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Understanding Students' Perceptions of Identity in Digital Connectivism Learning Environments

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Abstract

Connectivist learning theory has been widely discussed with higher-order thinking skills and critical reflection in online learning environments. Yet it is unclear how students negotiate their own identity within an academic collective learning context. To gain insights into the interrelations of learner identity, i.e. construction of learner position in one's own learning community, this study examines the manner in which the identity of a writer is negotiated intra-community of writer (how do they represent themselves while learning from others in writing tasks). A qualitative case study, involving interviews and observations in Oman higher education, was conducted with 56 Omani college students after engaging in online and face-to-face research course. Analysis of results of this study indicates a degree of success in terms of students navigating their digital, individual and group academic learner identities. However, some tensions are seen in terms of balance of participation in group work and difficulties of harnessing the benefits in mixed-ability groups of writers. More research which builds on the successes and looks for ways to address the challenges from a range of perspectives is recommended.

Keywords: *Connectivism, Identity, Digital Identity, Collective Negotiation, Academic Collective Learning*

Introduction

Students positioning themselves in their own learning in the global online ecosystems of their learning (see Coll & Falsafi 2010; Wang, 2020) is central to their own development. Online spaces can act as an extension (or spaces) for 'freed' texts from structure and rules (as in Al-Maawali, 2022a), allowing students unstructured and unsystematic self-generated initiatives through their own learning. However, regarding learner identity, evidence to date on the impact of curricula which draws on connectivist learning theory is scarce. While studies have focused on deploying online artifacts to demonstrate aspects of online identity presence, as summarized

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by Ke et al. (2011), it has been noted that identity is dynamic, cumulative (see Ching, 2021), and socially negotiated via the perceived educational constructs (Rodriguez & Lehman, 2017).

In this sense, connectivism learning theory can reorganize the role of online connections and communications with others selectively and informatively towards products that are critical and novel (Al-Maawali, 2022a). Attention needs to be given to the connective context and how learners can articulate or shape their ‘self’ or extend nodes of themselves in a connective context. How a person sees their ‘self’ interacting in a communicative context requires investigation as a fundamental aspect in online ecosystems. As Apostolidou (2022) rightly notes, future classrooms are being replaced by communities of practice and communities of inquiry, so it is important to understand what this means at a local level. The present study aims to fill a gap by contributing to understandings of what is happening at the local level in an Omani HE setting through an exploration of identity inwardly. It examines how students make sense of their academic identity when this is both enacted digitally and in the physical classroom.

Connectivist Learning Theory Constructs

Since the introduction of connectivism by Siemens (2005), the concept has received considerable attention from researchers investigating new online environments and theorists attempting to conceptualize new learning spaces (Downes, 2019, 2023). Covid-19 lockdowns and post-pandemic changes to teaching and learning practices also brought an unprecedented number of learners online. This further increased interest in connectivism worldwide in a range of subject areas (Boyras & Ocak, 2021; Lee et al., 2020; Mafenya, 2022; Salas-Valdivia & Gutierrez-Aguilar, 2021; Ulla & Perales, 2021). Connectivism learning theory can be defined as ‘distributive’ in that it ‘consists of networks of connection from experiences and interactions’ between constructs/agents (Goldie, 2016, p.1065). Unlike existing theories that highlight learning as largely memory and information processing (e.g., cognitive learning theory), or focus on constructs/conditions which mediate learning (e.g. sociocultural theory), connectivism networks human learning with technological tools utilizing the online environment as a space for self-oriented processes. In connectivism, it is therefore the students themselves who initiate learning actions and actively shape the process and their emerging learner identity. For instance, Tham et al. (2021) demonstrate an example of ‘strategic networking’ among students—connecting and ‘visualizing’ their communities utilizing personal learning networks (PLNs), thus offering implications for promoting self-direction and positioning the ‘self’ in an online learning space. An intentional positioning of self into a wider community constitutes a foundational drive for learning (Zhou et al., 2006). While connectivism has been chosen as a theoretical lens for this study, it is acknowledged that no one theory can fully account for a complex learning phenomenon. Dron and Anderson (2022) advocate openness to a wealth of pedagogies and theories—bricolage. This spirit of openness is certainly borne in mind; nevertheless, connectivism a central theoretical lens.

