Hamraie, 2020). Bardzell, Gamrat, Glantz, and Lenze (2021) claimed, "The digital learning environment allows for more meaningful activities, leading to potentially deeper learning" (para. 25), recommending that course designs include multiple modalities such as asynchronous, synchronous blogs (Gamrat, Lenze, Bardzell, & Glantz, 2021; Irvine, 2020; Wernimont, 2020), chat rooms, recorded lectures, and forums. It was apparent that those with previous experience teaching in the virtual domain, combined with their familiarity with terminology such as remote, emergency, online, asynchronous, synchronous, and virtual, provided significant benefits to both instructors and students during ERT. Whereas for others, the sudden introduction of this terminology into everyday academic life caused confusion (Wernimont, 2020). Cohn (2021) noted these terms meant different things to different people, leading to misunderstandings and frustrations when students moved from one professor to another. Discussions exposed an existing digital divide in the academic community (professors and students) between those with prior experience in digital pedagogy and those without (Bennett, Maton, & Kervin, 2008). Nevertheless, digital competence is understood to be more than technical skills; it is a combination of digital skills, knowledge, and attitude (Adedoyin & Soykan, 2023). While digital competence is seen as central to the successful implementation of online learning, Bond et al. (2020) claimed it was a mistake to consider ERT as online learning, noting that most educators switched traditional teaching approaches from the classroom to the virtual space.

While the shift to ERT reportedly increased professors' workloads, in turn, ERT shifted more responsibility into the students' hands, requiring them to log in to courses several times a day and manage readings, assignments, and discussions for multiple classes without direction from the professor (Gurung, 2020). Previous assumptions about students' tech-savvy abilities, shaped by Prensky's (2001) notion of digital natives, had led many educators to believe their students were digitally literate (Bennett et al., 2008). This belief was disrupted by reports claiming students struggled to navigate the LMS, upload and download files, and communicate academically in a virtual space. One professor stated, "My students know how to use their phones and tablets, but ask them to do what is needed for classwork, and they are lost" (Vinden et al., 2021, p. 28).

As a result of ERT, demands changed throughout the activity system of the higher education landscape, thrusting mental health issues to the forefront and, in doing so, exposing "long-standing sources of stress, anxiety, and depression and creating new ones" (Cavanagh, Carver, & Tugade, 2021, para 1). This triggered reports claiming that to best support students' learning, post-secondary institutions must work to expose the root causes and consequences of health disorders and find ways to address them (Bortolin, 2021;

Cavanagh et al., 2021; Johnson, 2021). Indeed, some educators chose to adapt their courses by extending deadlines, reducing assignments, and, in some cases, embracing the notion of un-grading to decrease students' stress and anxiety (Bortolin, 2021; Morris, 2021; Supiano, 2020). Alternatively, other educators reinforced rules by using LMS tracking systems and remote proctoring tools to uphold course syllabi and learning outcomes (Cavanagh et al., 2021; Gray 2020). Such exam proctoring practices were combined with rigid attendance policies and assignment deadlines, despite the controversy surrounding these tools as they relate to student mental health concerns and privacy (Gray, 2020)

As questions about empathy for students arose throughout ERT, so did the need to build virtual spaces that fostered students' sense of belonging (Buttler et al., 2021; Cavanagh et al., 2021; Gray, 2020; Horgos, Soria, Chirikov, & Jones-White, 2020; Smith, Graham, Waddell-Henowitch, De Moissac, & Lam, 2023). Critics of video communication tools claimed, "The distortions and delays inherent in video communication can end up making you feel isolated, anxious, and disconnected" (Murphy, 2020, para. 2#), claiming that it is harder to build cohesion and trust online. Similarly, professors spoke about a sense of isolation, yet, at the same time, they felt like they were drowning in digital communications (Kamenetz, 2020). According to Bortolin (2020a), the online learning environment requires educators to rethink how they connect with students, which will require many to reimagine their digital communication practices.

Our literature review surfaced disruptions and contradictions in all components of the activity theory framework: subject, tools, object, rules, community, and division of labor. When conditions change in any of the activity triangle components, it can interrupt the activity or create a break in the system (Nickerson, 2023).

