

CHALLENGES OF ONLINE COLLABORATIVE LEARNING AMONG SPECIAL NEEDS UNIVERSITY STUDENTS

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Abstract

Teaching and learning in the 21st century is no longer confined in the four walls of a classroom, as classes can also be conducted online. However, a predominant disadvantage of online learning is the limited opportunity for students to have face to face interaction with educators and peers. In contrast to able-bodied students, online collaborative learning among special needs students (SNS) has not been closely examined and their experience has been minimally evidenced in the current body of literature. Therefore, the purpose of this study was to investigate challenges faced by the special needs university students when having online collaborative learning. This study was conducted quantitatively, whereby a survey method was used for the data collection. Analysis of data was performed using SPSS, specifically employing descriptive statistics analysis. Based on the findings of the study, it was found that the SNS in this study mostly had problems communicating with their peers during online

collaborative learning. They were not really lacking in collaborative skills, but they were more concerned about their peers' perspectives on their disabilities, and their abilities to do group work. In addition, they also did not have many issues with assistance tools and technology when doing online work with their peers. In conclusion, to ensure that SNS have a meaningful learning experience in collaborative learning, all parties should be made aware of and given exposure on working with SNS in all educational institutions in the online setting.

Keywords: Challenges in online learning; online collaborative learning; online learning; special needs students; tertiary education

Abstrak

Pengajaran dan pembelajaran pada abad ke-21 tidak lagi terhad di dalam kelas, kerana kelas juga boleh dijalankan secara dalam talian. Walau bagaimanapun, kelemahan utama pembelajaran dalam talian adalah peluang terhad bagi pelajar untuk berinteraksi secara bersemuka dengan pendidik dan rakan sebaya. Berbeza dengan pelajar normal, pembelajaran kolaboratif dalam talian dalam kalangan pelajar berkeperluan khas (PBK) belum dikaji dengan teliti dan pengalaman mereka telah dibuktikan secara minimum dalam kajian literatur. Oleh itu, tujuan kajian ini adalah untuk mengkaji cabaran yang dihadapi oleh pelajar universiti berkeperluan khas ketika pembelajaran kolaboratif dalam talian. Kajian ini dijalankan secara kuantitatif, dengan kaedah tinjauan digunakan untuk pengumpulan data. Analisis data dilakukan menggunakan SPSS, khususnya menggunakan analisis statistik deskriptif. Berdasarkan dapatan kajian, didapati PBK dalam kajian ini kebanyakannya menghadapi masalah untuk berkomunikasi dengan ahli kumpulan semasa pembelajaran kolaboratif dalam talian. Mereka sebenarnya tidak mempunyai kekurangan kemahiran kolaboratif, tetapi mereka lebih mengambil berat tentang perspektif rakan sebaya mereka tentang ketidakupayaan mereka, dan kebolehan mereka untuk melakukan kerja berkumpulan. Di samping itu, mereka juga tidak mempunyai banyak masalah dengan alat bantuan dan teknologi semasa melakukan kerja dalam talian dengan ahli kumpulan mereka. Kesimpulannya, bagi memastikan PBK mempunyai pengalaman pembelajaran yang bermakna dalam pembelajaran kolaboratif dalam talian, semua pihak harus dimaklumkan dan diberi pendedahan tentang cara bekerja dengan PBK ini di semua institusi pendidikan.

Kata kunci: Cabaran pembelajaran dalam talian; pembelajaran dalam talian; pembelajaran kolaboratif dalam talian; pelajar berkeperluan khas; pendidikan tinggi

1.0 INTRODUCTION

Education in the 21st century is no longer dependent only on traditional chalk and talk method, due to the advancement of technology. On top of that, the COVID-19 pandemic has witnessed an expansion of online learning, especially in developing appropriate platforms and resources to safeguard a quality learning experience for students (Sugino, 2021). Higher learning institutions had to adapt and make multiple changes to the teaching pedagogy to ensure all students possess equal access to the learning process (Meda & Waghid, 2022). Thus, online learning has prompted a spike in the integration of collaborative learning (CL) in traditional classrooms. The effectiveness of CL has been well-documented in many studies as CL encourages students' higher-level thinking and assists them to retain information longer compared to self-learning (Amalia, 2017). CL deviates from an educator-centred method of learning to a joint intellectual learning between students and their educators.

