

RESEARCH ARTICLE

When More Input Becomes Less Intake: A Phenomenological Study of Digital Cognitive Overload in Second Language Acquisition Among Filipino Generation Z Freshmen

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ABSTRACT

Context: Generation Z learners now acquire second languages within a dense ecology of search engines, video platforms, translation tools, and generative artificial intelligence (AI). This abundance of input is widely celebrated, yet its cognitive cost remains under-examined.

Purpose: This study explored how Filipino Generation Z freshmen experience digital cognitive overload during second language (L2) acquisition, the conditions that make it difficult, the strategies they use to manage it, and the insights they draw from it.

Method: A descriptive phenomenological design was employed. Fifteen purposely selected freshmen aged 18–20 from four higher education institutions in Cotabato Province, Philippines, participated in semi-structured interviews. Transcripts were analysed through thematic analysis, and the resulting themes were interpreted through Cognitive Load Theory, Robinson's Triadic Componential Framework, and self-regulated learning theory.

Findings: Twelve themes emerged across four domains. Participants assembled multi-platform learning ecologies (YouTube, Google, Google Translate, online dictionaries, language-learning applications, AI chatbots, and social media) that supported vocabulary, grammar, pronunciation, and communication. However, multi-source input frequently produced confusion, conflicting explanations, reliability doubts, connectivity-related frustration, and interference in retention, a pattern this study terms the input-intake paradox. Learners managed overload through strategic pausing, single-source focus, environmental curation, note-taking, and spaced review, and came to value selective, quality-focused, and critically verified use of digital and AI resources.

Contribution: The study offers a phenomenological account of digital cognitive overload in L2 acquisition among Filipino Generation Z learners and maps learner experiences onto task complexity, task conditions, and learner factors. It provides empirically grounded directions for curating digital input, teaching source evaluation and AI literacy, and embedding self-regulation in language curricula.

1. INTRODUCTION

Smartphones, social media, cloud-based learning environments, and generative artificial intelligence (AI) have reshaped how learners access and process information. In higher education, these technologies have widened access to learning resources, enabled personalised and continuous learning, and supported real-time feedback and communication (Čančer et al., 2025; Shanmugasundaram & Tamilarasu, 2023). The same abundance, however, carries a cost. When learners confront more information than they can select, evaluate, and integrate, they risk information overload, a state in which additional input degrades rather than improves decision-making and learning (Eppler & Mengis, 2004). Access, in other words, is no longer the central problem for many learners; managing what they access is.

This tension is especially acute in second language acquisition (SLA), which concerns how people learn additional languages after their first. Digital technologies such as video-sharing platforms, online dictionaries, translation tools, language-learning applications, and AI chatbots now give learners immediate access to target-language input, explanations, and practice opportunities beyond the classroom (Lai & Gu, 2011; Li & Lan, 2022). Meta-analytic evidence confirms that technology-assisted vocabulary learning yields moderate gains (Yu & Trainin, 2022) and that generative AI chatbots can promote L2 development (Li et al., 2025). Yet SLA has long distinguished between *input*, the language a learner is exposed to, and *intake*, the portion that is actually noticed and processed (Corder, 1967; Schmidt, 1990). Because noticing depends on limited attentional and working-memory resources, more input does not automatically yield more intake.

When learners must read, compare, and remember content arriving from several sources at once, the volume and inconsistency of that content may exceed their processing capacity, producing what this study calls *digital cognitive overload*.

Generation Z, commonly defined as those born between 1997 and 2012 (Dimock, 2019), is particularly exposed to this phenomenon. Often described as digital natives (Prensky, 2001), members of this cohort move fluidly across devices and platforms and expect information to be immediately available (Jayatissa, 2023). Scholars caution, however, that growing up with technology does not guarantee the ability to learn efficiently with it, and that habitual multitasking can impair rather than enhance performance (Kirschner & De Bruyckere, 2017; Ophir et al., 2009). In the Philippines, recent studies of Generation Z in higher education describe a cohort that is digitally fluent yet still developing the judgment needed to use technology responsibly and productively (Bergania, 2021; Tabanay et al., 2026).

College freshmen occupy a particularly demanding position within this cohort. The transition from senior high school to university brings heavier coursework, greater expectations for independent study, and increased reliance on self-sourced information. For freshmen who are simultaneously developing academic proficiency in a second language, often English, while learning through Filipino or a regional first language, the convergence of these academic demands with constant digital exposure may intensify cognitive load. Cognitive overload occurs when the amount or complexity of information exceeds the capacity of working memory, and it has been shown to diminish learning and academic success in higher education (Koudsia & Kirchner, 2024; Sweller et al., 2019).

Although research has documented both the benefits of digital tools for L2 learning and the costs of digital distraction for academic performance, comparatively little is known about how learners themselves *experience* the cognitive demands of navigating multiple digital resources while acquiring a second language. Most existing work is quantitative, measuring outcomes rather than illuminating meaning, and few studies examine Filipino Generation Z freshmen, whose multilingual repertoires and mobile-first learning habits shape how digital input is encountered. The present study addresses this gap by exploring digital cognitive overload as a lived phenomenon. Specifically, it sought to answer four research questions:

- RQ1. What are the lived experiences of Generation Z freshmen with digital cognitive overload during second language acquisition?
- RQ2. What situations involving excessive digital information make second language learning difficult for these learners?
- RQ3. What strategies do these learners use to manage digital cognitive overload?
- RQ4. What insights do these learners gain from their experiences of digital cognitive overload?