RESEARCH QUESTIONS

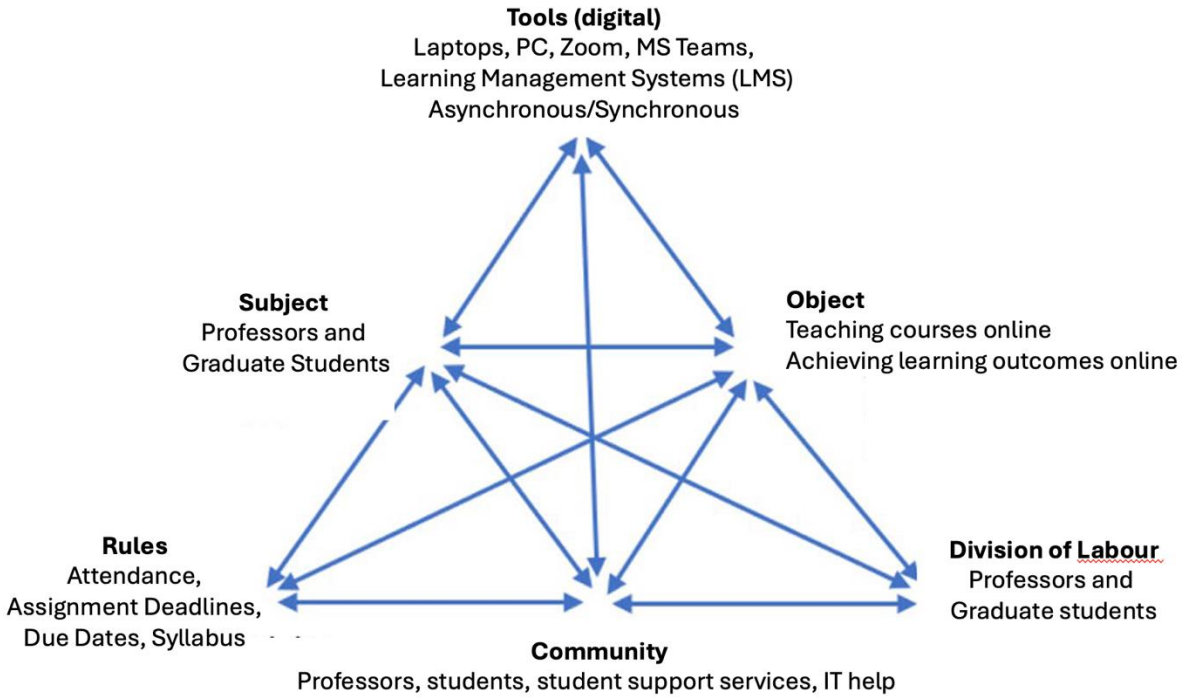
The following research questions guided this study:

- Which aspects of academic life were most affected by the implementation of ERT during the pandemic, and why?
- Who benefited from ERT modalities? Who did not?
- What lessons have been learned from ERT that may influence future practices during times when academic environments may experience rapid changes?

THEORETICAL FRAMEWORK

The activity theory unit of analysis is object-oriented, cultural, historically mediated systems (Engström, 2000). Teaching in academia is viewed as one of those systems that were disrupted during the implementation of ERT. In the context of this study, the activity system includes the object (or objective), subject (university professors and students), mediating artifacts (signs and tools such as computers, laptops, Zoom, LMS), rules (attendance, assessments, grading, deadlines), community (professors, students, support staff), and division of labor (workloads, roles, power differentials). We used these structural components of activity systems to identify the overarching themes regarding the pandemic's effect on the educational system, which then shaped the structure of the concourse used in this study.

FIGURE 1
UNIT OF ANALYSIS – TEACHING AND LEARNING IN ACADEMIA DURING ERT.



Note. Adapted from "Activity Theory as a Framework for Analyzing and Redesigning Work," by Y. Engström, 2000, *Ergonomics*, *43*(7), p. 962 (doi:10.1080/001401300409143) See also Gedera, Forbes, Brown, Hartnett, and Datt's article (2023).

In summary, we hypothesized that the contradictions experienced by academics would cluster around the axis of activity system components. At the same time, we believed each of our participants experienced the impact of ERT impact differently. For example, the teaching/learning activity structure would change if a professor did not possess strong technical skills in using new distance learning tools. The professor would have to overcome this contradiction by changing the learning goals and objectives by revising the curriculum, changing the assessment practices, or changing the division of labor in the classroom (Adedoyin & Soykan, 2023).

METHODOLOGY

The power of Q methodology lies in its ability to gain insight into the self-understandings of the participants in the study (Ramlo, 2016; Watts & Stenner, 2012). This is particularly useful when dealing with theoretical views, which are held in a manner that conflates the normative, expressive, and discursive functions (Stephenson, 1953). This methodology can assist in obtaining an understanding concerning the interpretative subjectivity of participants that is not possible through traditional positivistic research methodology (Brown, 1993). Traditional positivist research methodologies remain prominent in educational research. Like many Q studies, our research was designed to lead to new insights on the local level of discourse about emergency remote teaching and learning during the pandemic. Our literature search revealed that Q methodology was used in educational research in different instances. For example, Lundberg, De Leeuw, and Aliani (2020) conveniently completed their research before the pandemic. Their study focused on academic settings and identified four prominent themes of supportive environments, productive instructional strategies, social and emotional development, and systems of support, each

consisting of different principles of practice in the science of learning and development (Lundberg et al., 2020).