Extensive studies in Asian settings (Sugino, 2021; Kanno, 2020) and non-Asian settings (Burress & Peters, 2015; Zambrano et al., 2019) have advocated for CL as they deemed this method of learning to possess many benefits. Nevertheless, these benefits may not be fairly experienced by Special Needs Students (SNS). The term Special Needs Students (SNS) is referred to as those students with disabilities, who have official certification from the medical experts stating that they have disabilities either internal, external, or a combination of them (Tohara et al., 2021). The research to date has not been able to provide robust evidence that SNS are benefiting from collaborative learning. As more active interaction is required to engage them and make them feel like they are part of the learning process, it is important to ensure equal opportunities for both able-bodied students and SNS for inclusive learning in a virtual classroom (Muniroh et al., 2017).

The Malaysian government has exercised significant effort to ensure SNS' well-being is prioritised as articulated in the Disability Inclusion Policy (Malaysia Ministry of Education, 2021), which was included in the Malaysia Education Blueprint (2015 – 2025). However, this effort has not been sufficiently articulated for tertiary students which must be promptly addressed. The well-being of SNS on collaborative learning particularly in an online setting should be considered by education institutions in Malaysia. The presence of these students provides an important opportunity to advance the understanding of online collaborative learning experience by SNS as it is fundamental in molding graduates who are independent and creative learners (An, Kim, & Kim, 2008).

1.1 Problem Statement

The effectiveness of online collaborative learning may be challenged when the SNS are included in this learning setting. This conclusion is supported by Moritz et al. (2021) as they reported that SNS who do not possess high skills of self-regulation were less involved in digital learning. These students often have unique learning requirements, which are not always accommodated within the traditional collaborative learning environment, leading to feelings of social isolation, exclusion, and lack of engagement in the learning process (Halpern-Manners et al., 2022). Compared to the able-bodied students, there are a lot more aspects that need to be considered when SNS are involved.

In addition, the SNS require more educational support to ensure their learning success (Yazcayir & Gurgur, 2021), especially from their instructors and peers. It is also important to acknowledge the SNS's struggles in different learning settings. For instance, collaborations in physical classrooms provide opportunity for the able-bodied students to socialise with the SNS, hence making them to be more understanding and tolerable towards this minor group. On the contrary, it is believed that the SNS might have additional issues in online classes, such as difficulty to collaborate with their classmates. To this end, knowing and understanding SNS is crucial as it allows most students to respond and adapt accordingly when collaborating with each other online (Alonso, Gañete, & Bernárdez-Gómez, 2019).

This study will address some gaps identified when it comes to online collaborative learning among SNS. First, there is a research gap in which studies related to this topic area are scarce, especially in the Malaysian context. Since Malaysia is starting to focus more on inclusive education, it is important to know what are the challenges faced by SNS when collaborating with their classmates online. The second research gap is in term of the setting of collaborative learning, whereby a lot of previous studies focused more on the physical classroom setting rather than the online setting (Zabeli, Kaçaniku, & Koliqi, 2021; Muniroh et al., 2017; Yazcayir & Gurgur, 2021). The third gap is the study population, whereby most studies in this area involved only parents and teachers, and rarely on the SNS themselves (Whitley et al., 2021; Maatuk et al., 2022; Moritz et al., 2021). The gaps identified from the aforementioned studies emphasise the necessity of the present study.

Based on the gaps mentioned above, this study aimed to explore online collaborative learning between SNS in tertiary education institutions. Hence, the objective of this study was to identify the challenges experienced by SNS in online collaborative learning. The results of

this study would then answer the research question of: "What are the challenges faced by special needs university students?".

1.2 Online Collaborative Learning among Special Needs Students

Collaborative learning is part of a learner-focused pedagogy model that influences students' group participation in the educational process. It aims to create environments where students can actively collaborate to share and co-construct knowledge (Chi & Wylie, 2014). However, there is a lack of discussion on how SNS cope in their formal learning environment, specifically in their interaction with teachers and peers. In Malaysia, the inclusive practice of the education system has indirectly involved students with disabilities to utilize digital literacy skills as their learning strategies.