By foregrounding learner voices and interpreting them through established cognitive frameworks, the study contributes a theoretically anchored account of technology-mediated SLA that can inform language instructors, curriculum developers, and higher education institutions seeking to help students convert digital abundance into meaningful learning.

2. REVIEW OF RELATED LITERATURE

2.1 Generation Z learners in a saturated digital ecology

Generation Z students display learning characteristics shaped by the deep integration of digital technology into their everyday and academic lives (Alruthaya et al., 2021). In the Philippine context, Generation Z learners demonstrate strong digital, mobile, social, and visual learning orientations, although they still need to develop responsible and effective technology use (Bergania, 2021). Young Filipino leaders in higher education have likewise been shown to navigate their roles through a combination of digital fluency and mentored skill-building rather than technological familiarity alone (Osumo & Letigio, 2025; Tabanay et al., 2026). These findings suggest that digital nativity is better understood as exposure than as expertise.

2.2 Digital distraction and information overload in higher education

A growing body of work documents the academic costs of constant connectivity. Filipino college students report digital distractions associated with social media, video games, streaming, and messaging during online learning (Lucob et al., 2024), and digital-device use, multitasking, and mind wandering have been identified as common sources of academic distraction (Gruta et al., 2025). Digital technology also shapes Filipino education students' perceived academic performance (Viloan et al., 2024). Internationally, higher education students regard digital distractions as a significant threat to their performance (Pérez-Juárez et al., 2023), and multilevel analyses of more than 11,000 learners show that digital distraction negatively predicts achievement (Choi & Yun, 2024). Beyond distraction, the sheer volume of information available online can become burdensome for language learners in particular (Warrick, 2021). Together, these studies indicate that excessive exposure and simultaneous use of multiple technologies may interfere with attention and engagement.

2.3 Technology-mediated second language acquisition: affordances and cognitive costs

Technology offers considerable affordances for L2 development. Synchronous remote learning has been perceived as helpful for English learning among Filipino Generation Z students, particularly when activities promote speaking and grammar practice (Torres & Ortega-Dela Cruz, 2024). Sustained exposure to films and other audiovisual media supports vocabulary, listening, and literary understanding among

Filipino pre-service English teachers (Osumo & Barrita, 2026), and social media platforms provide authentic opportunities for language use (Muftah, 2024; Siddig, 2020). Among criminology undergraduates in Cotabato, learners compensated for lexical, pronunciation, and affective barriers by drawing on digital and multimodal resources, peer-mediated learning, and their mother tongue as cognitive scaffolding (Osumo et al., 2026). Generative AI has further expanded these affordances by offering on-demand explanations, conversation practice, and corrective feedback, while also raising concerns about accuracy, over-reliance, and the distribution of agency between learner and machine (Godwin-Jones, 2024; Li et al., 2025).

The same resources impose cognitive costs. English majors in Davao described digital reading as both convenient and distracting, with consequences for comprehension and retention (Navarez et al., 2024), and English majors in Occidental Mindoro reported comparable challenges in online language learning (Samino et al., 2024). Prolonged digital engagement has also been linked to burnout-like outcomes in L2 learning (Demirbilek & Suvorova, 2023). What remains less understood is how learners experience the cumulative cognitive demand of multiple, simultaneous, and sometimes contradictory sources, which is the focus of the present study.

2.4 Theoretical framework

This study draws on three complementary perspectives. First, **Cognitive Load Theory (CLT)** holds that working memory is severely limited when processing novel information and that instructional conditions impose intrinsic load (arising from the complexity of the material), extraneous load (arising from how information is presented), and germane processing devoted to learning (Sweller, 1988; Sweller et al., 2019). Digital and online environments can increase extraneous load through poor design, interface demands, and fragmented presentation (Skulmowski & Xu, 2022), and multimedia research shows that coherent, well-signalled materials outperform cluttered ones (Mayer, 2021; Noetel et al., 2022).

Second, **Robinson's Triadic Componential Framework** distinguishes three sources of task demand in L2 learning: *task complexity*, the cognitive demands inherent in a task, such as the number of elements to be processed; *task conditions*, the interactive and participatory circumstances under which a task is performed; and *task difficulty*, the learner factors, such as proficiency, aptitude, attention, and affect, that determine how demanding a task feels to a particular individual (Robinson, 2001, 2011). Applied to digital L2 learning, this framework allows overload to be traced to the number and inconsistency of sources (complexity), the multi-platform and connectivity-dependent context of use (conditions), and learners' proficiency, trust, and regulatory capacities (difficulty).