Q methodology makes it possible to correlate people instead of tests or responses (Stephenson, 1953), thereby allowing participants' perceptions to form the basis of the resultant factors. Rather than trying to define "independent variables" (Stephenson, 1953, p. 40) and to test them on a population of stakeholders, we can "analyze them instead from the point of view of the person who did the rating, because theirs are the actual operations at issue" (p. 40).

One of the major requirements for creating a rigorous Q-methodology study is identifying a concourse. For this study, the relevant concourse was the array of ideas, attitudes, feelings, values, and perceptions that professors and students may have associated with changes in teaching and learning experiences during the pandemic. We used the activity theory framework (Leont'ev, 1981; see also Engström, 2015) to conduct and guide our search on emerging literature about the impact of the pandemic to ensure we developed a full concourse. In sum, approximately 40 literature sources were analyzed to create a 51-statement concourse for this study.

By combining Q methodology, a mixed-methods approach, with the theoretical lens of activity theory, we aimed to provide a nuanced understanding of the diverse experiences and perceptions related to ERT's impacts. Like Lundberg et al. (2020), we selected Q methodology as the optimal tool to assess the subjectivity of professors' and students' viewpoints.

METHODS

Q methodology methods for this study consisted of the following stages:

- Built a concourse to capture the full range of perspectives relating to the issue. For example, "anything that is thought or said about a topic" (Deignan & Brown, 2016, p. 386).
- Developed a set of statements (Q-sample) that represents the concourse (see appendix 1).
- Selected participants who potentially possess diverse views on the topic.
- Arranged for participants to sort statements individually based on a range from -4 (strongly disagree) to +4 (strongly agree) using Q Method Software (n.d.).
- Requested participants complete an online questionnaire to provide rationales for their high-ranking statements.
- Performed an analysis of Q sorts using Q Method Software (n.d.) with varimax rotation.
- Interpreted differences in the participants' perspectives through z scores that calculate the average placement of each statement by the participants who loaded significantly on each resulting factor.

PARTICIPANTS

All participants in this study were professors and graduate students recruited from the Faculty of Education at a comprehensive university in British Columbia, Canada. Criteria for inclusion required Faculty of Education members (professors and graduate students, also referred to in this study as academics) who have experienced teaching or learning throughout March 2020 to March 2022 using ERT modalities. In sum, the 39 participants who took part in this study included 16 graduate students and 23 professors.

In regard to participants performing the Q sort, the Q methodology required each study participant to rank and sort the Q sample statements based on their own perspectives. The rank-sorting process identified patterns and clusters of perception within the participant group (Ramlo, 2016).

ANALYSIS

We used Q Method Software (n.d.) with varimax rotation to analyze the Q sorts. A four-factor solution enabled us to interpret differences in participants' perspectives on the impacts of ERT. All four factors have

eigenvalues greater than 1, and the correlation between factors is low. Please see the characteristics of the factors in Tables 1 and 2.

TABLE 1
CORRELATIONS BETWEEN FACTORS

	Factor 1	Factor 2	Factor 3	Factor 4
Factor 1	1.00	0.22708	0.34997	0.1399
Factor 2	0.22708	1.00	0.18027	-0.17648
Factor 3	0.34997	0.18027	1.00	-0.02413
Factor 4	0.1399	-0.17648	-0.02413	1.00

TABLE 2
FACTOR CHARACTERISTICS

	Factor 1	Factor 2	Factor 3	Factor 4
No. of Defining Variables	12.00	8.00	8.00	6.00
Avg. Rel. Coef.	0.80	0.80	0.80	0.80
Composite Reliability	0.97959	0.9697	0.9697	0.96
S.E. of Factor Z-Scores	0.14286	0.17408	0.17408	0.20

A four-factor solution surfaced, providing the best way to interpret differences in participants' perspectives. We focused on the statements placed in the +4/+3 and -4/-3 categories in the different factors. We also concentrated on distinguishing statements for each factor (i.e., those statistically different from the placements of the other factors). The composite Q sort grids show the weighted average placement (rank) for each statement by each factor (see Appendix 2). These average weighted placements are constructed through z scores that calculate the average placement of each statement by the participants who loaded significantly on the factor. We interpreted and named the four factors that emerged as follows: Digitally Overwhelmed, Digital Optimists, Non-Digital Traditionalists, and Digital Empaths.