Such views discern learning as rather strategic, founded on correctly linked ‘nodes’ that eventually construct internal learning for individual learners and groups of learners.

The characteristics and behaviors related to nodes are of significance in terms of students' intentionally generated attitudes to build on their learning (Al-Maawali, 2022a). On this basis, a key tenet of connectivism learning theory is the aim to benefit and contribute to the motivation of individuals and their individual learning experience, taking account of different abilities, interests and interaction types in a group (Boyras & Ocak, 2021; Tschofen & Mackness, 2012). Through connectivist learning, it has indeed been shown that lower-order cognitive skills can advance to higher-order cognitive skills and subsequently lead to better quality output for individuals in a group (which is similar to the sociocultural concept of scaffolding) (as in Al-Maawali, 2022a; Wongwatkit et al., 2023). However, there is no proof of equal distribution of knowledge or even favoring the high achievers compared to their less-able peers. Gaining more insights into the intersection of individuals' learning and contribution within a distributed ecosystem of interconnected networks would enlighten teaching. What the increasing use of artificial intelligence in teaching and learning means for this learner 'self' is also an ongoing debate for connectivist theorists (Downes, 2023).

The sense of identification in intergroup identity formation and meaning negotiation are also important factors in a connectivist learning environment. Exploring this through a qualitative study concerning online influence on engagement, Sidik et al. (2021, p.1351) revealed that "students' interactions, preferences, behaviors, attitudes, mindsets, opinions, participations, supports, and motivations" constitute combined factors which predict engagement in connectivist online ecosystems. Consisting of 116 respondents, it can be insightful in terms of typical characteristics and the subsequent 'identity' and outcomes following constructed 'knowledge' in educational tasks. In an attempt to link principles of connectivism to cognitive processes, Coronado (2018) recommends using mind maps due its underlying requirement to link and analyze concepts. Similarly, Kwangmuang et al. (2021) employed the said principles for learning innovation techniques that focus on learners' analysis, evaluation and creativity. They found that ease of navigation design with clear use of icons and hyperlinks to pertinent sources can facilitate higher-order thinking. The importance of designing problem scenarios connected to daily life using multimedia to promote communication and collaboration was highlighted alongside the usefulness of video resources to understand processes. Also drawing on connectivist pedagogies, Whewell et al. (2022) conduct a design-thinking methodology-based study with 63 university students from Belgium, Denmark, England, Norway, Romania, Spain and USA who collaborated using virtual reality (VR) and augmented reality (AR) tools. They find that digital collaboration enhances global mindfulness and develops students as changemakers.

In order to maximize the benefits of connectivist learning, the literature points to self-directedness and autonomy as key attributes to promote among learners (Mackness et al., 2013; Romanová, 2020; Tschofen & Mackness, 2012; Whewell et al., 2022). Han and Reinhardt (2022) refer to online spaces as 'digital wilds' and demonstrate, through narratives tracing students' learning journeys, that autonomy is inextricably linked to students' identity development. There is evidence that support processes initiated by students in collective writing practices—particularly meaning making processes—

facilitated through connectivism learning theory which led to individualized conceptualization of one's own writing style. Al-Maawali (2022a) highlighted how innate cognitive processes were facilitated through the connective space afforded to students as writers by increasing a sense of belonging and mitigating writer's block. Affordances in terms of habits of more regularly revising scripts, reduced anxiety and increased motivation and creativity were also found by Zhang and Yu (2023) in students who were collaboratively writing in a digital environment. In terms of key factors which bring about success outcomes, a study conducted by Mackness et al. (2013)—investigating the manner by which 200 MOOCs participants learned in a course—also indicates that the only successful learners are those who are characterized as autonomous. However, such a personal trait resides in the direct act of positioning oneself. As Tschofen and Mackness (2012, p.124) reveal, learners “vary greatly in their desire for and interpretation of connectivity, autonomy, openness, and diversity”. Fostering autonomy is therefore inherent to connectivist pedagogies. In higher education, enabling students to develop their identities as writers is likely to be a crucial strand for communication and autonomy. Given this heterogeneous nature of students, Al-Maawali (2022a) considers the implementation of circles of knowledge in Omani undergraduate EFL learners, which are negotiated in the learning community and helped build a new sense of connected identity regarding behavior and cognition. Findings of this study pointed to the importance of building up “construction of collaborative and connective efforts” (p.12). In the same vein, Sitti, Sopeerak, and Sompong (2013) shift their attention to ‘learning efficacy improvements’ in the classroom that engage students in critical thinking processes based on problem-based activities in higher education ICT learning. Favorable results were highlighted upon implementation of the instructional model design in terms of knowledge, attitudes and skills. Learning environment design has thus been shown to construct experiences that can help to mediate change in learner identity. The question remains as to how to purposefully and selectively intervene in this design to positively reinforce learner identity.