Despite the advantages of online collaborative learning (OCL), there are several impeding factors, such as technological, domestic, institutional, and community barriers (Baticulon et al., 2021; McCollum et al., 2019). The present study believes that inclusivity in OCL should be considered by considering the challenges faced by minority groups, especially the SNS. This is because OCL underpins a new learning experience and demands learners to be highly motivated in their cognitive aspect and emotional engagement. Meda and Waghid (2022) investigated the perceptions of people with disabilities and SNS regarding remote online learning in the UAE. Their results revealed that SNS maintained positive perceptions of online learning and collaborated with other students in group activities. However, the study also maintained that the same learning approach might not work for all SNS. Some SNS might prefer face-to-face instruction because they have difficulty staying on an electronic device for excessive time. In contrast, others, especially those who are blind, might favour online learning because they primarily depend on their sense of hearing. Meanwhile, Pang and Jen (2018) compared dyslexia and non-dyslexia students in various online collaborative environments. Results revealed that specific online platforms, such as text chat, are ineffective for both groups of students, while video conferencing is suitable for most learners. Despite no significant differences between dyslexia and non-dyslexia challenges in their collaborative learning, there are concerns in terms of self-esteem and performance during discussions, leading those with dyslexia to feel uncomfortable when facing their peers.

It would be important and informative to examine the social-cognitive and emotional perspectives in understanding SNS's OCL experience. This is because the success of OCL takes place in many instances outside knowledge construction, such as "identifying group

identity and evaluating group work share" (Du, Zhou, & Xu, 2016). These elements are reflected in Vygotsky's theory of social constructivism, which is an important dimension of collaborative learning as the success of the learning strategy is associated with the process of meaning-making. The present study examines whether the method rooted in Vygotsky's idea is implemented during OCL. It is important to analyze the possible barriers to OCL to effectively design the learning approach that the SNS needs.

1.3 Challenges of OCL for Special Needs Students

OCL has profoundly influenced higher education; yet, SNS frequently encounter distinct barriers that impede their educational experiences. Technological limitations and disparities are a significant challenge in OCL (Porter, Greene, & Esposito, 2021). Many SNS lack adequate technology equipment or dependable internet connectivity to engage fully in online learning. The digital gap intensifies existing educational disparities, hindering these students' participation in collaborative online activities (Bakaniené et al., 2022; Verulava et al., 2022). Fakhru et al. (2022) contend that students with disabilities experienced challenges related to digital accessibility, a lack of assistive technology, and insufficient access to instructional and evaluative approaches. Consequently, educators were required to create tailored activities employing both synchronous and asynchronous interactive techniques, enabling participation from children with special needs, preferably in small groups or individually (Parmigiani et al., 2021).

In addition to technological access, researchers have discovered that insufficient accommodations exacerbate the difficulties of online learning. In this study, accommodation is referred to as any items, tools, or gadgets that could help the SNS to learn in any learning setting. Terras, Anderson, and Grave (2020) contend that the flexibility of online learning and students' capacities in self-accommodation and self-advocacy are crucial for the academic performance of students with disabilities in online courses. A prior study by Gin et al. (2022) indicated that students faced challenges in accessing existing accommodations, and there was insufficient information from Disability Resource Centers (DRCs) concerning the adoption of these accommodations for online learning environments. However, another element to consider is the preparedness of the instructors. Online educators faced challenges in delivering technology-based accommodations and adaptations for students with disabilities, frequently depending on resources inherently available in the online learning environment to all students (Carter & Rice, 2016).

To establish efficient support systems for university students with disabilities, it is essential to comprehensively understand the diverse aspects that affect their learning experiences. This encompasses the acknowledgment of individual traits (such as self-advocacy and self-esteem), external support systems (including family and educators), and institutional adaptations (like inclusive policies and accessible resources), all of which influence learning challenges faced by students in higher education (Moriña & Biagiotti, 2021; Bartolo et al., 2023; Lipka et al., 2020; Valle-Flórez et al., 2021). A recent study by Algolaylat et al. (2023) examined the obstacles to implementing inclusive education methods at X University in Jordan, as experienced by students with disabilities. The study, conducted through semi-structured interviews with ten students possessing sensory and physical limitations, highlighted five primary challenges: the physical environment, adjustments, personal attitudes, assistive technologies, and administrative procedures.