FINDINGS: Q FACTORS INTERPRETATION

Factor 1: Digitally Overwhelmed

Factor 1 viewed the migration from traditional teaching approaches to pandemic-induced ERT as a significant disruption to students' and faculty members' lives (see Composite Q sorts for Factor 1 in Appendix 2). Factor 1 participants agreed strongly with Statement # 45: This abrupt migration to online learning also creates major disruptions to student, staff, and faculty life outside their association with the university. In addition, they agreed that teaching and learning conditions on Zoom classes (synchronic and a-synchronic) presented too much screen time (Statement #40), and a sense of connection was undermined further by burnout, distraction, worry and uncertainty (Statement #47). While digital communications and virtual relationships were abundant during ERT, the Digitally Overwhelmed cluster felt removed from colleagues even while drowning in digital messages from them (Statement #46). In sum, these participants thought it was unrealistic to teach in the same way as before ERT (Statement #13) and considered the workload of grading and providing feedback on assignments while trying to build an online course, deliver it, and keep up with marking, was overwhelming (Statement #17). Participants claimed teaching via ERT increased workloads and time commitment in the following areas: class preparation time, delivery of instruction, marking assignments, and providing feedback. Thus, they supported shortening the syllabus and changing course content to cope with the emergency situation (Statement #19).

Factor 1 participants strongly disagreed with statements that consider the positive effects of online learning. They disagreed that remote online learning is pivotal in setting the stage for students' future

success in a post-pandemic world (Statement #30). These participants also disagreed that moving online facilitated a more collaborative academic life for students (Statement #44), and that students are more engaged in online teaching (Statement #31). They also disagreed with the notion that output rises when people work remotely (Statement # 15).

Factor 2: Digital Optimists

Unlike Factor 1, Factor 2 embraced academia's sudden shift to ERT (see Composite Q Sorts Factor 2 in Appendix 2). This unique situation excited the Digital Optimists, allowing them to re-evaluate traditional teaching approaches. Factor 2 participants demonstrated that digital teaching and learning is not just about how to use Zoom or learning management systems, it is about taking a holistic look at courses, especially learning outcomes and assessment strategies, and redesigning them for the online environment (Statement #42). Moreover, these participants saw ERT as an excellent time to reconsider traditional face-to-face teaching and learning and consider the most favorable characteristics of such a move. Digital Optimists were the only factor that highly agreed with Statement #2: This is an exciting time to re-create how we teach. Factor 2 revealed that moving courses online provided an opportunity to increase accessibility in higher education (Statement #6) by placing inclusion and accessibility at the center of course design. This is consistent with Statement #23: During the pandemic, faculty have recognized students' distress and challenges and realized the power they have to lessen that distress through their class policies and new teaching strategies. In doing so, Factor 2 supported disrupting teaching-learning rules by removing grades as a means of assessment. In agreement with Statement #12, Factor 2 demonstrated that, without grades, students can learn what they want, the way they want, with students being more engaged in the learning environment and feel empowered to take risks. This factor advocates for removing grades on the understanding that this action diffuses the power differential between student and professor.

Digital Optimists also believe that digital fluency is more than technical skill; it is a new capacity to create and communicate new complex ideas digitally (Statement #33), claiming that ERT provides an opportunity to prepare learners for a digital future. Digital Optimists also indicated the pandemic helped professors reconsider how they teach and change it for the better by taking a new look at their courses, redesigning assignments, and evaluating strategies to consider new affordances that online teaching provides (Statement #42; Bardzell et al., 2021).

Factor 3: Non-Digital Traditionalist – Composite Q Sorts Factor 3

Factor 3 participants mostly saw the adverse effects of moving online. Participants claimed students could not connect and bond online in the same way as they would in face-to-face classes. The Non-Digital Traditionalists placed a high value on learning communities and thought emergency online learning was a barrier to creating such community-based learning environments (Statements #48 and #49; see Composite Q sorts for Factor 3 in Appendix 2). They claimed the loss of a sense of connection in online teaching was further complicated and undermined by burnout, distraction, worry, and uncertainty (Statement # 47). The unsettling results of online learning did not prompt the non-digital traditionalists to support changes to syllabi or pedagogical approaches. Equally, they did not support altering assessments or placing more responsibility into students' hands (Statements #18 and #20); instead, they stood firm on the rules of the environment to retain syllabi, assignments, and grading approaches throughout the disruption to ensure course objectives were met. Although Non-Digital Traditionalists saw this emergency move to online as a significant disruption, they desired to replicate traditional ways of teaching and learning while mitigating the adverse effects of stress and loss of connectivity. Factor 3 participants highly agreed with Statement #23: Fallout from the pandemic thrust mental health into an even broader, brighter spotlight, exposing long-standing sources of stress, anxiety, and depression and creating new ones, which they claim led to an increase in empathy, accessibility, safety, and vulnerability.

Non-Digital Traditionalists saw the ERT disruption as a temporary issue and, unlike Factor 2 participants, did not see new affordances provided through online instructional technologies as positive. These participants strongly disagreed with Statement #5: Returning to the old normal is not desirable, given the inequities and accessibility challenges that existed in higher education long before the pandemic struck.

