

Contradictions Through the Lens of Activity Theory: Analyzing Discord as Online Collaborative Learning Platform

Authors:

Author 1 : Awang Najib Awang Mohamad

Email : 20010073@siswa.unimas.my

ORCID ID : 0009-0002-7596-8449

Affiliation : Universiti Malaysia Sarawak (UNIMAS)

Address : Kota Samarahan, 94300, Sarawak, MALAYSIA.

Author 2 : Associate Professor Zaimuariffudin Shukri Nordin

Affiliation : Universiti Malaysia Sarawak (UNIMAS)

Address : Kota Samarahan, 94300, Sarawak, MALAYSIA.

Author 3 : Mohd Hafizan Hashim

Affiliation : Universiti Malaysia Sarawak (UNIMAS)

Address : Kota Samarahan, 94300, Sarawak, MALAYSIA

Abstract

The rapid integration of online platforms such as Discord into education has been studied from various perspectives but attempts to theorize the diverse and conflicting challenges faced by students learning through these platforms have been limited. This research adopted a qualitative approach to investigate students' experiences using Discord for online collaborative learning (OCL) at a matriculation college in Sarawak, Malaysia. Data obtained via text-based focus group interviews on Discord is presented in light of an Activity Theory (AT) framework. The finding identifies multiple contradictions in Discord's use: primary contradictions related to its high data and memory requirements, secondary contradictions between its design and user practices, tertiary contradictions between its current model and the need for new approaches, and quaternary contradictions with the broader educational system. These contradictions, categorized into dilemmas, conflicts, critical conflicts, and double binds, highlight the challenges in using Discord as an educational tool. The research concludes with recommendations for developers, educators, and users to foster an environment that is both technologically robust and aligned with educational principles of accessibility and inclusivity.

Keywords: *Discord, Online Collaborative Learning (OCL), Activity Theory, Contradictions*

1.0 Introduction

Around the globe, education systems are recognizing the key role of technology tools in transforming education to meet students' needs in the 21st century. With the emergence of platforms such as Discord which offer unique opportunities for online collaborative learning (OCL), there is a growing interest in understanding how these technology tools can be effectively integrated into educational settings (Hamilton, 2022). Despite the potential of Discord and similar technology platforms to support dynamic, interactive online learning environments, there exists a significant

gap in their integration for educational purposes (Gandolfi et al., 2023). This gap is primarily due to the challenges in understanding how to effectively implement and integrate such platforms to support powerful instruction. The rapid evolution of technology platforms poses a continuous learning challenge especially for educators, who must keep pace with new tools and features that could enhance student learning (Hofer et al., 2021). This situation is akin to hitting a moving target, where the landscape of available technologies is constantly changing, and complete knowledge of these tools remains elusive (Burbules, 2020).

The integration of technology tools as OCL platform can be influenced by various factors at different levels. For example, the administrative support for technology use (Francom, 2020), socio-regional attitudes towards online learning (Doukakis et al., 2020), the availability of resources (Haleem et al., 2022), and the digital literacy of both teachers and students (Alakrash & Abdul Razak, 2021). Additionally, the pedagogical approaches employed and the culture within educational institutions play critical roles in how a technology is adopted and used in teaching and learning processes (Tuma, 2021). The beliefs and attitudes, especially students as the main targeted users significantly impact their willingness to accept these technologies into their process of learning. Despite recognizing the potential benefits of technology platform such as Discord for fostering student collaboration and engagement, some users may hesitate due to concerns that may arise from these platforms.

The process of integrating technology tool into educational settings can be conceptualized as progressing through five phases: entry, adoption, adaptation, appropriation, and invention (Saepuloh & Salsabila, 2020). Each phase requires technical, instructional, and collegial support to overcome challenges and leverage the full potential of technology platform for enhancing student learning experiences. Effective organization and leadership within educational institutions, a supportive school culture, and a professional learning community approach are crucial for the successful integration of technology tool (Carpenter & Munshower, 2020). Challenges at the classroom level, such as limited time for teacher training and a lack of curricular guidelines in teaching and learning, must be addressed to facilitate this integration (Rodrigues, 2020).