Understanding Connective Identity

Although identity construction in connectivist learning is individual, this process occurs within the context of a learning community which shapes and is shaped by the individual, the group and the learning opportunities. Bakhtin (1935) explains that languages carry collective voices that are specific to particular age groups/classes, era, or location. For that reason, multivoicedness can occur when “my utterance conveys other voices though they are not mine” (p.294), by using another dialect or voice that is not the user's. As Bakhtin (1935, p.63) explains, “various genres can reveal various layers and facets of the individual personality and individual style can be found in various interrelations with the national language”. This indicates a written text can demonstrate identities selected purposefully by the writer to convey specific writerly roles and interrelations. Bowden (1995) compares voicedness to ‘wearing a dress’ to suit occasions: the ability to choose and modify a voice. Learning how to effectively co-construct and flexibly adapt this identity for second language learners and writers—increasingly conducted in a connectivist manner online—is widely acknowledged as crucial for multilingual participants and those learning English

as a second or foreign language to succeed in a globalized society (Lee & Kim, 2014; Norton, 2013; Teng, 2019). Despite this, Nesfield's (2023) study highlights how these students may have limited opportunities available to explore their digital writer identity. Identity has been perceived as a personality trait, albeit socio-politically negotiated via the perceived educational constructs (Rodriguez & Lehman, 2017). The construction of identity occurs through a process of learning that is mediated through participation, engagement, or collaboration (Coll & Falsafi; 2010; Rodriguez & Lehman, 2017) often with socialization through the context (Ybema et al., 2009) through the roles, demands, behaviors or traits a person adopts. Moreover, identity is multifarious (Wang, 2020) with successful students adjusting their writerly identity according to the task and context. For instance, Coll and Falsafi's (2010) study reveals that school students demonstrate familial self at home while exam-oriented self among other types of self-positioning. Hence, identity is internal, yet partly is socially flux. The internal aspect is the individual constructions, while the social domain includes transitioning into a group by harmonizing and transcending to commonality with the group. There is a presumed hidden aspect of the self that may manifest its traits in response to environmental catalysts (Northrup, 1989).

Identity struggle may however occur when writing in new contexts. For instance, the manner acts of negotiation and reconciliation as part of identity on undergraduate students' transitioning to higher education when there is a dramatic change in the context was observed by Turner and Tobbell (2018). They employed an ethnographic study based on tools such as observation, interactions, interviews, and analysis of documents. The study highlights the complexities of identity and its influence on individual decision making and outcomes where past, present and future identities are sometimes seen in conflict. It is noted that for some outcomes, autonomy is a prerequisite rather than something developed through the learning process. Where autonomy is not attained, this may prevent full participation in academic practice which may negatively impact learner identity. When adapting to a new academic context, it was revealed that a similar struggle of identity construction—acts of merging past, present with new group related identity—occurred. Other studies (Martin, Lord, & Warren-Smith, 2020; Wood et al., 2016) indicate the same struggle associated with achieving new goals. Challenge and struggle with identity is thus reported as part of identity growth and dynamic evolution.

Most importantly, the construct of identity is seen as self-selective and driven—achieved by conscious effort and motivation to engage within a particular setting. This was especially the case for Ching (2021), who suggested that career changes happen as Taiwanese doctoral students' academic identity develops in a community of practice, alongside mentors and interactions with peers. This can occur when individuals take particular positions in the events of their lives (Moje et al., 2009). Similarly, Idrus and Narzi's (2016) findings demonstrate that the process of connecting with an academic Malaysian ESL grouping involved a process of identifying oneself by sharing similar group interests and values, being validated and attaining group acceptance. Clearly, attempting to appear in a particular manner in a connective learning ecosystem is central to identifying oneself with others.

