# Students' Perceived Learning Acquisition of the Enhanced Course for Digital Communication

**Diadema A. Ronquillo[1] and Supot Thaisurya[2]**

[1]Lecturer, Rajamangala University of Technology Rattanakosin, Thailand, ronquillo_da@outlook.com
[2]Vice Dean for Academic and Research, Rajamangala University of Technology Rattanakosin, Thailand, supot_x@hotmail.com

## Abstract

*The inevitable rapid transformation of technology has instantly defined the way of life people have today, particularly in the education sector, where academic experts are compelling to realign the curriculum and instructions with the existing technological trends. The study of the enhanced course for Digital Communication is presented in this undertaking to address the digital technology learning needs of Liberal Arts students in the new normal phenomena. Specifically, it examines the influence of students' perceived prior digital technology knowledge on their perceived cognitive learning and explores the differences in students' perceived learning acquisition. Data were generated from one hundred fifty-two (152) first-year Liberal Arts students of Rajamangala University of Technology Rattanakosin. Cronbach's Alpha coefficient confirmed the high internal consistency of the personalized and partly adopted questionnaire. The finding reveals that students' perceived prior digital technology knowledge has significantly influenced their perceived cognitive learning acquisition. The diminished data variability strengthens the evidence that students' performance has dramatically improved in hybrid and blended learning. Correspondingly, the three groups of respondents highly favored affective learning acquisition over cognitive and psychomotor. It conveys that learners profoundly engage with others using digital technologies as they grasp the meaning of the subject matter. This paper, therefore, substantiates that the enhanced course for Digital Communication was designed ergonomically for effective learning.*

***Keywords:*** *digital technology, students' perceived learning acquisition, enhanced course for digital communication, ergonomic design for effective learning*

## Introduction

Technological advancement regularly happens year after year. This is common to digital natives and migrants, especially people whose work is highly engaged in Information and Communication Technology. Education 4.0 was promulgated by the World Economic Forum (2020) and has been adopted by the education sector worldwide for the "innovation of leveraging pedagogies." The health emergency fast-tracked the transformation process due to the high demand for

safety and security issues of the Internet of Things for online communication, backlog in health services, e-commerce issues, and problems in public and privately run industries, including the vulnerable education sector. The latter account resonated with the concern of Dhawan (2020, in Plummer et al., 2021), underpinning "that learning with technology was the future, but the pandemic accelerated the process." As a result, information becomes more accessible while constantly changing in response to current events (Kingkaew et al., 2023). As reiterated by Snelling (2022, in Snezhana, 2022), the education sector, specifically at the tertiary level, will continue to progress, adapting to the future demands of lecturers and students, where digitalization has been a vehicle for achieving ergonomic outcomes.

The technological phenomenon has indeed instantly transformed various sectors, having their system upgraded and realigned with the existing technological trends. In the education sector, academic experts are driven to sustain the quality of curriculum and instructions with redefined goals and innovative design. One of these was Snezhana's (2022) proposal that lecturers should acquire expertise in virtual facilitation to "keep the sessions balanced for diverse learners." Similarly, Belessova et al. (2023) defended the idea of the suitability of information technologies in "psychological and pedagogical training," suggesting the development of a "digital ecosystem" in the current era. While, Subedi et al. (2020, in Pereira et al., 2023) reiterated that digital technologies are becoming common to maximize work and production efficacy. Lopez-Reyes et al. (2022) further stated how digital technology plays a crucial role as a learning medium to scaffold students' acquisition of new ideas and skills.

Pertinent to the existing digital education trends and recent studies, the current undertaking has not been scrutinized by other authors; thus, this study was conducted to investigate the design of the enhanced course for digital communication addressing the needs of Liberal Arts students in the new normal phenomena where hybrid and blended learning are intensively offered.

## Objectives

This study was conducted to scrutinize the ergonomic design of the enhanced course for digital communication. Specifically, the following objectives have been put forward to:

1. Examine the influence of students' perceived prior digital technology knowledge on their perceived cognitive learning; and
2. Explore the differences among the enhanced English, Chinese, and Japanese Digital Communication Courses with respect to the students' perceived learning acquisition.

## Theoretical Framework

Denoting the course design, Faustmann et al. (2019) corroborated that "a digital learning platform has to be developed individually based on the participants' backgrounds, needs, and behavior for a successful learning outcome".

Consistently, Joosten et al. (2020) emphasized that the crucial part of alleviating e-learning is integrating relevant media to harness and promote interactive participation. Instructors with better-informing abilities should be involved in designing courses to help students succeed and improve learning (Joosten et al., 2020). Equally, Kintu et al. (2017) proposed that students' attributes and learning outcomes should be considered when designing a curriculum. At the same time, Snezhana (2022) promoted the integration of microlearning to attain its maximum effectiveness. Likewise, Sailer and Homner (2020, in Okariz et al. 2023) affirmed the importance of incorporating gamification in designing procedural learning, for it equips students with several advantages (Lo & Hew, 2020, in Okariz et al., 2023), including the internalization of a lesson and learning empowerment.