Hence, by using Activity Theory (AT) as a theoretical lens in this research, it offers a novel approach to understanding the complexities and contradictions involved in adopting Discord for educational purposes. This perspective can help identify the systemic and individual factors that hinder the integration of OCL platforms into teaching and learning practices. This research investigates the use of Discord as OCL platform by examining the perspectives of students in real educational setting. By identifying situational factors perceived as barriers in the adoption process, it aims to provide insights into the contradictions and how Discord can be more effectively utilized to enhance OCL experiences among students.

1.1 Activity Theory

AT offers a robust and multidimensional framework for understanding human behaviour and learning within socio-cultural contexts (Engeström, 2005). Originated by Soviet psychologists Vygotsky, Leont'ev, and Luria, AT has evolved into a comprehensive theory that integrates individual and social dimensions, emphasizing the mediated nature of human activities through tools and symbols (Hakkarainen & Bredikyte, 2021; Wertsch, 1988).

At the core of AT is the principle that human activities are not isolated actions but are embedded in a cultural-historical context, mediated by various tools and artefacts (Waymouth, 2020). These mediators, whether physical (e.g. technology) or symbolic (e.g. language) are imbued with cultural significance, shaping, and being shaped by human practices (Dougherty, 2021). This mediation process highlights the intertwined relationship between individuals and their socio-cultural

environments, shifting the focus from a purely individualistic perspective to one that considers broader societal influences. The three generations of AT as following:

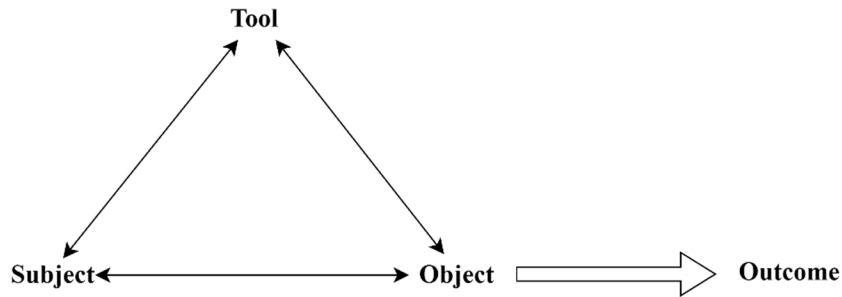


Figure 1: First Generation of AT

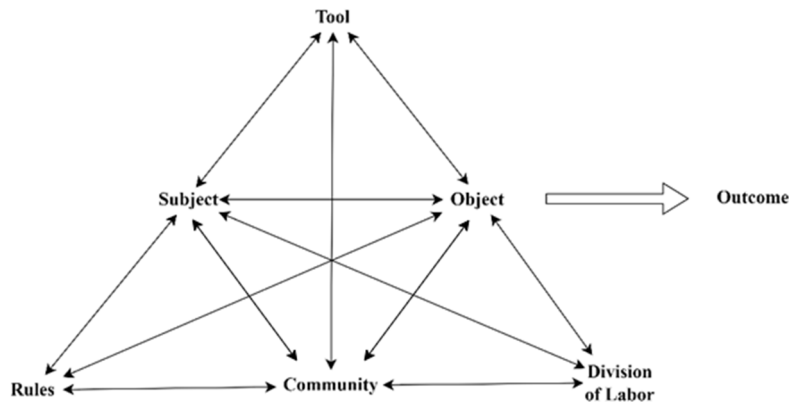


Figure 2: Second Generation of AT

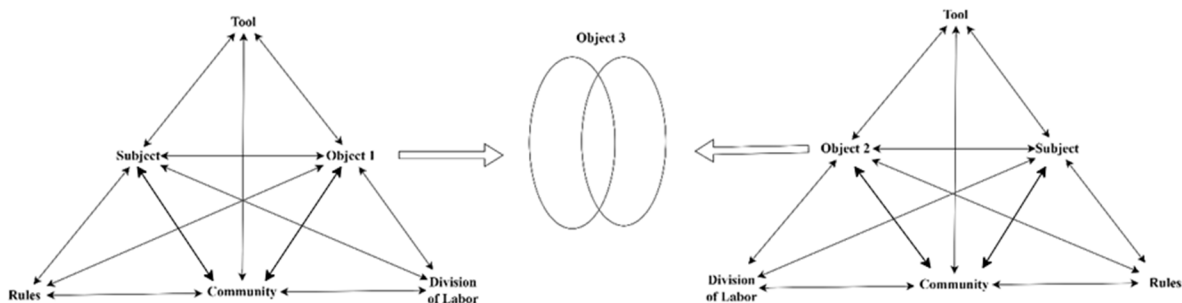


Figure 3: Third Generation of AT

In the context of OCL, AT provides a valuable lens to analyze and enhance educational processes. The AT components (Table 1)—subject, object, tools, rules, community, division of labor, and outcome—interact dynamically, offering insights into how learning activities are shaped by and contribute to the socio-cultural environment.

Table 1: Description of AT components

Component	Description
Subject	The individual or group carrying out an activity, using tools to achieve an object.
Object	The aim or purpose of an activity, which can be a motive or goal. When attained, the object transforms into an outcome, separating actions and sub-activities within the activity system.
Tools	Mediating artefacts that facilitate the transformation of the object into an outcome, demonstrating the principle of mediation. Tools can be physical (e.g., a computer), mental or conceptual (e.g., a plan), and psychological, symbolic, or abstract (e.g., language or experience).
Rules	The implicit or explicit norms, practices, and expectations that govern or shape actions and interactions within the activity system, varying based on specific communities.
Community	Participants in an activity, other than the subject, who share the same object and outcomes, reflecting the collective nature of the activity.
Division of Labour	The allocation of roles, tasks, and responsibilities among community members, also indicating status and power differences.
Outcome	The final result or goal of an activity, achieved when the object is successfully transformed.

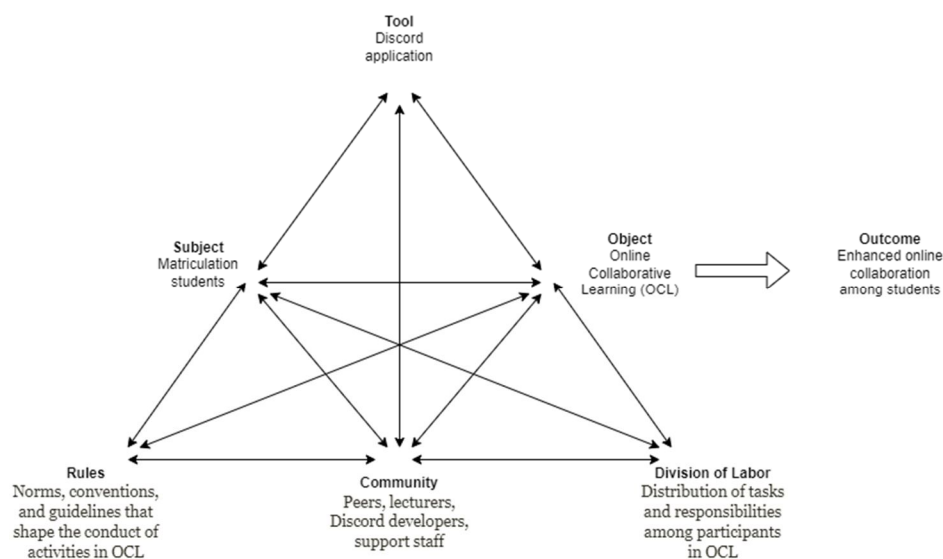


Figure 4: Unit of analysis – The use of Discord as OCL platform among matriculation students

Figure 4 illustrates an activity system model developed for the activity of OCL on Discord platform, using AT framework to demonstrate how an activity can be integrated into the frame. AT, with its emphasis on the interconnectedness of individual actions and socio-cultural contexts, thus offers profound insights into learning and development. By considering the mediated nature of activities and the dynamic interactions among the theory's components, AT provides a comprehensive framework for analyzing and enhancing learning environments. It emphasizes that learning is not just an individual cognitive process, but a collective endeavour deeply rooted in cultural and historical contexts. Through its application in educational research, particularly in

OCL, AT continues to influence and inspire innovative approaches to understanding and facilitating human learning and development.