The literature shows numerous threads of investigation in theory and practice around

connectivism, academic identity and how students' experience their digital learning processes. However, more studies are needed to weave these strands together and explore these on a local level. There is currently a need for more studies in Oman in these areas, which makes the present research significant in seeking to address this.

Methodology

The study aims to explore emergent personal identities in socially connective and disruptive ecosystems when students collaborate during the learning process.

Research Questions

The main question of this study is:

How do a group of ESL writers negotiate their connective and inter-connective identity when writing and interacting within a writing community of researchers?

The sub questions are as follows:

RQ1: How do students perceive their academic identities in a connective ecospace?

RQ2: What is the nature of students' dispositions and behaviors when collaborating in a connectivist task?

Research Design

The study is a qualitative case study that aims to understand a phenomenon as it occurs. More specifically, its purpose is to focus on identity connections with a connective group on a task that fits the criteria of connective learning theory. It involves interviews, students' written reflections, analysis of written texts and teachers' observations of the students' engagement in connective tasks. Students investigate texts on academic identity such as Mackness et al., 2013; Romanová, 2020; Sidik et al., 2021; Tschofen and Mackness, 2012. In addition, students are instructed to work collaboratively to incorporate different sources based on both teacher-guided and autonomous selections.

Participants

The study participants are 56 undergraduate students in a university at Oman whose language level is estimated at 6.00 IELTS band (female=35 and male =21). They have covered a variety of courses and are in their 6th (out of 8) semester of majoring as teachers of English language (TESOL). The selection of the participants is purposive to include those who are enrolled in a course that requires them to conduct online surveying and personally selecting suitable materials through Blackboard and Google classes. The course requires them to conduct qualitative research, transform their knowledge into research projects, and reflect on their processing of information and existing literature review that is related to their selected research topics. The students are divided into three groups and monitored for two months inside the classroom and outside through their online interactions in G-suite and blackboard. Representative themes generated from the data are included in the results. Individual quotes and contributions which illustrate these themes are anonymized through initials assigned to participants in the study.

Instruments

Since identity is defined as deliberate and purposive construction of nodes with others based on digital and face-to-face connections created with other members of the community (Goldie, 2016), identity is investigated based on tentatively selecting who to connect with in the scholarly community. Students were asked to collaboratively produce reflective texts on their conceptualization of 'identity' as a term which required them to reflect on what they do and how they perceive themselves. In order to do so, they use available digital resources on the web to synthesize and analyze whether they apply to them in reality. Table 1 below provides a summary of the data collection.

Table 1*Tools for Data Collection*

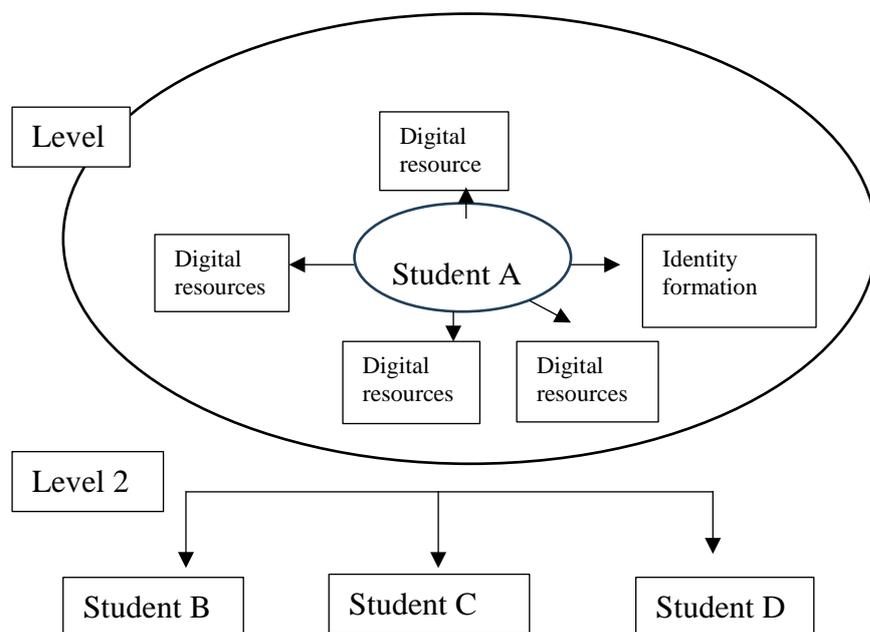
Tool	Frequency	RQ	Analysis
1-Texts (written products)	Twice weekly × 3 months	RQ 1- How do students perceive their academic identities in a connective ecospace?	Thematic analysis
2- Focus groups	3 times × 3 groups	RQ 2- What is the nature of students' dispositions and behaviors when collaborating in a connectivist task?	Thematic analysis
3- Observation of students' behavior and talk in class	3 times × 3 groups	R. Q 2- What is the nature of students' dispositions and behaviors when collaborating in a connectivist task?	Thematic analysis