Third, **self-regulated learning (SRL)** theory explains how learners plan, monitor, and adjust their cognition, behaviour, and environment to achieve learning goals (Panadero, 2017; Zimmerman, 2002). In online language learning, self-regulation of digital resource use, including the management of time and learning methods, predicts improved outcomes (Hromalik & Koszalka, 2018). CLT and Robinson's framework thus explain *why* overload arises, whereas SRL explains *how* learners respond to it. Together, they guided both the interpretation of themes and the mapping presented in Section 4.5.

3. METHODOLOGY

3.1 Research design

The study employed a qualitative, descriptive phenomenological design (Creswell & Poth, 2018; Moustakas, 1994). Phenomenology was appropriate because the aim was to describe how participants experience and make sense of digital cognitive overload, rather than to measure variables or test hypotheses. A comparable phenomenological approach has been used productively to examine the lived experiences of young learners and leaders in the same region (Osumo & Letigio, 2025; Osumo et al., 2026).

3.2 Setting and participants

The study was conducted during the second semester of 2025 in four higher education institutions in Cotabato Province, Philippines: University of Southern Mindanao–Main Campus in Kabacan, Colegio de Kidapawan, Notre Dame of Kidapawan College, and Central Mindanao Colleges. It explored Filipino Generation Z freshmen's lived experiences of digital cognitive overload in learning English as a second language.

Fifteen freshmen aged 18–20 years were selected through maximum variation purposive sampling to capture experiences across institutions and degree programmes. A sample of this size is consistent with evidence that thematic saturation in relatively homogeneous interview samples is typically reached within the first twelve interviews (Guest et al., 2006). Participants met the following inclusion criteria: (a) enrolment as a first-year college student during the study period; (b) age 18–20 years; (c) engagement in learning English as a second language; (d) regular use of digital resources for language learning, including online platforms, learning management systems, language-learning applications, videoconferencing tools, or artificial intelligence tools; (e) self-reported experiences of feeling overwhelmed, confused, or mentally fatigued when processing digital information during language learning; and (f) willingness to provide informed consent and to participate in an audio-recorded interview. Students who did not meet these criteria were excluded.

Participants represented various degree programmes and disciplines. By self-identified gender, seven participants identified as female, five as male,

and three as LGBTQ+. Most participants identified Bisaya, referring to local varieties of Cebuano, as their first language. English was the target second language for all participants. Demographic information was reported in aggregate to protect their identities.

Participant selection prioritised direct experience of digital cognitive overload while allowing variation in educational contexts. This approach supported an in-depth exploration of how participants experienced excessive digital input, understood its implications for learning English, and managed the associated cognitive demands.

3.3 Instrument and data collection

A researcher-developed semi-structured interview guide was content-validated by two experts in qualitative research and language education before use. The guide contained open-ended questions aligned with the four research questions, for example, “What digital platforms do you commonly use when learning a second language?” and “How do you feel when you receive information from several digital sources at the same time?”, followed by probes inviting participants to describe difficulties, feelings, strategies, and lessons learned.

Interviews were conducted face-to-face or by video call, depending on participant availability, and lasted approximately 15 to 30 minutes. Participants were free to respond in English, Filipino, or Cebuano, consistent with the translanguaging practices common in multilingual Philippine classrooms (Osumo et al., 2026). All interviews were audio-recorded with permission. Recordings were transcribed using TurboScribe, an AI-assisted transcription tool; the researchers then verified every transcript against the original audio, corrected errors, and preserved participants’ original wording. Excerpts in Filipino or Cebuano were translated into English by the researchers and checked by a bilingual language expert to preserve meaning. In the Results, English translations are presented with the original wording in brackets.

3.4 Data analysis

Within the descriptive phenomenological design, data were analysed through thematic analysis following Braun and Clarke’s (2006) six phases: familiarisation, initial coding, theme generation, theme review, theme definition and naming, and reporting. Transcripts were read repeatedly, significant statements related to the phenomenon were extracted, and recurring patterns concerning digital learning practices, cognitive demands, language-learning difficulties, distraction, and mental fatigue were clustered into themes under each research question. Two researchers coded the transcripts independently; differences in coding or interpretation were discussed until consensus was reached. In the final interpretive stage, themes were mapped deductively onto Robinson’s (2001) task complexity, task conditions, and task difficulty dimensions, and onto CLT and SRL constructs, to

explain how these factors jointly produce and mitigate digital cognitive overload.

3.5 Trustworthiness

Trustworthiness was established using Lincoln and Guba’s (1985) criteria. *Credibility* was supported by member checking, in which participants reviewed summaries of the findings to confirm that the interpretations reflected their experiences, and by peer debriefing with the research adviser. *Dependability* was supported by independent double coding and an audit trail of coding decisions. *Confirmability* was strengthened by grounding each theme in verbatim excerpts and by researcher reflexivity: because the researchers were themselves members of Generation Z and language learners, they recorded their assumptions about technology use before analysis and revisited them during theme review. *Transferability* was supported by describing the setting and participant criteria in detail.

3.6 Ethical considerations

The research protocol was reviewed and approved by the Central Mindanao Colleges Research Ethics Committee (CMC-REC; reference no. CMC-REC-CTE-032; approved July 12, 2025). Participants received full information about the study’s purpose and procedures and provided written informed consent before data collection. Participation was voluntary, and participants were informed of their right to withdraw at any time without penalty. Confidentiality was maintained by assigning codes (P1–P15) and removing identifying details, and audio recordings and transcripts were stored securely with access limited to the research team.