1.2 Four Levels of Contradictions

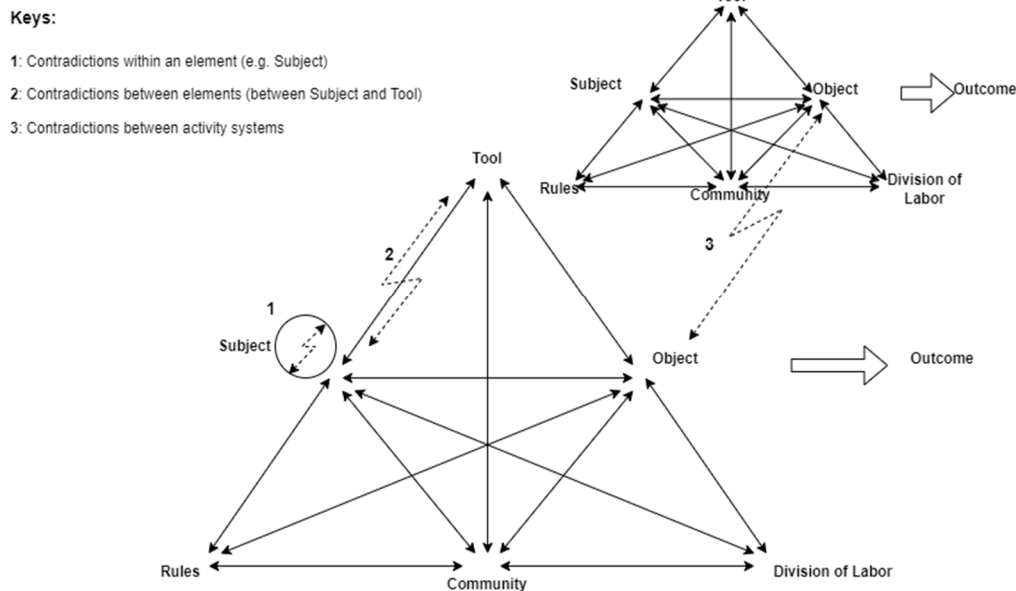


Figure 5: Contradictions within and between activity systems

Engeström and Sannino (2011) in their work identify four levels of contradictions (**Figure 5**) in activity systems:

- *Primary contradictions* occur within any single component of the system, such as tools, objects, rules, community, and division of labor.
- *Secondary contradictions* arise between the elements of the activity system.
- *Tertiary contradictions* occur when an activity system confronts an externally introduced model or idea that challenges its current way of functioning. These contradictions are between the original object and motive of the activity and the potentially more advanced object and motive that is being introduced. Associated with the transformation of the activity system, where the need to implement a new model or approach within the system creates tensions.
- *Quaternary contradictions* are found between different activity systems that have to coexist or interact. These contradictions arise between the central activity system and its neighbouring or interacting activity systems.

1.3 Aim and Research Questions

The aim of this research is to explore the contradictions perceived by matriculation students regarding the use of Discord as OCL platform and analyse them using third generation of AT. Identifying these contradictions will inform strategies to design more effective OCL experiences using technological tools. The primary research question is: *What contradictions do students perceive in the integration of Discord for OCL?*

2.0 Method

The research employed a qualitative case study methodology to deeply explore the complex dynamics of adopting and perceiving Discord as an online collaborative learning (OCL) tool in a science course at a matriculation college in Sarawak, Malaysia. The study was carried out within the Pure Science student population at the college. A purposive, non-random sampling approach was used to select 30 participants who were recognized for their active participation in online courses and proficiency with collaborative technological tools. This selection strategy was crucial for gathering rich and comprehensive data, encompassing a broad range of experiences and perspectives relevant to the OCL environment.

Ethical approvals were obtained from multiple authorities, including the Malaysian Ministry of Education via Educational Research Application System (eRAS 2.0) [Ref: KPM.600-3/2/3-eras (18676)], UNIMAS Human Research Ethics Committee [Ref: UNIMAS/TNC(PI)/09 – 65/02(80)], MoE Matriculation Division, and the Director of the respective matriculation college. These approvals confirmed compliance with national and institutional ethical guidelines. After securing ethics approval and participants' consent, a three-week intervention for OCL was designed and implemented to actively engage participants in the learning process and enhance their online learning experiences. Over the course of three weeks, participants took part in various collaborative activities such as group projects, peer reviews, and discussion forums, facilitated through the Discord platform.