Originally, the digital communication course was designed for English communication to further the four macro skills learned by Thai college students. It was likewise aligned with the modern technology of the pre-COVID-19 era, wherein the use of digital technology encompassing digital learning platforms, synchronous learning, asynchronous learning, hybrid or blended learning, assistive technology, and digital production were just options for teachers and students. In that case, students were more likely to engage with theoretical knowledge and information alone, while the applied learning and practical experience were compromised. This paper explains the course for digital communication and its enhanced features. The latter includes applied digital learning to obtain practical digital experience while sustaining students' engagement with theoretical knowledge and information. Edgar Dale's Cone of Learning highlighted that students remember 90% of what they do and 70% when they speak or write, whereas only 10% are absorbed in reading and 20% in listening alone (Gove Group, n.d.).

**Figure 1**

*The Paradigm of the Enhanced Course for Digital Communication*

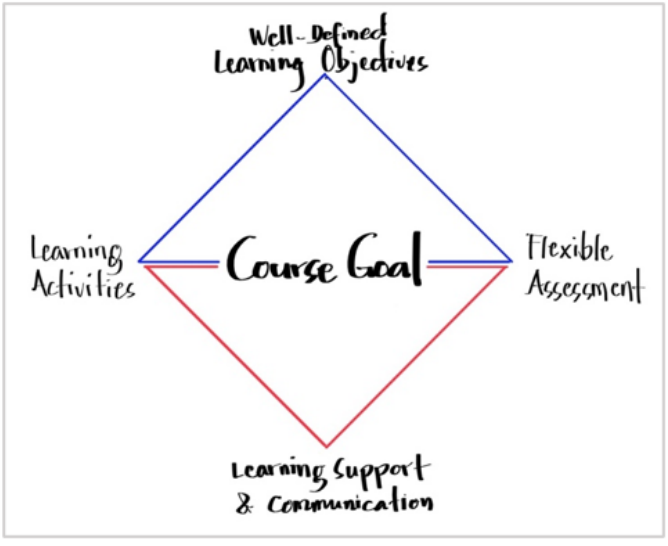


Figure 1 describes the Enhanced Course for Digital Communication paradigm.

The course model highlights an ambitious course goal to direct and guide students to possible future careers, interests, and daily life experiences along with digital technologies. Having well-defined and clear learning objectives could scaffold the classroom managers and curriculum and instruction designers to achieve learning activities that encompass relevant digital learning content, active and learner-centered, and constructive (Duke Learning Innovation, (n.d.). Panigrahi et al. (2018) stated that the most important factor in digital learning success is the availability of learning content.

Furthermore, well-defined and clear learning objectives could corroborate flexible assessment, leading students to realize its theoretical and practical applications in real life. Furthermore, a course goal could be achieved with learning support and consistent communication. To support the acquisition of learning activities and flexible assessment, access to learning materials is maximized using available digital technologies, free assistive technologies, and engaging printed materials. Also, there are in-class consultations and outside-the-schedule consultations for tutorials, inquiries, and personal concerns. The latter statement can be done on-site or asynchronously.

To distinguish the measurement of the ergonomic design of the course, the use of students' perceptions has been manifested in the study of Bahrami et al. (2023). Similarly, Boud and Molloy (2013) further substantiated the students' feedback as a sustainable source of real assessment for course delivery. Additionally, Boud and Molloy (2013) highlighted that learners should be given the opportunities to get involved as judges of their learning. Also, Aroonsrimarakot et al. (2022) discovered that the strategies suggested by student respondents could contribute to the possible resolution of e-learning problems.

Moreover, several experts unfolded their notions on the controversy of gender stereotypes in adopting technology. Nonetheless, a recent study by Okariz et al. (2023) on "the effects of gender and course acquisition on student satisfaction revealed no effects." Likewise, Korlat et al. (2021) found that male and female students "exhibited the same competence beliefs regarding digital learning." A parallel study by Yu and Deng (2022) affirmed that "e-learning outcomes" are comparable for both male and female students. In the same manner, Basak and Manna (2020) concluded that both male and female respondents had the same perception of e-learning. Hendawi and Nosair (2020) conducted a similar study on students' technological awareness, depicting "no differences in all dimensions." Flores et al. (2019) also corroborated the absence of a "distinction" between male and female participants using the gamified xMOOCs. Similar finding was verified by Quino and Potane (2023) in "post-pandemic digital self-efficacy and online learning readiness." Contrarily, Liu et al. (2021) divulged that "females outperformed males in terms of online self-study." Benvenuti (2023) further corroborated the latter attestation in terms of "internet use." Moreover, Chin (2020) revealed that females better understand digital technology safety and "security practices than their male counterparts." The latter likewise exhibits a good implication for gender equality and the acquisition of digital technology education. Additionally, the equal perceptions posed by both genders in their learning acquisition suggest that they are comparable in understanding, appreciation, and execution of learning tasks.