4. RESULTS AND DISCUSSION

Analysis produced twelve themes, three under each research question. Tables 1 to 4 summarise the themes and their representative codes; each theme is then presented with illustrative excerpts and discussed in relation to the literature. Section 4.5 integrates the findings through the study’s theoretical framework.

4.1 Lived experiences of digital cognitive overload (RQ1)

Table 1. Themes on the lived experiences of digital cognitive overload during L2 acquisition (RQ1)

Theme	Representative codes
Multi-platform digital ecologies for L2 learning	Use of YouTube, Google, Google Translate, online dictionaries, language apps, AI chatbots, and social media; combining tools for different skills; choosing tools by perceived accuracy and convenience
Ambivalent affective and cognitive responses to multi-source input	Satisfaction and fascination at discovering new words; feeling overwhelmed and confused; irritation at mismatched information; difficulty judging correctness

Theme	Representative codes
Technology as a scaffold for access, convenience, and communication	Immediate answers; confidence in answering tasks; anytime access; using learned language with new friends; occasional difficulty understanding explanations

Theme 1. Multi-platform digital ecologies for second language learning

Participants described a broad repertoire of digital resources, most frequently YouTube, Google, Google Translate, online dictionaries, language-learning applications, AI chatbots such as ChatGPT, and social media. These were used for vocabulary practice, pronunciation, grammar study, conversation, and searching for explanations and examples. As P1 summarised:

“The digital platforms I usually use are YouTube and Google.” [*Usually ginagamit ko na digital platforms ay YouTube and Google.*] (P1)

Platform choice was deliberate and grounded in perceived accuracy and convenience. Some participants trusted conventional search over AI, whereas others valued AI for its speed and specificity:

“I use Google because it is more accurate than AI tools.” [*Naga gamit ko ug Google kay mas accurate siya kaysa sa mga AI.*] (P2)

“ChatGPT is easier for me to use in learning my second language because it immediately provides the information I am looking for, and it is less of a hassle.” [*Mas dali nako magamit ang ChatGPT sa pag-learn sa akong second language kay mas ma-provide niya dayon ang information nga akong gipangita and less hassle siya.*] (P5)

These accounts show that participants did not rely on a single platform but assembled personal learning ecologies in which different tools served different functions. This mirrors findings that Filipino learners strategically combine digital, multimodal, and first-language resources to overcome communicative barriers (Osumo et al., 2026), and that generative AI is becoming a learning partner whose agency must be negotiated by the learner (Godwin-Jones, 2024). Importantly, participants’ divergent trust in Google and AI indicates that source selection was already a cognitive task in itself, preceding any engagement with the language content.

Theme 2. Ambivalent affective and cognitive responses to multi-source input

Receiving information from several sources simultaneously produced mixed responses. Some participants felt happiness, satisfaction, and fascination at discovering new words, pronunciations, and meanings:

“I feel so happy because I learn information that I can use in learning my second language.” [*I feel so happy kasi may nalaman akong mga information na magagamit ko para sa pag-learn ko ng second language.*] (P4)

Others described feeling overwhelmed, confused, or unable to focus, particularly when sources were abundant or inconsistent:

“Sometimes, because of the sheer amount of information the platform provides, I struggle to process which information is correct and which is not.” [*Minsan sa kadaghan sa mga information nga gina-provide sa platform nga akong gigamit, maglisod nako og process sa mga information kung asa ang sakto ug dili.*] (P2)

“It can be irritating sometimes, because even when you are supposed to learn, you can’t, since the information given does not match.” [*Makairita usahay, Ate, kay bisan dapat makakat-on ka, dili na lang kay ang information nga gihatag wala nagtugma.*] (P7)

This ambivalence is central to the phenomenon. Multimodal input can enrich vocabulary and sustain engagement (Yu & Trainin, 2022), but poorly coordinated or conflicting information increases extraneous load and limits the working-memory resources available for learning (Noetel et al., 2022; Skulmowski & Xu, 2022). Participants’ experiences therefore indicate that digital cognitive overload is not uniform: it depends on the amount, quality, consistency, and organisation of information, and on the learner’s capacity to manage it.

Theme 3. Technology as a scaffold for access, convenience, and communication

Despite these difficulties, participants generally regarded digital technology as a positive influence. They valued the speed with which they could find meanings, pronunciations, examples, and translations:

“With AI, it is easier, because once you tell it what you want to know, it gives it to you right away, and I no longer need to search because it is already there.” [*Sa AI po, Ate, mas dali na lang siya kay if i-provide lang nimo sa iya ang imong gusto mahibal-an, mahatagan ka niya dayon, and dili na nako mangita pa kay naa na dayon.*] (P2)

Digital learning also extended into everyday communication:

“When I have friends or new acquaintances who do not speak my first language, I use what I have learned to communicate with them, so we understand each other.” [*If naa koy mga amiga o mga bag-ong friends nga dili mo-istorya sa akong first language, kung unsa tong akong na-learn kay gagamiton nako siya sa pag-communicate sa ila, so magkasinabtanay mi.*] (P1)