By the end of the intervention, students were anticipated to have achieved a more comprehensive and enriched online learning experience. This set the stage for insightful and detailed discussions during the subsequent text-based focus group interviews conducted on Discord. These interviews, lasting between 45 to 60 minutes, involved participants who were anonymously labelled as Student 1-30. They were divided into six focus groups (FG1-FG6) for data collection. This method facilitated real-time, detailed discussions on the OCL experience. The dynamic format of the interviews encouraged participants to share comprehensive insights on their online learning experiences through open-ended questions. A thematic analysis (**Figure 6**), guided by Braun and Clarke (2006), was conducted using ATLAS.ti 24. The six-phase process involved familiarization with data, generating initial codes, searching for themes, reviewing themes, defining, and naming themes, and producing the report. This analytical approach was instrumental in uncovering the detailed understandings and perceptions of Discord's role in enhancing the OCL experience within the context of the research.

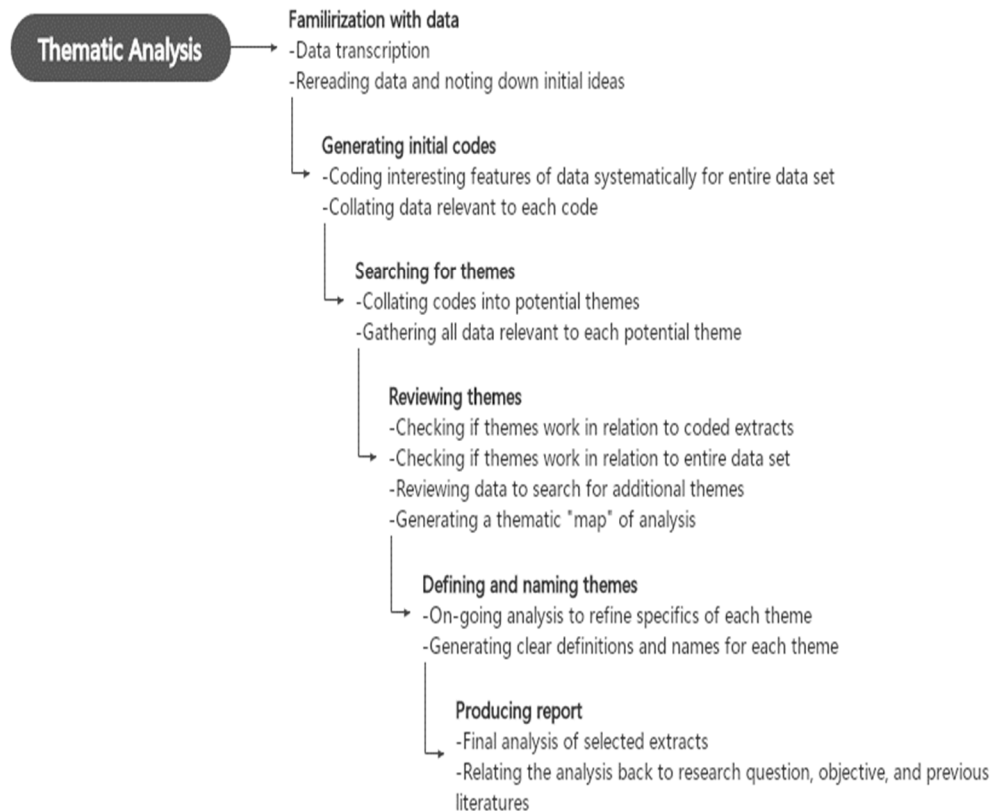


Figure 6: Six-phase thematic analysis (Braun & Clarke, 2006)

AT was used as a theoretical lens to analyze the contradictions perceived by students in the integration of Discord for OCL. In this research, the minimal meaningful unit of analysis was the use of Discord as OCL platform. In analysing the qualitative data, the elements of AT were used as “buckets” to organize the collected data to gain an in-depth understanding of the participants, processes, and components of the learning activity (Barab et al., 2004). For instance, when participants discussed about notifications in Discord affected their online collaboration, the relevant data was arranged into “Tool” (the mediating artefact that should facilitate the transformation of the object into an outcome).