In summary, during ERT, Factor 3 participants were surviving during ERT and waiting until they could return to the old ways of teaching and learning.

Factor 4: Digital Empaths

Factor 4 participants valued compassionate teaching during the sudden shift to ERT (see Composite Q Factor 4 in Appendix 2). The Digital Empaths saw this as an opportunity to compassionately situate students at the center of learning. They agreed most strongly with Statement #41: Even though the focus can sometimes be on technology, tools, and logistics, what is needed now is compassion from professors. Collectively, Factor 4 participants were less concerned about the delivery of course content or online instructional techniques; they paid close attention to students' mental health and emotional issues. Digital Empaths agreed with shortening syllabi and changing the number of assignments based on compassion and understanding that students faced more difficulties during the pandemic. This belief was reflected in their agreement with Statement #9: The virtual learning environment requires faculty and staff to ensure that students are receiving adequate accommodations, such as deadline extensions and extended test-taking times. Factor 4 participants also worried about building cohesion and trust online (Statement #39) and the inability to create student bonds online (Statement #48).

Participants who clustered together in Factor 4 prioritized compassion for the learner. They recognized the emotional impact of ERT on learners, noting the increase in mental health issues. In doing so, they brought to light concerns regarding a general lack of empathy and compassion shown to students by faculty members throughout the academy. The Digital Empaths show this belief in their strong disagreement with Statement #22: During the pandemic, faculty have recognized students' distress and challenges and have also realized the power they have to lessen that distress through their class policies and new teaching strategies. Similarly, these participants strongly disagreed with Statement #7: Never before have I had this many conversations about safety, empathy, and accessibility in higher education, conversations seeking solutions and best practices for all students, including our most vulnerable.

DISCUSSION

Through the combination of Q methodology and the theoretical lens of activity theory, we gained a nuanced understanding of participants' diverse experiences and perceptions toward ERT. In doing so, we found that contradictions exposed themselves as obstacles, interruptions, conflicts, tensions, and gaps, which aligns with Engström's (2001) description. As hypothesized, we found each of our participants experienced the impact of ERT in different ways, yet the shared contradictions experienced by the participants clustered around the axis of activity system components.

Factor 1, named the Digitally Overwhelmed, perceived the transition to ERT as a significant disruption affecting students and faculty life both in and outside the university. From an activity theory lens, the participants in this grouping experienced a considerable disruption in their teaching and learning activity due to the introduction of new technological tools (zoom and LMS, virtual learning spaces, pre-recorded lectures). They were overwhelmed because they lacked mastery when teaching and learning online, which led to contradictions within the activity system. ERT resulted in unrealistic teaching/learning expectations for this cluster of participants and increased workloads (division of labor). In sum, Factor 1 participants' support for shortening syllabi and altering course content (rules) was driven by their lack of mastery of online tools, causing a major contradiction clustering around the tools axis. As a means to resolve the disruption, actions taken intersected with rules, outcomes, and the division of labor.

While contradictions to the rules within the activity system were also evident for Factors 2 and 4, their reasons for such disruptions differ significantly from Factor 1. Factor 2, the Digital Optimists, welcomed the sudden shift to ERT in academia as an opportunity to reassess traditional teaching/learning approaches.

Factor 2 participants claimed to have approached ERT with competence, which allowed them to look beyond tools like Zoom and LMS and view digital teaching and learning as a holistic process. Consequently, they believe ERT provided an opportunity to reconsider traditional face-to-face teaching. Contradictions to tools, rules, division of labor, and outcomes within the activity system are evident for

Factor 2. When the Digital Optimists advocated removing grades (rules), they did so as a means to empower students and enhance engagement (division of labor, community, and outcomes), which differs significantly from Factor 1's agreement to change course syllabi and content as a means to compensate their lack of mastery and to reduce feelings of overload and overwhelm.

Factor 4 also supported adjusting syllabi and assignments and advocated for adequate accommodations, such as deadline extensions and extended test-taking times. These contradictions also clustered around the rules and outcomes axis of the activity system; however, their rationale for adjusting syllabi and assignments (rules) was situated in empathy for students facing pandemic-related challenges. Factor 4 respondents, named the Digital Empaths, underscored the importance of compassionate teaching during the abrupt transition to ERT, prioritizing students' mental health over content delivery or online instructional techniques.

To clarify, Factor 1 participants' decisions to adjust the rules of the activity system were grounded in their lack of mastery in working with the new tools, leading them to feel overwhelmed. It is from this place that Factor 1 supported changes to syllabi as a means to resolve the contradictions. On the other hand, Factor 2 participants' agreement to change syllabi, particularly grading policies, was grounded in an optimistic view, noting the empowerment of students through the inclusion of digital teaching and learning tools. In sum, then, contradictions relating to Factors 1, 2, and 4 clustered around the rules axis of the activity system during ERT; however, as noted, their reasons to resolve such contradictions differ significantly from each other.