Furthermore, a study conducted by Kisanga (2020) on the educational and social impediments encountered by students with sensory disabilities at two Tanzanian universities revealed substantial academic difficulties, including insufficient resources, suboptimal teaching methodologies, communication obstacles, examination challenges, restricted access to information, curriculum limitations, environmental inaccessibility, and adverse perceptions. Students utilized problem-focused and emotion-focused coping strategies to address these obstacles. Amin et al. (2021) examined the experiences of students with visual impairments at a Malaysian higher education institution and identified five principal challenges: financial constraints, societal stigma, accessibility, peer acceptability, and academic difficulties. Despite these challenges, students use numerous coping mechanisms to succeed in academics. Educational institutions must develop inclusive policies, improve support systems, and create a more inclusive environment for SNS to address these issues. Universities can assist these students succeed by focusing accessibility and favorable perceptions.

1.4 Vygotsky's Social Constructivism Theory in Collaborative Learning

Inclusive education has become the primary method for catering to the needs of children and young individuals with special educational needs (SEN) and disabilities, both in the UK and around the world (Lindsay, 2018). Vygotsky introduced a social constructivist approach which merged from his own experiences with disabled children, specifically those who suffered from sensory and physical impairment, as well as mental disabilities (Kugelmass, 2007). Through his approach, Vygotsky believed that all children should be taught similar content and that learning is most effective when it occurs in a social and interactive environment. In addition,

Vygotsky proposed that an individual's learning lies within the zone of proximal development (ZPD), which refers to the difference between what a child can do independently and what they can do with the help of others. Vygotsky's concept of ZPD explains that children can receive support and guidance from more knowledgeable others, such as teachers or peers in a learning environment. Their learning thus, is considered as more significant and meaningful due to social interactions and collaboration.

In the context of special needs children, Jamero (2019) demonstrated her implementation of social constructivism and play with autistic children and found that there are certain acts or behaviours that would encourage or discourage these autistic children from responding in conversations. This represents the importance of the surrounding environment in the SNS's learning environment. Other than that, Jamero (2019) also highlights the educator's role in collaborative learning. In her study, the teachers tend to pair children with varying abilities in the activities to encourage interactions among them. It is important to consider how the SNS interact with their peers and instructors, and how they are able to use technology to facilitate their learning. Vygotsky's emphasis on the importance of social interaction and collaboration is highly relevant in the present study, as SNS may need to rely on peer support or specific tools and accommodations to effectively participate in online collaborative activities.

1.5 Online Collaborative Learning Theory

Online collaborative learning (OCL) theory is a pedagogical approach that emphasizes the importance of social interaction in the learning process particularly in digital environments. Incorporating OCL principles can significantly enhance the educational experience for SNS in online environments. By fostering a collaborative atmosphere, educators can create opportunities for SNS to engage with their peers, share diverse perspectives, and develop essential social skills. This approach not only helps to mitigate feelings of isolation often experienced by these students but also encourages them to actively participate in the learning process. As Gaad (2022) highlights, understanding the unique challenges faced by SNS allows educators to tailor their instructional strategies, ensuring that all students can access and benefit from collaborative learning experiences.

There are three key phases of OCL namely idea generating, idea organizing, and intellectual convergence. These phases play a vital role in facilitating meaningful interactions among students. During the idea generating phase, SNS can express their thoughts and

contribute to brainstorming sessions without the pressure of immediate judgement. This democratic process helps build confidence and encourages participation. In the idea organizing phase, students analyse and categorise the ideas presented, allowing them to engage in critical thinking and reflection. Finally, the intellectual convergence phase promotes synthesis of ideas, leading to shared understanding and collaborative problem-solving (Harasim, 2012). These phases are particularly beneficial for SNS as they provide structured opportunities for engagement and learning.