Others noted that watching videos shaped their learning, consistent with evidence that sustained audiovisual exposure strengthens L2 and literary learning among Filipino students (Osumo & Barrita, 2026). These accounts position technology as a scaffold that bridges classroom instruction and authentic use (Lai & Gu, 2011; Muftah, 2024). Yet support was not frictionless:

“Sometimes I struggle, because when I want to know the meaning of something, I end up not

understanding it; even though the sources say the same thing, they use different words, so it becomes harder to understand.” [Maglisod ko usahay, Ate, kay pananglitan naa koy gusto mahibal-an kung unsa ang meaning ani, dili na nako masabtan usahay kay ang gina-provide nga information, although pareho siya, lahi-lahi ang mga words nga gigamit, so maglisod hinoon ko og sabot.] (P8)

P8’s account captures what this study terms the *input-intake paradox*: multiple paraphrases of the same concept, each intended to clarify, collectively increased the number of elements to be reconciled and reduced comprehension. In SLA terms, input increased while intake diminished (Corder, 1967; Schmidt, 1990).

4.2 Situations that make L2 learning difficult (RQ2)

Table 2. Themes on situations in which excessive digital information makes L2 learning difficult (RQ2)

Theme	Representative codes
Confusion, overload, and the reliability problem	Too much information from different sources; conflicting websites; deciding which source to trust; slow internet and device lag; advanced vocabulary beyond proficiency
Dual effects on comprehension, retention, and production	Easier essay writing and vocabulary expansion; learned content “mixing”; harder to focus and remember; believing wrong information; output perceived as AI-generated
Lexical depth, interpretation, and communication barriers	Deep or unfamiliar words; dialectal and pronunciation variation; misinterpretation; checking meaning before use; losing the flow when looking up words while watching series

Theme 4. Confusion, overload, and the reliability problem

The most common difficulties involved confusion, information overload, conflicting information, and doubts about reliability. Participants reported that searching more often led to less certainty:

“I feel happy because we learn new things from what we read or search, but sometimes the more I search, the more confused I get about which information is correct, so I am unsure what to keep in mind or what I should remember.” [Malipay, Ate, kay makalearn mi og mga bag-o sa among gibasa o gi-search, pero usahay the more nga mag-search ko, ma-confuse na ka unsa o asa ang sakto nga information, so maglibog nako unsa akong ibutang sa akong hunahuna o dapat i-remember.] (P5)

Technical and linguistic barriers compounded the problem. Slow connections, device lag, and platforms using vocabulary beyond participants’ proficiency forced learners to manage the technical environment and the language task simultaneously:

“When the internet keeps loading, it distracts my learning, and because of the frustration, what I have learned seems to slip away.” [If loading kaayo ang internet, Ate, maka-distract siya sa akong pag-learn, unya tungod sa frustration murag mawala na lang hinoon akong mga na-learn.] (P15)

These findings indicate that difficulty arose not only from the *quantity* of information but from its accuracy, accessibility, and alignment with learners’ proficiency. From a CLT perspective, unstable connectivity and interface demands add extraneous load that competes with language processing (Skulmowski & Xu, 2022). Such conditions are particularly salient in regions where internet access remains uneven, and they underscore the value of organised, appropriately paced materials (Mayer, 2021; Warrick, 2021).

Theme 5. Dual effects on comprehension, retention, and production

Participants described both positive and negative effects of digital overload. On the positive side, repeated exposure supported vocabulary growth, grammar, and writing:

“There really are times I forget words I came across because I no longer use them, but now it is fine because it is easier for me; whatever I learn or see while searching any website, I remember it and can use it more in essays or school activities.” [Naay instances gyud, Ate, nga makalimot ko sa mga words nga akong nakita kay wala na nako gigamit, pero karon okay na siya kay mas dali na para sa akoo; kung unsa tong akong na-learn o nakita sa pag-search sa bisan asa nga websites, mahinumduman nako and mas magamit nako siya sa mga essay o activities sa school.] (P9)

This is consistent with meta-analytic evidence that technology-assisted vocabulary learning is effective when input is structured and repeated (Yu & Trainin, 2022). On the negative side, accumulated input caused learned content to “mix,” weakened focus, and impaired recall:

“The more I add to what I know, the harder it seems to remember what I learned first; there are also times I struggle to focus because I have to think very hard.” [The more nga mapun-an akong nahibal-an, Ate, murag maglisod nako og remember kung unsa tong mga una nakong nahibal-an; naa poy instances nga maglisod ko og focus kay maghunahuna pag-ayo.] (P4)

“With so much information, I end up struggling to understand, because I thought something was right when it was not.” [Sa kadaghan sa information, Ate, maglisod na hinoon ko og sabot kay akala ko mao, dili diay.] (P11)

P4’s description resembles interference in memory, in which new items disrupt the retrieval of earlier ones when they are not consolidated. Participants also raised a concern about production: one reported that teachers and peers remarked that their word choices seemed to come from AI platforms. This reflects broader concerns that reliance on generative AI may yield phrasing perceived as unnatural and places the burden of verifying AI accuracy on the learner (Godwin-Jones, 2024). Overall, digital overload both supported and hindered learning, depending on the volume, quality, and organisation of input and on learners’ capacity to evaluate it.