In contrast to Factors 1, 2, and 4, Factor 3, named the Non-Digital Traditionalists, opposed changes to the rules of the activity system and agreed with maintaining syllabi, teaching methods, and assessments during ERT. Factor 3 participants agreed established rules and course objectives are to be adhered to, including replicating traditional teaching approaches, despite awareness of the adverse effects of ERT on students and the increase in stress and loss of connectivity. Factor 3 participants' resistance to change may be linked to their shared perception that the disruption caused by ERT was temporary. In addition, they dismissed any potential benefits and affordances provided by online instructional technologies, such as addressing inequities and accessibility challenges in higher education. In short, Factor 3 strongly disagreed with the notion that returning to the pre-pandemic old normal is undesirable.

While rules within the activity system remained stable for Factor 3 throughout ERT, integrating digital tools into the activity system led to contradictions in other system components for the Non-Digital Traditionalists. Factor 3 participants emphasized the negative impacts of transitioning online, particularly the challenges in fostering student connection and community building in virtual classes. They claimed to value the concept of a community of learners and felt ERT created barriers to achieving this. In addition, they believe the loss of connection with peers, burnout, distraction, worry, and uncertainty further hindered community building in the online teaching environment. For Factor 3, ERT caused significant disruption to the community of practice and the division of labor within the activity system. Their desire to uphold traditional pedagogies, combined with resistance to avoid disruptions to the rules of the syllabi, may have increased the impact of disruption on the community of learners.

Participants in Factor 4 also expressed concerns about building cohesion and trust online (community), finding it challenging to foster bonds among students. However, they recognized the emotional impact of ERT and highlighted the need for empathy and compassion among academic community members. As a result, they agreed with changing course syllabi and assignments (disrupting rules and the division of labor within the activity system as a solution) in alignment with their desire to build cohesion and trust in the online domain.

In a similar light, contradictions to the community of the activity system were evident for Factor 1. These participants claimed extensive digital communications and excessive screen time in Zoom classes increased the feeling of being overwhelmed and isolated from colleagues throughout ERT (community). However, the cause of this disruption for Factor 1 participants is situated in their inadequate digital skill sets, noting that digital communications and virtual interactions reinforced their lack of competence, which differed from Factor 3 participants, the Non-Digital Traditionalists, whose resistance toward technology

and reinforcement of traditional practices was grounded in the notion that ERT was temporary and returning to normal was the optimal goal.

In contrast to Factors 1, 3, and 4, Factor 2 participants welcomed the contradiction to the community within the activity system that ERT provided. They claimed that moving courses online provides an opportunity to increase accessibility in higher education by placing inclusion and accessibility at the center of course design. Factor 2 participants recognized the power professors have to lessen student distress and diffuse power differentials between students and professors through changes to class policies and the introduction of new teaching strategies. Ultimately, Digital Optimists believe digital fluency is more than a technical skill; it is a new capacity to create and communicate new complex ideas digitally, allowing students to be more engaged and empowered in the learning environment. Factor 2 participants claimed the pandemic provided an opportunity to reassess and enhance teaching practices and to adapt to online affordances. This notion reinforces Engström's (2001) assertion that contradictions are helpful in the development of activity systems.

While contradictions were clustered around the same axis of the activity triangle for Factors 1, 2, and 4, the meanings behind these contradictions differed, and reasonings about ways to resolve such contradictions helped the authors understand how differently they perceived them. In addition, the interconnectivity and interdependence of the activity system components cannot be ignored, as contradictions in one component impact other components.

In summary, Factor 1 participants' concerns about disruptions to student and faculty lives caused by the introduction of ERT were exaggerated by their lack of competency in navigating digital teaching tools, which led to contradictions to tools, rules, outcomes, community, and division of labor within the activity system. Similarly, contradictions clustered around the same components of the activity system for Factor 2. However, the reasoning for such contradictions differed significantly between Factor 1 and 2 participants, with Digital Optimists seeing an opportunity for positive change and embracing digital pedagogy tools to create a more inclusive educational system. Factor 4 participants' contradictions also clustered around the same components of the activity systems as Factors 1 and 2 participants, yet their reasoning to resolve them was grounded in compassion for students' well-being over course content.

While Factor 3's Q-sorts reflected contradictions to tools, outcomes, community, and division of labor, showing clustering around the same four components of the activity triangle as Factors 1, 2, and 4, Non-Digital Traditionalists' rationales differed significantly. Factor 3 participants' desire to uphold the rules of the traditional teaching activity system differs further. Despite claiming students were struggling with the connectivity of technology and mental health issues (tools, outcomes, and community), Factor 3 participants agreed with prioritizing rules within the activity system above all.