Collaborative Tasks

The participants were extensively involved in tasks related to identity construction and concepts, and their interrelations in three modes: digitally, on paper, and digitally for specific tasks during classes. The first task required the participants to read about 'identity and discuss its conceptualization in relevant literature'; then, to respond in terms of how this relates to their own performance in digital connective spaces. Next, they were involved in critical construction of new ideas wherein the students have to decide the final outcome by deciding which content is important to highlight and what form of genre is more suitable and text genre (summary or part of literature review) of their produced texts. This task is built on concepts and premises of connective learning theory that afford mental and critical reconstruction of ideas. Hence the students are provided with a task that includes two sections; one is a working draft of literature review and the other is a critical response. Task 3 requires students to write reflections after each group discussion on identity, synthesizing the literature and their own reflections. They refer to their stance on existing concepts of literature such as: self-representation, reconstruction, the mediating role of technology and making use of connectivist 'nodes'. The task requires students to incorporate reflections on their behaviors, feelings, meaning negotiation, and acts of acceptance, deferral or negotiation of others' opinions. The tasks are administered in a manner demonstrated in Figure 1 at two levels. The first level is connecting with digital resources to form perceptions of materials and the second level is actual negotiation of the learnt concepts to claim a self-niche or demonstrate a part of academic identity.

Figure 1

Identity (Re)construction in Extended Connective Context



*Arrows indicate the connections

Ethical Process & Trustworthiness

Institutional approval for conducting research was obtained by the relevant department at the college. Consequently, the students signed the college related ethical forms that outlined their rights to participate without duress, their privacy, confidentiality, and withdrawal from the study at any time.

Data Analysis

Data were analyzed thematically (Braun & Clarke, 2019, 2021) using NVivo following grounded theory principles to uncover interconnections and nodes of identification of oneself and behaviors. Grounded theory can be used, in this case, as a means to capture and theorize academic identity development in undergraduate students through their interactions and views expressed during the process (Creswell & Guetterman, 2021). Thematic analysis allows certain themes to be generated from the purposive connections reported by the learners.

Results and Discussion

Differences were revealed in the academic identities as outlined in Table 2. Individual academic identities uncovered have been divided into two broad categories.

Table 2*Results of Academic and Connective Identity among Young Writers*

Themes	Sub-themes
Traits of identity construction	<p>1- High achievers demonstrate a high sense of academic knowledge (respected by colleagues for their academic achievement and ideas- not the same as. Two types:</p> <p>1) Impress teacher by presence, discussion, paying attention and confidence</p> <p>2) Less observed by teacher who are acknowledged by their high-achieving colleagues (less known in the digital space by community members)</p> <p>Isolated identity- academically voiced and distinctive identity (who already worked out their voice/academic conceptualisation)</p> <p>2- Known by their academic community for their general admirable character. Their speaking ability is more developed; they know what to say in different situations. They are attentive, assertive in their requests.</p>
Connection (nodes)	Lack of connective skills (led to isolation, singularity of ideas, or burying own ideas)
Outcomes	Responsibility is on the high performing students Flattened quality at the average level, rather than working on the strengths of

The results are presented and discussed under the following interrelated themes: traits of identity construction, digital identity, task quality and problematizing students' shared knowledge. These four sections address the main research question: How do a group of ESL writers negotiate their connective and interconnective identity when writing and interacting within a writing community of researchers? 4.2 and 4.3 focus on student perceptions of themselves in the connective space (sub-question 1), whereas 4.4 and 4.5 consider the student perceptions of themselves in relation to the connective task (sub-question 2).