2.0 MATERIALS AND METHODS

This study employed a quantitative approach in which a cross-sectional research design was employed. The target population of this study was the SNS from one public university in Malaysia. Since the SNS are the minority community in the university, this study had limited access to them which resulted in a small sample size. In total, this study managed to gather 33 responses from the target population. A one level cluster sampling technique was utilised whereby the target population was clustered according to 34 campuses of the university. From these 34 campuses, 29 campuses were randomly selected using a random number generator. Then, to collect the data, this study contacted the coordinator of the SNS department to distribute questionnaires to the target population in these 29 campuses.

This descriptive study employed a survey method to collect information about a targeted population to describe the characteristics of the domain (Collis & Hussey, 2014; Swanson & Holton, 2005). Before the study was conducted, an instrument was developed to identify the challenges among SNS in online collaborative learning. The instrument was adapted from two studies, specifically from Muuro et al. (2014), Ha et al. (2017), and Toran et al. (2009). There were three sections in the instrument: respondents' demographic profiles, challenges of collaborating online with group members, and lack of collaborative skills challenges. In total, there were 25 items for the respondents to answer.

Once the development of the instrument was completed, the instrument went through a validation process in which three expert panels were involved. The first and second panels were experts in English and Malay languages respectively, whereby they checked the words, tenses, and structure of the languages used in each item. Meanwhile, the third panel is an expert in special education, whereby all items and terms used in the instrument were checked to ensure they were appropriately and correctly used. All comments and feedback from the panels were addressed and amendments were made accordingly.

Before the questionnaires were distributed to the respondents, this study first went through the research ethics procedure. The application for research ethics approval was done through the university to ensure all ethical considerations were satisfied before the study was conducted. This was very crucial, since this study involved a vulnerable group of students. Once the approval of the research ethics committee was received, this study then proceeded to contact the Special Needs Services and Development Department to get permission to conduct the study among the SNS in the university. Through the department, the Google Form link of the questionnaire was shared and distributed to the respondents. After the data collection process was done, all responses were then transferred to the SPSS Version 29 for data analysis purposes. Descriptive statistics analyses were conducted.

3.0 RESULTS AND DISCUSSION

Based on the analysis of the data, the Table 1 shows the demographic data of the respondents involved in this study according to four categories: gender, age, level of study, and types of disability.

Table 1. Respondents' demographic profiles

Items	Categories	Frequency (f)	Percentage (%)
Gender	Male	12	36.4
	Female	21	63.6
Age	18-22	19	57.6
	23-27	12	36.4
	33-37	2	6.1
Level of study	Foundation	2	6.1
	Diploma	9	27.3
	Undergraduate	21	63.6
	Postgraduate	1	3.0
Types of disability	Vision impairment	4	12.1
	Blindness	1	3.0
	Hearing impairment	6	18.2
	Physical disability	12	36.4
	Learning disability	4	12.1
	Autism	4	12.1
	Multiple disability	1	3.0
	Mental disability	1	3.0

Table 1 shows the respondents' demographic profiles. From the table, it is observed that a majority of the respondents were female students ($f = 21, 63.6\%$) while there were 12 male students (36.4%). Most of the respondents were in the age group of 18 to 22 years old ($f = 19, 57.6\%$). A lot of them were also undergraduate students ($f = 21, 63.6\%$) and a majority of the respondents had physical disabilities ($f = 12, 36.4\%$).

Table 2. Descriptive results of challenges of collaborating online with group members

No	Item	Mean	SD
1	I find it difficult to get clarification from group members when collaborating online	3.36	1.25
2	I find that there are differences in skill/knowledge level of group members that makes it difficult to collaborate online	3.36	1.08
3	I find that group members are not understanding of my condition when collaborating online	3.30	1.42
4	I find it difficult to ask for help from my group members when collaborating online	3.15	1.39
5	I do not get sufficient feedback from group members when collaborating online	3.09	1.18
6	I find that a single/some member always dominate group online discussion	3.09	1.04
7	I find that the workload of tasks is not shared equally among group members when collaborating online	3.03	1.21
8	I find that group members always stray away from topics when discussing online	2.85	1.25
9	I find that group members are uncooperative when collaborating online	2.82	1.21
Total mean score		3.12	1.23