Theme 6. Lexical depth, interpretation, and communication barriers

Participants reported difficulty with deep or unfamiliar words, regional and dialectal variation, pronunciation, and specialised terms encountered online. Video platforms were often preferred over text-based AI because audiovisual input aided comprehension:

"I use YouTube because it is better than AI for me; I understand more when I watch a video." [Naga-gamit ko og YouTube, Ate, kay mas okay man siya kaysa sa AI, kay mas makasabot ko if video akong gitan-aw.] (P3)

"For example, when I search something on Meta, sometimes the words they use are very deep and still new to me, so I do not understand much." [Like if naa nakoy i-search, example sa Meta, usahay ang gigamit nila nga words lalom kaayo unya bag-o pa sa akong panan-aw, so dili kaayo ko makasabot.] (P7)

Participants also described difficulty producing accurate English and the risk of misusing words acquired online, prompting deliberate verification:

"When I learn new words, I first check what they mean, because I might use them carelessly and they turn out to be interpreted differently." [Pag nakahibalo nako sa words, gina-check sa nako kung unsa ang meaning, kay basin mag-pataka ra ko og gamit ana nga words, unya dili diay mao ang interpretation nila.] (P11)

One participant added that pausing to look up unfamiliar words while watching an English series caused them to lose the flow and miss the meaning of the scene, an example of split attention between comprehension and look-up. These findings parallel the lexical and pronunciation barriers documented among Filipino tertiary learners (Osumo et al., 2026) and support the view that audiovisual immersion is beneficial when learners can process it without constant interruption (Osumo & Barrita, 2026). Social media provides abundant opportunities for language learning (Muftah, 2024; Siddig, 2020), but its unfiltered lexical density can exceed learners' current proficiency, turning potential input into noise.

4.3 Strategies for managing digital cognitive overload (RQ3)

Table 3. Themes on strategies used to manage digital cognitive overload (RQ3)

Theme	Representative codes
Strategic pausing and incremental processing	Resting, sleeping, or taking short breaks; stopping when confused; one source or topic at a time; reflecting before continuing; re-searching after rest
Curating the learning environment	Studying in quiet places; turning off notifications; removing unnecessary apps and websites; avoiding unrelated platforms; repetition and familiarisation
Prioritising, limiting exposure, and rehearsing	Limiting simultaneous apps and tasks; prioritising important and reliable information; reducing screen time; note-taking; repeated vocabulary review

Theme 7. Strategic pausing and incremental processing

Participants managed overload by resting, sleeping, or taking short breaks when confused or exhausted, and by avoiding the simultaneous use of multiple apps or websites:

"I rest for a while, and sometimes I sleep when my body or mind is too tired, because for me, if I keep going even when my mind is exhausted, what I learn is useless since my brain is already too exhausted to receive new information." [Magpahuway ko kadiyot, ug usahay matulog ko kung sobra na ka-kapoy akong lawas o akong hunahuna, kay para nako, bisan kapoy na akong hunahuna unya magpadayon gihapon ko, wala'y pulos akong gina-learn kay exhausted na man akong brain sa pag-receive sa mga bag-ong information.] (P14)

After resting, participants returned to tasks, re-searched information where necessary, and focused on one source or topic at a time. P14's insight, that continuing while exhausted is futile, reflects an intuitive grasp of working-memory limits and of the point at which additional input ceases to be useful (Eppler & Mengis, 2004; Sweller et al., 2019). Pacing, reflection, and selective attention are core self-regulatory processes (Zimmerman, 2002), and their spontaneous use here suggests that learners were already regulating cognitive load without formal instruction.

Theme 8. Curating the learning environment

Participants maintained focus by studying in quiet places, silencing notifications, and removing distractions:

"What I do is remove unnecessary apps or websites so that I do not get distracted while I am learning." [Gina-buhat nako kay gina-remove nako ang mga unnecessary nga apps o websites para dili ko ma-distract if nagakat-on ko.] (P9)

These practices represent environmental structuring, a recognised dimension of self-regulation in online learning (Hromalik & Koszalka, 2018; Panadero, 2017). They are also consistent with evidence that limiting device-based distraction improves performance (Choi & Yun, 2024). Participants additionally used repetition and familiarisation to sustain attention, which aligns with experimental findings that repeated retrieval within a learning session improves L2 vocabulary learning (Nakata, 2017).

Theme 9. Prioritising, limiting exposure, and rehearsing

Participants reported limiting the number of applications used at once, prioritising important information, focusing on one activity at a time, reducing screen time, and taking notes:

"When my brain is very exhausted, what I do is rest first so my mind can refresh." [If exhausted na kaayo akong utok, Ate, ang gina-buhat nako kay

magpahuway lang sa para ma-refresh akong hunahuna.] (P3)

“What I do is write down information that is new to me, so I can go back and study it in case I forget.”
[*Ang gina-buhat nako kay if makita nako nga bag-o nga information sa akoo, gina-sulat nako, para mabalikan nako og study if ever makalimot man ko.*] (P4)

From a CLT perspective, prioritisation reduces the number of interacting elements competing for working memory, and note-taking externalises information so that it need not be held in mind (Sweller et al., 2019). Repeated review supports consolidation, as shown in Nakata’s (2017) experiment with 98 Japanese learners of English, in which higher numbers of retrievals produced significantly higher vocabulary scores. Collectively, these strategies show learners shifting from passive receipt of information to active management of it.