Traits of Identity Construction

The first category is underlined under high achievers and included only three participants (out of 56). They demonstrate a clear sense of their level and knowledge in the target specialization-related or course-related content which showed in their discussions about content and acceptance and negotiation. Clear understanding of how and when to connect was also noted in class observations amongst high achievers. This meant that those students preferred isolation from the groups when their academic values did not fit together. Those who demonstrated a stronger academic identity were able to make connections that clearly influenced their own learning or outcomes positively. These students also sought to be seen as distinguished or 'different' from the rest of their group. Another characteristic is that they choose to connect with similarly successful colleagues or classmates. This indicated purposeful attempts to choose the most suitable 'resources'.

The less-able academically performing students demonstrated unstructured academic values and goals but underlined the importance and challenges of maintaining positive group dynamics among peers. However, they were more active in connecting. The majority of digital connections forged show lack of mediating skills or connection skills when connecting within the community of writers. This is particularly because sharing one's own ideas and arguments requires, as noted by a focus group participant, an in-built 'confidence

to communicate and discuss ideas together”. Difficulties in managing critical thinking were observed and readily acknowledged by focus groups and reflections. At the level of performance, this led to writing sometimes poorly connected concepts and perspectives. In focus groups, few students justified that it is a ‘thinking aloud in collaboration task’ which is difficult and new but also ‘students are supposed to accept the criticism by other students’ which can influence the harmony of the group negatively. In each of the three focus group discussions, students acknowledged that the breakdown of harmony could be due to ‘the perceptions of others’ and failure to position themselves in the learning group academically’. Clearly, a number of students were yet to develop a robust sense of academic identity. This is congruent with Nesfield (2023) who emphasizes that even more regular opportunities are needed for students to effectively explore their emergent identities.

Digital Identity

Overall, students seemed to positively associate competent digital skills with their academic identity. The students tended to define their academic identity as personal characteristics that include effort to participate, persistence, responsibility, clear understanding of learning needs, need to develop academic skills and digital literacy. An evaluation cycle was also seen in which particular behaviors are highlighted as suitable. These perceived behaviors led participants to connect or refrain from connecting with specific individuals in their learning. In return, students expect a suitable level of ‘acceptance’, ‘being valued’, and ‘belonging’ without which the interrelations cannot be sustained. Participant JQ noted, “*When we work online, everyone can have a role, use their strength and participate. But when someone is wasting time online or doesn't do the work, the group cannot accept this or must help them*”. Similarly, this is indicated by Coll and Falsfi (2010) who emphasized that individuals refrain from participation when there is lack of acceptance. This acceptance is linked by the participants to establishing or confirming ‘who we are emotionally’, which justifies the definition of Delahunty, Verenikina, and Jones (2014) on identity as related to motivation and participation level. This, in return, substantiates the personal traits to make more efforts, participate or take responsibility, or only be a passive participant—as indicated above—which may lead to students' silence or isolation. This need for acceptance and a grounding in abilities sufficient to be able to effectively participate is also supported by the findings of Turner and Tobbell (2018). SA enthusiastically highlights the impact of the digital space on their identity:

It [the online space] can make me feel connected to the world, but a lot of information can make me confused. But digital helps us connect to classmates anytime too so we can help understand by messages, video calls and sharing documents.

Connectivism learning theory can support the process of creating nodes, yet for it to be efficiently integrated within the educational pipeline, digitized spaces require students' individual production and attention to quality. As a corollary to this, Ravenscroft (2011) argues for the need of ‘greater criticality’, aligned with the notion of higher order thinking skills (Al-Maawali, 2022b). A key lever is the argument of Tham et al. (2021) regarding connectivism and lifelong learning online skills such as critical analysis of resources. How

groups could manage these complex challenges and the implications of this for individual and group identity were recurrent themes in the present study.