3.0 Results and Discussion

The research findings are presented below according to the primary research question: *What contradictions do students perceive in the integration of Discord for OCL?*

Theme 1: Tool – Notification Issues in Discord

The data analysis reveals a disconnect between Discord’s designed efficiency and the actual experience of users in staying informed due to the notification issues. Reports from participants indicate a frequent occurrence of missing crucial alerts and messages, leading to a misalignment with the tool’s purpose as a dependable channel for communication. A participant from Focus Group 1 encapsulated a common frustration: *"Sometimes, the notification did not appear on my phone"* (Student 4, FG1) signalling a broader issue of inconsistency. This experience is mirrored in Focus Group 2, where a participant noted: *"As for the challenges, when using discord is sometimes, you won’t be able to receive the notification from any channel in the discord. Did you guys*

experience it too?" (Student 10, FG2). The discussion further highlighted that without direct tags, notifications fail to alert users, as mentioned: *"Yes, if the message has no tags for us, it will not notify us in general"* (Student 7, FG2). The impact of these notification failures is significant, with students missing important academic deadlines. One participant shared their experience: *"Yes, just like when our physic lecturer assigns or updated our new work to be submitted in his list, I don't get any notification which makes me sometime miss the deadline. That is not good"* (Student 8, FG2). The problem extends to navigating within the app, as another user recounted: *"Sometimes I saw a notification and I click on it, but it did not direct me to that message. I have to find that message by clicking into every channel"* (Student 11, FG3). The dissatisfaction with Discord's notification system prompts some users to reconsider its utility, with a participant stating: *"For me, I do not prefer to use Discord as it has the notification system's problem. I need to open it very often to prevent skipping important information"* (Student 15, FG3). This sentiment is reinforced by additional accounts of notification issues, such as: *"Based on my experience, sometimes notifications from Discord cannot come out or pop out on my mobile phone and because of this I tend to miss some important information"* (Student 18, FG4). These firsthand accounts illuminate a critical issue within Discord's notification system, where the gap between expected reliability and actual functionality leads to missed communications and deadlines. This feedback underscores the necessity for Discord to address and refine its notification mechanisms, ensuring users can depend on the platform for timely and reliable information dissemination.

Theme 2: Division of Labor – Challenges in Organizing Materials

The organization of materials and channels within Discord presents another challenge, as the platform's design intention for streamlined communication collides with the complexity and confusion experienced by users. Despite the presence of numerous channels intended to facilitate organization, participants frequently find themselves ensnared in a web of confusion, struggling to locate specific information or materials. This dichotomy highlights a critical tension between the envisioned structural efficiency of Discord and its actual efficacy in practical use. A participant from Focus Group 3 encapsulated this challenge by noting the necessity of navigating through every channel to find a specific message, illustrating the time-consuming and inefficient nature of the current organizational system: *"I have to find that message by clicking into every channel."* (Student 11, FG3). This sentiment is further echoed in Focus Group 5, where a participant described the process of locating a needed sub-channel as overly complicated, requiring meticulous attention: *"It seems to be a little bit complicated for me because you have to see carefully whenever you want to look for the sub-channel that you need the access to."* (Student 24, FG5). The challenge is compounded when servers contain an excessive number of channels, as highlighted by a participant from Focus Group 3, who pointed out that an abundance of channels can lead to confusion: *"The disadvantage of using Discord is that sometimes if a server has too many channels, it makes me confuse."* (Student 12, FG3). This issue not only affects the ability to find information efficiently but also introduces a distraction element, as noted by a Focus Group 6 participant. The concurrent discussions across various channels and servers can divert attention from focused tasks, further detracting from the platform's utility: *"In my opinion, the disadvantage of Discord is it can be distracting sometime especially for who are trying to focus on the other tasks. While we collaborate on one topic, others might be discussing on other channel or server which I find it quite distracting."* (Student 28, FG6). These insights collectively outline a significant challenge within Discord's framework, where the abundance and arrangement of channels, intended to enhance organization, inadvertently foster confusion and inefficiency. The feedback from participants clearly indicates a discrepancy between the platform's structural design and its practical application,

suggesting a need for re-evaluation and potential restructuring to better align with the users' needs for efficient and straightforward material organization.