CONCLUSION

The integration of Engström's (1987) activity system with Q methodology proved beneficial in achieving our research objectives. While this combination emerged in only a few research projects that explored the effects of the COVID-19 pandemic on academic life, these approaches provided us with a comprehensive understanding of such effects, allowing us to contribute and expand the methodological repertoire available to future scholars, a contribution we are pleased to make.

Discovering the different perspectives presented in the four factors is only the first step. The next step would be to continue the dialogue in the community with a more nuanced understanding of how other members experienced similar situations. For example, because the majority of people saw the integration of ERT as a major disruption, it came as a surprise even to us, as researchers, that we also had a Digital Optimist among us.

As our hypothesis suggested, we found each participant experienced unique impacts throughout ERT, and as anticipated, all participants shared contradictions experienced by professors and students clustered around the axis of activity system components. In conclusion, we have proven that multiple activity systems of teaching co-exist in academia, with people infusing different and sometimes opposite meanings into the object of teaching activity (e.g., why we teach in academia and what we want to achieve). From the point

of view of curriculum theory, educators should be mindful of such multiplicity, especially if it leads to theoretical incompatibilities (Egan, 2010), as highlighted in our study and presented as different perspectives held by participants towards ERT.

These diverse perspectives offer valuable insights into the complex challenges and opportunities faced in education during the pandemic. Considering these findings, we can better adapt and support students and educators in a rapidly changing academic environment.

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APPENDIX 1: Q SAMPLE – CONCOURSE STATEMENTS: UNDERSTANDING THE IMPACTS OF COVID-19 ON ACADEMIC LIFE

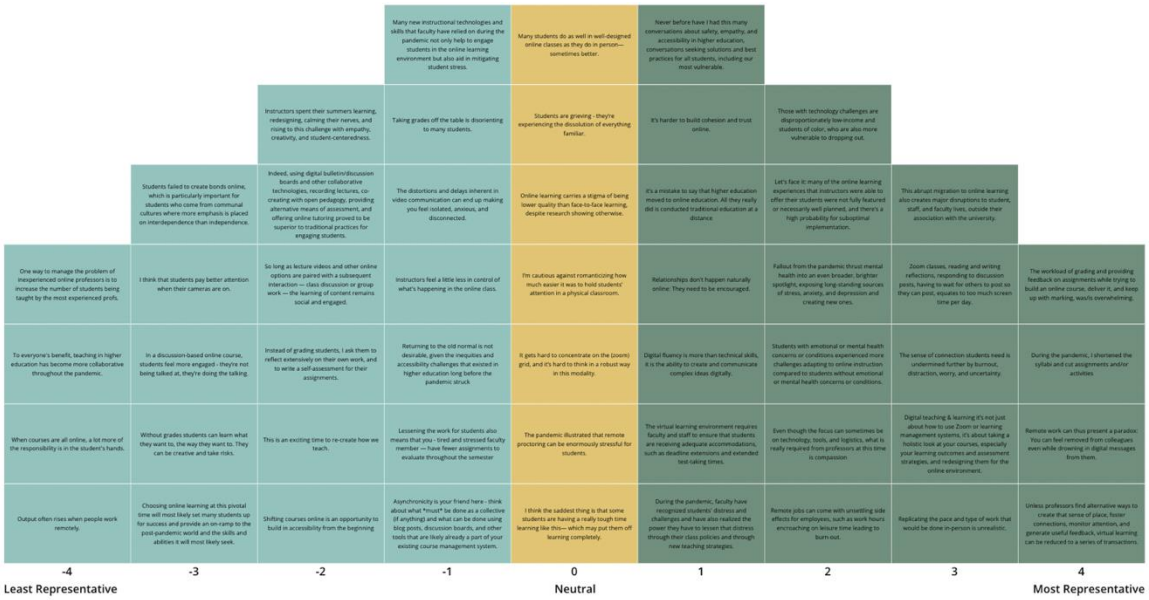
1. Instructors feel a little less in control of what's happening in the online class.
2. This is an exciting time to re-create how we teach.
3. Online learning carries a stigma of being lower quality than face-to-face learning, despite research showing otherwise.
4. it's a mistake to say that higher education moved to online education. All they really did is conducted traditional education at a distance
5. Returning to the old normal is not desirable, given the inequities and accessibility challenges that existed in higher education long before the pandemic struck
6. Shifting courses online is an opportunity to build in accessibility from the beginning
7. Never before have I had this many conversations about safety, empathy, and accessibility in higher education, conversations seeking solutions and best practices for all students, including our most vulnerable.
8. Those with technology challenges are disproportionately low-income and students of color, who are also more vulnerable to dropping out.
9. The virtual learning environment requires faculty and staff to ensure that students are receiving adequate accommodations, such as deadline extensions and extended test-taking times.
10. I'm cautious against romanticizing how much easier it was to hold students' attention in a physical classroom.
11. Taking grades off the table is disorienting to many students.
12. Without grades students can learn what they want to, the way they want to. They can be creative and take risks.
13. Replicating the pace and type of work that would be done in-person is unrealistic.
14. One way to manage the problem of inexperienced online professors is to increase the number of students being taught by the most experienced profs.
15. Output often rises when people work remotely.
16. Remote jobs can come with unsettling side effects for employees, such as work hours encroaching on leisure time leading to burn-out.
17. The workload of grading and providing feedback on assignments while trying to build an online course, deliver it, and keep up with marking, was/is overwhelming.
18. Instead of grading students, I ask them to reflect extensively on their own work, and to write a self-assessment for their assignments.
19. During the pandemic, I shortened the syllabi and cut assignments and/or activities
20. Lessening the work for students also means that you - tired and stressed faculty member — have fewer assignments to evaluate throughout the semester
21. Instructors spent their summers learning, redesigning, calming their nerves, and rising to this challenge with empathy, creativity, and student-centeredness.
22. During the pandemic, faculty have recognized students' distress and challenges and have also realized the power they have to lessen that distress through their class policies and through new teaching strategies.
23. Fallout from the pandemic thrust mental health into an even broader, brighter spotlight, exposing long-standing sources of stress, anxiety, and depression and creating new ones.