The important feature of some collective group work online, namely, reaching a level of harmony, is a finding reiteratively mentioned by participants. As described in one focus group, ‘the work becomes easy and smooth’, the interrelation becomes ‘flexible’ and involves the following:

Sharing ideas freely online and feeling comfortable to say what is in our mind since members respect each other... We all take into account other members’ opinions and never ignore any of them... So we save time because we divide the work between us... It also impacts the extent of inter-personal and intellectual engagement because we can overcome challenges; we provide various solutions. (Focus Group 3).

A heightened sense of shareability when constructing thoughts and a testimonial of trust can be noted here. There appeared to be some consensus on this issue among students regarding their positive learner identity in the digital space.

Task Quality

The results of the qualitative data analysis revealed a general understanding of the connective mechanism of designing a task for being holistic and ruling out personal responsibility of a task. To ensure task quality students largely indicated a number of features in terms of cognitive and socio-cognitive approaches. Firstly, time was required to establish connective relationships and get the team mentally on board. Given the segregation of genders, some differences were observed. In a face-to-face setting, all gentlemen were physically attentive showing intergroup relationships in terms of having their heads closer, showing seriousness and having different positions and hand movement. They have, overall, shown conformity in behavior. Showing harmony in terms of task achievement, female participants appeared to be generally more focused on their individual understanding of the materials. They were quiet and organized, appearing to double check the task more frequently and focused on the best manner to approach the tasks. They frequently enquired about the outcome—whether they had to do a summary or link the readings in a different way. It was noted from students and corroborated through observations that the more engagement in the tasks occurred, the more original conceptualizations were demonstrated. Thinking aloud in a group whereby others listen to obtain new information/knowledge and convey particular meanings was observed to be similar to conference discussions. They were conveying ideas but also after quickly surveying their own ideas.

Regarding features specific to technology, phone applications were reported as frequently used by individuals but not by the group. Social media may have formed part of informal learning (Bozkurt, 2023); however, unlike in some other settings it was not made formal use of for this particular task on identity. The participants attempted to make links between the ideas in English by using the Arabic language as a medium to facilitate this. Discussions carried out in English were characterized by repetition, summary or

recasts of ideas expressed in Arabic. Surprisingly, use of technology was minimal for the overall group mechanism which shows students preferred having direct social links. This differs from the results of Idrus and Narzi (2016) who demonstrated that ESL students presenting as part of online identity is appealing for group members' acceptance and validation. This study does not highlight this feature. Rather, learners' digital identity was linked with supporting the generation of ideas and understanding of concepts. In line with Zhang and Yu (2023), this suggests some creativity and motivation. For instance, the participants relied on *group mind mapping*, which is a new connective tool or digital affordance that helped connect ideas rather than the usual form of text.

The challenge of incorporating everyone's ideas was discussed by the three focus groups and in their texts. There were newly generated ideas at the level of discussion; however, making sense of them together was repeatedly described as difficult and time-consuming. On the one hand, MA (a participant) enthused that when the group was successful, there was a 'good flow of ideas'. On the other hand, Participant B noted, 'We have different ideas and it makes it difficult to link the ideas'. Although conformity was frequently referred to at the level of the academic performance, observation data showed that as attention appeared to shift more towards understanding of the concepts, classmates would give each other space and be open to taking up the new ideas, reformulating them into a coherent new text with the help of digital affordances. This shows an acceptance of individual identity within the group, making use of each other's resources and abilities, digital resources and positive group dynamics. Through supportive scaffolding (Downes, 2010; Siemens, 2005)—human and digital—tasks can be performed effectively.

Problematizing Students' Shared Knowledge

Points raised on students' shared knowledge show that there are some tensions or conflicts following group writing tasks, in terms of both identity and perceptions on results. There was considerable consensus among the 56 students that knowledge going into the tasks is condensed and flattened to reflect an average ability level, with omission of details. Personal values regarding the quality of the work that are usually demonstrated by high performing students were reported, by the three high-achieving students, to disappear. Participant JB illustrates this, highlighted that students' understanding of the task is simplified or reduced and is translated so as to be more easily digested than the teacher's explanation. For instance, students copied an outline performed by one student and disregarded the model provided by the teacher.