Theme 3: Tool – Technical Difficulties in Discord

The technical challenges reported in Discord manifest a notable disparity between the anticipated seamless functionality of the tool and its actual performance in real-world scenarios. These technical obstacles detract from the user experience, impeding effective engagement with the platform and, consequently, affecting its capacity to meet the educational needs of its users. Participants have voiced their frustrations with the platform's slow startup times, noting that the delay in opening Discord on a laptop can be significant. One participant from Focus Group 1 mentioned: "Yes, the waiting time to open Discord on laptop is quite long. Or maybe I am the one who is impatient." (Student 3, FG1). A sentiment echoed by another participant from Focus Group 2 who experienced such lengthy loading times that a laptop restart was required to access the application: "Another challenge that I experience during my time using Discord is the loading time is too long. I need to restart my laptop then I will be able to open it." (Student 10, FG2). The issue of slow refresh rates, particularly when accessing Discord on a laptop, was identified as a further impediment, with one participant attributing this difficulty to internet connectivity issues: "For me, Discord is quite difficult to refresh the page, depending on the internet connection. Especially when I try to open it on laptop." (Student 16, FG4). Frequent updates compound these technical hurdles, as noted by a participant who found that Discord consistently requires updates upon login, leading to further delays: "There are a lot of updates on Discord. It's like, every time I open Discord on laptop, it is always updating." (Student 5, FG1). The duration of these updates, sometimes excessively long, adds to the users' frustration: "Sometimes, the update takes too long." (Student 6, FG2)

Additionally, bugs within the platform, particularly affecting voice chat functionality, were highlighted as a source of embarrassment and inconvenience for users: "Then, the mic or voice chat always have bugs, when I accidentally turn on my mic it is embarrassing." (Student 9, FG2). The inability of Discord to operate smoothly across multiple devices simultaneously was also criticized for complicating users' workflows: "Discord does not operate smoothly with two devices at the same time, it really makes my work troublesome." (Student 20, FG4). These technical issues show a critical gap between Discord's envisioned user experience and its operational reality. The platform's technical limitations not only hinder user engagement but also pose significant challenges to achieving educational objectives, signalling a need for improvements to ensure Discord meets its users' expectations for a smooth, efficient, and reliable communication tool.

Theme 4: Tool – Discord's Limitations

Discord's resource-intensive nature, marked by significant data consumption and memory space requirements, introduces a stark contradiction with respect to accessibility and usability, particularly impacting participants with constrained internet bandwidth or limited device capacity. This situation highlights a discrepancy between the platform's operational demands and the diverse technological capabilities of its user base, challenging the inclusivity and equity of the educational environment facilitated by Discord. A participant from Focus Group 1 succinctly noted the high data usage associated with Discord, stating: "Discord consume lots of data." (Student 4, FG1). This observation is reinforced by a contribution from Focus Group 4, where a user emphasized the need for a robust internet connection to ensure Discord's optimal functionality, underscoring the platform's reliance on significant internet bandwidth: "I think Discord needs a large amount of internet data for it to function normally. A fast internet connection is needed so that Discord can operate at its finest."

(Student 20, FG4). The platform's demand for memory space further compounds these challenges. A participant from Focus Group 5 highlighted Discord's considerable RAM usage, pointing out a critical flaw in its design that impacts device performance: *"I think Discord has flaws in terms of its memory space. Discord takes up a fair amount of RAM."* (Student 22, FG5). This issue resonates with the experience of another user who initially attributed performance issues to their device's memory capacity before recognizing Discord's substantial memory requirements: *"Yes, I totally agree with you. I also experienced the same issue. At first, I thought the problem was my phone memory."* (Student 25, FG5). These limitations present a significant barrier to equitable access and participation in Discord-based learning environments, particularly for individuals with limited internet resources or older, less capable devices. The discordance between Discord's resource demands and the varied technological contexts of its users calls for a critical reassessment of the platform's design and optimization strategies. Addressing these issues is essential to enhance Discord's accessibility and ensure it serves as an inclusive tool for collaborative learning, regardless of participants' technological circumstances.