24. Students with emotional or mental health concerns or conditions experienced more challenges adapting to online instruction compared to students without emotional or mental health concerns or conditions.
25. Many new instructional technologies and skills that faculty have relied on during the pandemic not only help to engage students in the online learning environment but also aid in mitigating student stress.
26. Students are grieving - they're experiencing the dissolution of everything familiar.
27. Many students do as well in well-designed online classes as they do in person—sometimes better.
28. I think the saddest thing is that some students are having a really tough time learning like this—which may put them off learning completely.
29. When courses are all online, a lot more of the responsibility is in the student's hands.
30. Choosing online learning at this pivotal time will most likely set many students up for success and provide an on-ramp to the post-pandemic world and the skills and abilities it will most likely seek.
31. In a discussion-based online course, students feel more engaged - they're not being talked at, they're doing the talking.
32. The pandemic illustrated that remote proctoring can be enormously stressful for students.
33. Digital fluency is more than technical skills, it is the ability to create and communicate complex ideas digitally.
34. I think that students pay better attention when their cameras are on.
35. It gets hard to concentrate on the (zoom) grid, and it's hard to think in a robust way in this modality.
36. Asynchronicity is your friend here - think about what *must* be done as a collective (if anything) and what can be done using blog posts, discussion boards, and other tools that are likely already a part of your existing course management system.
37. Let's face it: many of the online learning experiences that instructors were able to offer their students were not fully featured or necessarily well planned, and there's a high probability for suboptimal implementation.
38. Unless professors find alternative ways to create that sense of place, foster connections, monitor attention, and generate useful feedback, virtual learning can be reduced to a series of transactions.
39. It's harder to build cohesion and trust online.
40. Zoom classes, reading and writing reflections, responding to discussion posts, having to wait for others to post so they can post, equates to too much screen time per day.
41. Even though the focus can sometimes be on technology, tools, and logistics, what is really required from professors at this time is compassion
42. Digital teaching & learning it's not just about how to use Zoom or learning management systems, it's about taking a holistic look at your courses, especially your learning outcomes and assessment strategies, and redesigning them for the online environment.
43. Indeed, using digital bulletin/discussion boards and other collaborative technologies, recording lectures, co-creating with open pedagogy, providing alternative means of assessment, and offering online tutoring proved to be superior to traditional practices for engaging students.
44. To everyone's benefit, teaching in higher education has become more collaborative throughout the pandemic.
45. This abrupt migration to online learning also creates major disruptions to student, staff, and faculty lives, outside their association with the university.
46. Remote work can thus present a paradox: You can feel removed from colleagues even while drowning in digital messages from them.
47. The sense of connection students need is undermined further by burnout, distraction, worry, and uncertainty.
48. Students failed to create bonds online, which is particularly important for students who come from communal cultures where more emphasis is placed on interdependence than independence.
49. Relationships don't happen naturally online: They need to be encouraged.

50. The distortions and delays inherent in video communication can end up making you feel isolated, anxious, and disconnected.
51. So long as lecture videos and other online options are paired with a subsequent interaction — class discussion or group work — the learning of content remains social and engaged.

APPENDIX 2: COMPOSITE Q SORTS

Factor 1: Digitally Overwhelmed Q Sorts



Factor 2: Digital Optimists Q Sorts

Factor 3: Non-Digital Traditionalists Q Sorts

Factor 4: Digital Empaths Q Sorts