Scaffolding Texts

Given that some students disregarded teachers' in-class modeling texts or ideas, rather resorting to their graduate or high performing peers' texts, some reasons to explain this were elicited. Participant AR mentioned that this strategy was adopted: "*Following others' works and way of writing their research benefits me a lot to have an idea about style of writing and new academic vocab*". Nevertheless, she admitted that peer discussions in-class were sometimes limiting while teacher-led discussions were 'helpful' due to provision of step-by-step examples. Surprisingly, the same praxis was not appreciated by

high performing students who skipped hands-on writing classes and justified their behaviors as ‘*wasting of their valuable time!*’. In the context of computer scientists, Rodriguez and Lehman (2017) advocate a stronger role for faculty in developing theories and enacting praxis to mentor students through the process of developing and enacting their new identities. The results in this study certainly suggest that enhancing mentoring—whether from peers or teachers—is a valid agenda. There does, however, seem to be more work to do in ensuring that students are fully aware of the rationale and theory behind teachers’ interventions and are able to fully benefit from affordances.

In the focus groups, peer-led learning was justified by numerous participants in terms of meeting their need to ‘assure understanding’ (AS). Another participant explained how they turned to a classmate, face-to-face or through an online channel, rather than the teacher in order to get “*simplified techniques from peers or friends*” (MM).

On a positive note, it was interesting to see how each group strived to reinforce and support their group member’s academic identity through acceptance of ideas and collaboration. Academic identity as the social closeness or distance created by an individual’s behaviors and readiness, as highlighted by Delahunty, Verenikina, and Jones (2014), was an aspect these students seemed highly aware of and significant efforts were made to integrate all ability ranges. The remaining challenge is to provide the catalysts (Northrup, 1989) which harness digital affordances as well as the associated higher-order thinking affordances accompanying technologies and individuals. This will maximize benefits for both individuals and the group and strengthen their inchoate twenty-first century professional identities when faced with learning tasks.

On the whole, results suggest that the connectivist approach to collaborative work has enabled the students to develop numerous skills and reflect on their emergent academic identities. However, some tensions remain in terms of ensuring the following:

1. Students of all abilities can reach their full potential with higher-order thinking skills.
2. Student awareness is raised on the specific benefits of peer and teacher interventions.
3. Teaching and connectivist pedagogy is closely aligned and in dialogue with students’ learning processes and academic identity development.

Conclusion

Rarely do studies allow students to dive into the term identity. The contribution of this study has been to offer glimpses of student perceptions of their writer identities and how they navigate them in their communities of inquiry. It has attempted to explore possible approaches of connecting amongst different academic writers when using online resources to make sense of existing resources but also connect with other individuals to discuss their concepts and develop new understandings. This study contributes to the existing literature by investigating ‘identity’ inwardly—how individual students make sense of this identity themselves. Their conscious and deliberate conceptualization of their own identity construction was investigated as they explored the meaning of ‘identity’ from previous studies but also as they reflect and see themselves as active agents in formulating their

own academic writerly ‘self’. The findings have provided some insights into how students negotiate and construct their connective and inter-connective identity, on the whole, reasonably successfully within the digital and face-to-face learning spaces they inhabit. It showed how valuing others’ contributions and maintaining group harmony were key to the particular context. Nevertheless, some tensions were noted in terms of how different abilities worked together and harnessed the benefits of this effectively. Clearly there is more to untangle if we are to ensure that maximum benefit is derived from the learning spaces and working relationships the tasks afford. It is interesting to learn about different behaviors from the perspectives of the student at the same time as these are demonstrated; however, more studies are required in exploring ‘connective’ relationships in different contexts.

While the findings of this study are not generalizable to other contexts, they may shed light on issues of learner identity and connectivism and resonate, to differing degrees, with a range of learning institutions globally. Future studies may address the role that artificial intelligence use—such as ChatGPT—has on students’ interactions and identity, which has more recently become a central theme. More research is also needed from multiple perspectives to assess the relative impact of interventions in terms of teachers, students, learning environments and tasks to ensure an appropriate balance is struck within the connectivist ecosystem.

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No, there are no conflicting interests.

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