Table 2 shows that two items attained the highest mean where 'I find it difficult to get clarification from group members when collaborating online' ($M=3.36, SD=1.25$) and 'I find that there are differences in skill/knowledge level of group members that makes it difficult to collaborate online' ($M=3.36, SD=1.08$). On the other hand, the item that achieved the lowest mean was 'I find that group members are uncooperative when collaborating online' ($M=2.82, SD=1.21$). Interestingly, 'I find that group members are not understanding of my condition when collaborating online' achieved a moderately high mean score of 3.30 ($SD=1.42$). Thus,

this may have led to the respondents finding it difficult to reach out for assistance as shown by the high mean score achieved by 'I find it difficult to ask for help from my group members when collaborating online' ($M=3.15$, $SD=1.39$). The total mean score for challenges of collaborating online with group members is 3.12 ($SD=1.23$).

The two items with the highest mean scores indicate that obtaining clarification from group members and dealing with skill/knowledge disparities are the most pressing issues. These findings align with previous research by Pang and Jen (2018), who identified communication barriers in online platforms for students with special needs. The difficulty in getting clarification may be worsened by the lack of face-to-face interaction in online settings, particularly affecting students who require additional support or alternative communication methods. This shows the importance of the OCL theory in which social interaction is crucial in digital learning (Gaad, 2022). The moderately high mean score for group members' lack of understanding about the respondents' conditions is concerning. This lack of awareness may contribute to the respondents' reluctance to ask for help, as evidenced by the high score for difficulty in seeking assistance. These results support de Klerk and Palmer (2022) argument that while online collaborative learning can benefit SNS, it requires specific accommodations and increased peer awareness to be truly effective. Interestingly, the lowest mean score pertains to group members being uncooperative, suggesting that while challenges exist, there is a baseline level of cooperation among students. This finding partially aligns with Meda and Waghid (2022) observation that SNS generally maintain positive perceptions of online learning and collaboration despite facing obstacles.

Table 3 displays the descriptive results of lack of collaborative skills challenges among the respondents in this study. Based on the table, it shows that the item 'I am concerned that my disability will cause me to be left behind in completing the collaborative work online' obtained the highest mean score ($M=3.91$, $SD=1.21$). This is followed by the item 'I am concerned that group members would see me as a free-rider due to my disability' with the second highest score ($M=3.88$, $SD=1.24$). In contrast, item 'I find it difficult to accept opposing viewpoints from group members when completing online collaborative work' showed the lowest mean score of 1.82 ($SD=0.81$), followed by the item 'I find it difficult to follow the planned group activities when completing collaborative work online' ($M=2.79$, $SD=1.22$). Meanwhile, the item 'I find it difficult to explain my ideas to group members when completing collaborative work online' obtained a moderate score of 3.18 ($SD=1.16$). The total mean score of the lack of collaborative skills challenges is 3.09 ($SD=1.14$).

Table 3. Descriptive results of lack of collaborative challenges

No	Item	Mean	SD
1	I am concerned that my disability will cause me to be left behind in completing the collaborative work online	3.91	1.21
2	I am concerned that group members would see me as a free-rider due to my disability	3.88	1.24
3	I find it difficult to provide help to group members when completing collaborative work online	3.36	1.19
4	I find it difficult to explain my ideas to group members when completing collaborative work online	3.18	1.16
5	I find it challenging to negotiate for a solution when completing collaborative work online	2.94	1.09
6	I find it challenging to find the right time to state my ideas during group discussions online	2.85	1.23
7	I find it difficult to follow the planned group activities when completing collaborative work online	2.79	1.22
8	I find it difficult to accept opposing viewpoints from group members when completing online collaborative work	1.82	0.81
Total mean score		3.09	1.14

The fact that most respondents in this study were concerned that they would be left behind and be seen as free riders in online collaborative learning is closely related to their self-advocacy and self-esteem (Moriña & Biagiotti, 2021), in which they were really worried about their peers' perspectives toward them and their disabilities. These feelings that they had might affect them when collaborating with their peers online. On the other hand, the results also showed that the respondents did not think they were lacking in collaborative skills, as they did not think it is difficult to accept opposing viewpoints and to follow planned group activities. These results contrast with the findings of Ha et al. (2018) study, as they found that difficulty to accept opposing viewpoints was the highest. It is interesting to learn that SNS are more accepting of opposing viewpoints compared to the able-bodied students. This means that the third phase of the OCL theory which is the intellectual convergence (Harasim, 2012) is not an issue for the SNS to do.