4.4 Insights gained from experiences of digital cognitive overload (RQ4)

Table 4. Themes on insights gained from experiences of digital cognitive overload (RQ4)

Theme	Representative codes
Metacognitive awareness of one’s own learning	Recognising what helps one learn; regular practice; focused study; prioritising essentials; L2 as a social and employability asset
From abundance to selectivity: quality-focused resource use	One reliable resource at a time; not using every available resource; learning words in context; repeated reading and review
Advice to peers: pace, rest, and critical use of AI	Quality over quantity; avoiding over-reliance on AI; verifying with legitimate sources; learning at one’s own pace; language learning is not a race

Theme 10. Metacognitive awareness of one’s own learning

Participants developed greater awareness of their learning needs and of the strategies that worked for them, emphasising regular practice, focused learning, rest, and prioritisation. They also saw L2 learning as enabling communication with speakers of other languages and as an asset for future employment:

“When I use what I have learned, I can say that my learning of that language is effective, although sometimes I forget.” [*Kapag ginagamit ko kung unsa akong nahibal-an, Ate, makaingon ko nga effective akong pagkat-on ana nga language, although usahay makalimot ko.*] (P3)

This reflects the monitoring and self-evaluation phases of self-regulated learning (Panadero, 2017; Zimmerman, 2002). The experience of overload appears to have functioned as a catalyst for metacognition, prompting learners to become more reflective, focused, and strategic.

Theme 11. From abundance to selectivity: quality-focused resource use

Participants learned that the availability of many resources does not mean all must be used. They preferred focusing on one reliable resource at a time and reviewing it repeatedly:

“You should focus on just one thing, then relax yourself.” [*Dapat mag-focus lang sa usa ka bagay, then relax yourself.*] (P2)

They also recognised that encountering and using words in context aids retention more than memorising isolated lists:

“I memorize the word, and I list the difficult words because I am forgetful, but if I use them or hear those words, I remember them.” [*I-memorize to nako ang word, Ate, then ang mga lisod nga words gina-list nako kay limtanon man ko, but if gamiton nako o makadungog ko ato nga words, mahinumduman nako.*] (P5)

“I understand new information when I read it and review it again, and also when I use it, because if I just store it in my mind, I tend to forget it over time.” [*Makasabot ko og mga bag-ong information kung akong basahon ug i-review balik, ug usab if gamiton nako siya, kay if i-stock ra sa akong hunahuna murag makalimot ko kadugayan.*] (P6)

These insights align with evidence that self-regulating the use of digital resources improves online language learning outcomes (Hromalik & Koszalka, 2018) and with the long-established role of context in L2 vocabulary acquisition (Prince, 1996). They also resonate with the observation that the current generation of learners benefits from simple, accessible, and contextually grounded materials rather than from sheer volume (Osumo, 2024).

Theme 12. Advice to peers: pace, rest, and critical use of AI

Participants advised fellow Generation Z learners to prioritise quality over quantity, to choose a few reliable sources, and to avoid over-reliance on AI:

“Do not keep relying on AI; it is okay to use, but it is better to also read around and dig deeper so that our knowledge grows.” [*Dili mag-sige og rely sa AI; it’s okay to use, pero mas nindot if magbasa-basa pud, like dig deeper, para madugangan atong knowledge.*] (P13)

They also emphasised rest, self-pacing, and adequate processing time:

“If you feel confused about what you are reading or the information given to you, just relax your mind and take only the information that is easy to understand.” [*If feel ninyo nga naglibog mo og sabot sa inyong gibasa o gihatag nga information, i-relax lang inyong hunahuna, ug kuhaa lang ang information nga dali ra masabtan.*] (P1)

“Do not overuse gadgets, and give yourself time to rest; you do not need to rush to learn everything or whatever you want to know.” [*Ayaw sobrahi ang paggamit sa gadgets, ug hatagi og time ang inyong kaugalingon nga mopahuway; dili kinahanglan*

magdali-dali nga makat-on sa tanan o kung unsa ang inyong ganahan mahibal-an.] (P15)

The view that language learning “is not a race” reflects a mature understanding of cognitive limits. It is consistent with research showing that digital environments can inflate extraneous load (Skulmowski & Xu, 2022) and that verifying AI output is a necessary component of AI literacy (Godwin-Jones, 2024; Li et al., 2025).