Theme 5: Rules – Accessibility Issues with Discord

Accessibility concerns stemming from the dependence of Discord on stable internet connectivity and the lack of offline access underscore a significant contradiction within the platform's operational framework. Discord's design, aimed at fostering accessible and flexible learning environments, paradoxically faces limitations due to its reliance on continuous internet access. This dependency creates a barrier for users in regions plagued by inconsistent internet services, directly impeding the platform's role in offering equitable access to educational resources and engagement opportunities. Participants from Focus Group 4 have highlighted the difficulties experienced when attempting to refresh Discord pages, attributing these challenges to the quality of internet connection: *"For me, Discord is quite difficult to refresh the page, depending on the internet connection."* (Student 16, FG4). This issue is further exacerbated for individuals with unstable internet connections, for whom utilizing Discord for online learning becomes a formidable challenge: *"So, for those who often have weak internet connection, it seems that it would be a big challenge for them to use Discord for online learning."* (Student 20, FG4). The necessity for a stable internet connection to ensure smooth operation on Discord is echoed by participants from Focus Group 5, who note the critical need for reliable connectivity to access information and materials essential for online assignments: *"Thus, we should have a stable internet connection in order for us to use it smoothly."* (Student 22, FG5). *"I can say that Discord needs stable internet connection as it consumes a large amount of data for us to access the information and materials needed for our online assignments."* (Student 23, FG5). This sentiment is shared by a participant from Focus Group 6, who, despite uncertainties about Discord's exact internet requirements, acknowledges experiencing connection-related issues: *"Oh yes, sometimes I also face this connection problem. But I am not sure whether Discord needs a very stable internet connection to access, or maybe not."* (Student 26, FG6). The absence of offline access further compounds these accessibility issues, as noted by a Focus Group 2 participant, highlighting the inability to access materials without an internet connection: *"The disadvantage of using Discord, when there is no internet connection, we cannot get access to the materials in there."* (Student 9, FG2). These insights reveal a critical gap between Discord's potential as a versatile educational tool and its actual efficacy in scenarios marked by internet unreliability. Addressing these accessibility challenges is paramount to enhancing Discord's inclusivity, ensuring that all participants, irrespective of their geographical location or internet stability, can benefit equally from the educational opportunities it aims to provide.

The exploration of Discord as an educational tool through the lens of Engeström's AT uncovers a multifaceted landscape of contradictions within its use, illuminating the complex interplay between technology, users, and educational objectives. In the **Table 2** below, these contradictions are categorized into primary to quaternary levels of contradictions, together with their descriptions and proposed solutions.

Table 2: Contradictions and their proposed solutions

Type of Contradiction	Description	Proposed Solutions
Primary	High data and memory requirements of Discord vs. users' technological resources	<ol style="list-style-type: none"> 1. Develop a lite version of Discord for educational purposes. 2. Introduce data usage settings to allow users to control their consumption.
Secondary	Discord's designed functionalities vs. user practices	<ol style="list-style-type: none"> 1. Gather user feedback to align Discord's features with educational needs. 2. Adjust the notification system and channel organization features based on user feedback.
Tertiary	Existing operational model of Discord vs. need for innovative approaches to meet educational users' needs	<ol style="list-style-type: none"> 1. Optimize code for improved performance across devices. 2. Introduce offline modes and asynchronous communication features. 3. Co-design with educational technologists to develop features catering to online learning environments.
Quaternary	Discord's capabilities vs. broader requirements of the educational system it supports	<ol style="list-style-type: none"> 1. Integrate Discord with existing educational technologies and platforms for seamless interoperability. 2. Develop partnerships with educational institutions to align features with their needs. 3. Create features that support accessibility and allow educators to manage and structure learning activities, fostering a more inclusive and equitable environment.

Conclusion

The analysis of Discord's use in OCL through Engeström's AT elucidates the intricate challenges and dynamics at play. The identification of dilemmas, conflicts, critical conflicts, and double binds across the levels of contradictions provides a comprehensive framework for understanding the issues faced by users and the platform alike. Addressing these contradictions is crucial for the ongoing development and refinement of Discord as an educational tool, ensuring it can more effectively meet the needs of its users and the goals of the educational communities it serves. This endeavour requires a collaborative effort between developers, educators, and users to foster an environment that is both technologically robust and aligned with educational principles of accessibility and inclusivity.

Declaration

All authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

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