Table 4. Descriptive results of challenges of assistance tools

No	Item	Mean	SD
1	I find it challenging to complete collaborative work online when there is no specialized equipment for me	2.82	1.49
2	I find it challenging to complete collaborative work when there are no disabled-friendly computers/gadgets when collaborating online	2.79	1.56
3	I find it challenging to complete collaborative work when there is no interpreter to help translate communication with other group members when collaborating online	2.58	1.58
4	I find it challenging to navigate the internet to complete collaborative work with group members	2.00	1.15
Total mean score		2.55	1.44

Table 4 presents the descriptive results regarding the challenges respondents face with assistance tools in online learning environments. The item with the highest mean, indicating the most significant challenge was, *I find it challenging to complete collaborative work online when there is no specialized equipment for me* (M=2.82, SD=1.49). This is closely followed by *I find it challenging to complete collaborative work when there are no disabled-friendly computers/gadgets when collaborating online* (M=2.79, SD=1.56). Subsequently, *I find it challenging to complete collaborative work when there is no interpreter to help translate communication with other group members when collaborating online*, obtained a mean score of 2.58 (SD=1.58) which is relatively low. The item reflecting the least agreement among the respondents was also related to lack of interpreters, *I find it challenging to complete collaborative work when there is no interpreter to help translate communication with other group members when collaborating online* (M=2.00, SD=1.15).

These results suggest that, overall, respondents displayed a low agreement regarding their need for assistance technologies in a collaborative learning classroom. This finding raises, especially considering the existing literature that underscores the necessity of assistive tools for students with special disabilities requiring assistance tools to achieve meaningful learning experiences. For instance, studies by Rao, Torres, and Smith (2021) and McNicholl et al. (2021) emphasise that digital tools and technology-based instructional strategies assist in minimising learning barriers and enhancing educational outcomes for students with disabilities. Furthermore, Mahoney and Hall (2017) listed tools such as Vocaroo and Plickers that can help educator's differential and personalise learning instructions for students with

disabilities. In conclusion, while the respondents indicate a low perceived need for assistive technologies in collaborative online learning, this finding starkly contrasts established research highlighting their critical role in facilitating meaningful educational experiences for students with disabilities. However, the low perceived need for assistive technologies

4.0 CONCLUSION

The primary purpose of this study was to identify the students with special needs perceptions of the challenges they faced during online collaborative learning contexts. Vygotsky's theory and OCL theory guided this study, which emphasised social interaction in learning, including in digital environment. The findings from 33 responses gained in this study reveal insights into the challenges faced by special needs students (SNS) in online learning environments particularly on collaborating with group members and assistance tools. Results of the findings show moderate perception on challenges in online collaborative learning by SNS. Problems with seeking clarification from peers, being seen as free-riders or left behind due to their disabilities were moderately seen as significant suggesting that SNS may possess a greater capacity for intellectual convergence than previously recognized. However, the low perceived need for assistive technology by SNS may indicate discrepancy in understanding the actual need for specialized equipment to enhance learning. Overall, the study emphasizes the need for targeted interventions that foster inclusive environments through increased peer understanding and access to appropriate tools, ultimately empowering all SNS to thrive collaboratively.

This study is not without its limitations. First, the small sample size significantly restricts the generalisability of the findings. With a limited response rate, the results may not adequately represent the broader population of students with disabilities. However, it is important to note that the survey findings do reflect the genuine perspectives of the respondents involved. Also, the study may not account for contextual factors such as specific online platforms or types of collaborative tasks, which can influence the findings. Therefore, future research should consider contextual information to better understand how these variables affect the quality of collaborative learning experiences. Also, to deepen the understanding in this aspect of literature, researchers should conduct longitudinal studies which could provide further insights on how assistive tools can help students with disabilities over time. In summary, while this study provides valuable insights into the challenges faced by students with disabilities in online collaborative learning, the identified limitations highlight the need for further research that incorporates diverse samples, contextual factors, and longitudinal perspectives to fully capture

these learner' barriers in maximising collaborative learning.

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