4.5 Integrative interpretation: the input-intake paradox

Table 5 maps the twelve themes onto the study’s theoretical framework. Read together, the findings suggest that digital cognitive overload in L2 acquisition arises when three sources of demand converge: an increase in task complexity, as learners must reconcile many and sometimes conflicting sources; adverse task conditions, such as multi-platform use, notifications, and unstable connectivity; and learner factors that raise task difficulty, including limited proficiency for advanced vocabulary, uncertain trust in AI, and fatigue. Under these conditions, the abundance of input that technology provides is not converted into intake. Learners respond through self-regulation, by pausing, curating, prioritising, and rehearsing, and in doing so they reduce extraneous load and redirect working-memory resources toward learning.

Table 5. Mapping of themes onto Robinson’s Triadic Componential Framework, Cognitive Load Theory, and self-regulated learning

Framework dimension	How it appeared in the data	Related themes
Task complexity (Robinson); intrinsic and element-interactivity load (CLT)	Many sources, paraphrases, and explanations to reconcile; advanced or unfamiliar vocabulary; conflicting information requiring judgment	Themes 2, 4, 5, 6
Task conditions (Robinson); extraneous load (CLT)	Simultaneous apps and tabs; notifications; social media; slow internet and device lag; looking up words while watching series	Themes 1, 4, 6, 8
Task difficulty / learner factors (Robinson)	Proficiency level; trust in Google versus AI; fatigue; anxiety about misusing words; prior knowledge interfering with new input	Themes 1, 3, 5, 6
Self-regulated learning (Zimmerman; Panadero)	Pausing and resting; single-source focus; environmental structuring; note-taking; spaced review; verifying AI output	Themes 7–12
Germane processing and intake (CLT; Schmidt)	Learning words in context; using new words in conversation and essays; repeated retrieval	Themes 3, 5, 11

This integration extends the existing literature in two ways. First, whereas prior studies have largely treated digital tools either as beneficial resources (Li et al., 2025; Yu & Trainin, 2022) or as sources of distraction (Choi & Yun, 2024; Pérez-Juárez et al., 2023), the present findings show that the *same* resources

function as both, depending on how many are used at once, how consistent they are, and how well learners regulate their use. Second, by applying Robinson’s framework, originally developed for pedagogic task design, to learners’ self-directed digital environments, the study demonstrates that learners effectively design their own tasks when they choose and combine digital resources, and therefore need explicit support in doing so well.

5. CONTRIBUTION TO PRACTICE AND SDG ALIGNMENT

For learners. Students should recognise early signs of overload, such as confusion, irritation, and declining recall, and respond by pausing, narrowing to one reliable source, and processing information incrementally. Note-taking, contextual use of new words, and spaced review can convert exposure into durable learning.

For language instructors. Teachers can reduce extraneous load by curating a small set of vetted digital resources for each lesson rather than directing students to search open-endedly, by sequencing input from simple to complex, and by avoiding the simultaneous presentation of excessive material. Instruction in source evaluation and AI literacy, including how to cross-check AI explanations and how to adapt AI-suggested phrasing into one’s own voice, should be embedded in language courses. Localised, accessible instructional materials that draw on learners’ contexts can further reduce unnecessary cognitive demands (Osumo, 2024).

For institutions and curriculum developers. Higher education institutions can integrate digital well-being and self-regulation training into first-year orientation and language programmes, promote notification-free study practices, and address infrastructure constraints such as unstable connectivity that add avoidable load. Freshman language courses may benefit from explicit modules on managing digital information, given that first-year students face the combined demands of academic transition and L2 development.

Together, these directions support Sustainable Development Goal 4 (Quality Education) by helping learners convert access to digital resources into effective, self-regulated language learning.

6. CONCLUSION

This study explored the lived experiences of Filipino Generation Z freshmen with digital cognitive overload during second language acquisition. Participants built rich, multi-platform learning ecologies that gave them unprecedented access to vocabulary, grammar, pronunciation, and communicative practice. The same abundance, however, frequently produced confusion, conflicting information, reliability doubts, technical frustration, and interference in retention, revealing an input-intake paradox in which more input did not reliably yield more learning. Participants responded by

pausing, curating their environments, focusing on one reliable source at a time, prioritising, taking notes, and reviewing repeatedly, and they came to value selectivity, self-pacing, and critical verification of online and AI-generated content.

Interpreted through Cognitive Load Theory, Robinson's Triadic Componential Framework, and self-regulated learning theory, these findings show that digital cognitive overload emerges from the interaction of task complexity, task conditions, and learner factors, and that it can be mitigated when learners regulate their use of digital resources. The central lesson for language education is therefore not to reduce learners' access to technology but to help them transform digital abundance into meaningful intake through curated input, explicit instruction in source evaluation and AI literacy, and sustained support for self-regulated learning.

7. LIMITATIONS AND FUTURE RESEARCH

This study involved fifteen freshmen from four higher education institutions in Cotabato Province. Its findings cannot be statistically generalised but may offer insights into similar contexts. The relatively short interviews, approximately 15 to 30 minutes each, may have limited the depth of some responses. Data reflected participants' self-reported experiences at one point in time, and their strategies were not verified through observation or performance measures. Translation from Filipino and Cebuano into English may also have missed some nuances.

Future research could include more diverse participants and examine digital cognitive overload over time using interviews and quantitative measures. Studies could compare digital tools, test strategies for reducing overload and improving language learning, and include teachers' perspectives on digital instruction and responsible AI use.

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