Employing this learning acquisition was originally grounded in Bloom's taxonomy of learning domains (Vikaspedia, 2020). These are focused on students' cognitive learning acquisition, affective learning, and psychomotor learning. Cognitive learning acquisition (Bloom, 1956, in Ruhl, 2024) reflects on learners' ability to "recall information, understand the meaning, troubleshoot in logical deduction, put parts together, and value ideas." On the other hand, affective learning acquisition (Krathwohl et al., 1964, in Ruhl, 2024) resonates with students' "willingness to listen, active participation, confidence and acceptance of diversity, self-reliance, and cooperation." Whereas, the psychomotor learning acquisition (Simpson, 1972, in Ruhl, 2024) echoes students' "guided response, mechanism, adaptation, and origination."

The aforementioned idea has been noticed in the studies of Bahrami et al. (2023) and Pereira et al. (2023), anchored to the affective learning domain focusing on teamwork and interaction. In comparison, Kingkaew et al. (2023) concentrated on cognitive learning alone. Contrarily, López-Reyes, et al. (2022) provided a broader avenue for active learning and digital technologies by employing the three learning domains.

In these latter years, the learning phenomena of Thai students enrolled in English, Chinese, and Japanese programs are more inclined to go online. Thus, digital technology "supplements their formal classroom learning that caters to their needs through supportive communities" (Quilt. AI, 2022).

Bogart (2014) concluded that utilizing LINE in learning English as a Foreign Language has effectively made students improve as digitally cognitive learners. Similarly, Chotipaktanasook (2014) affirmed that the willingness of students to communicate in English appeared to be enhanced by partaking in social media because it caters to them in a less stressful environment. Meanwhile, Guo and Lertlit (2021) attested that mobile-assisted language learning enhanced students' performance as it helped them to learn the Chinese language freely and actively through collaboration. Moreover, Thanwanon (2018) found that most Thai students learn the Japanese language more satisfactorily from online media than from books.

## Methodology

This quantitative study employs a two-pronged approach: (1) a causal research design to determine the influence of prior digital technology knowledge on learning acquisition and (2) a comparative design to determine if there are significant differences among the three groups on perceived knowledge acquisition.

The data were generated using the digital survey questionnaire administered with guidance during the face-to-face classes and were completed in the last week of February Academic Year 2022. The survey questionnaire consists of four (4) parts: (a) perceived prior digital technology knowledge – adopted from John's (2015) study, (b) perceived cognitive learning acquisition, (c) perceived affective learning acquisition, and (d) perceived psychomotor learning acquisition. Each part consisted of five (5) questions patterned to a five-point Likert scale. The

perceived prior digital technology knowledge has a Likert scale range of 1 as Poor, 2 as Fair, 3 as Good, 4 as Very Good, and 5 as Excellent. Equally, the perceived learning acquisition has a Likert scale range of 1 as Strong Disagree, 2 as Disagree, 3 as Neutral, 4 as Agree, and 5 as Strongly Agree.

Each part has the possible highest total scores of 21 – 25, indicating students' excellent perceived prior digital technology knowledge. Moreover, each question was designed according to its indicator (*see Appendices D, E, F, and G*).

Respondents consisted of first-year students from the Faculty of Liberal Arts. Thirty-eight (38) students have responded from the English Program, fifty-seven (57) from the Chinese Program, and another fifty-seven (57) from the Japanese Program, for a total of one hundred and fifty-two (152). The target respondents of this study were chosen because they were characterized as novice digital resilient (*see Appendix C*).

Data were analyzed using the Microsoft Excel Analysis ToolPack. The t-test for two sample means was used to examine the influence of students' prior digital technology knowledge on their digital learning acquisition. Subsequently, One-way ANOVA was employed and run separately for each group of respondents to determine the differences in their perceived learning acquisition. Likewise, the z-test for two sample means was applied to verify the Analysis of Variance result.

Cronbach's Alpha (0.804) confirmed a high internal consistency of the twenty-item survey questions on Students' Perceived Learning Acquisition. The questions are personalized and partly adopted from one of John's (2015) exploration tools. The aforesaid survey questionnaire was validated by the RMUTR-Liberal Arts research experts to further verify its credibility. It was pilot-tested right after the approval and disseminated to the target respondents in the last week of February 2023.

## Results and Discussions

### Significant influence of students' perceived prior digital technology knowledge on their perceived cognitive learning

The findings in Table 1 reveal that the respondents' perceived prior digital technology knowledge statistically significantly influences their perceived cognitive learning acquisition ($p < 0.05$). This stipulates that their improved hybrid and blended learning performance in their perceived cognitive learning acquisition was significantly influenced by their perceived prior digital technology knowledge as evidence of diminished data variability.

The perceived prior digital knowledge of three groups of respondents showed a very good average for two indicators: understanding internet connection on Wi-Fi or mobile data ($\mu=4.46$) and awareness and management of social media, online gaming, and other related applications ($\mu=4.05$) (*see Appendix D*). Respondents' very good understanding of those indicators forced them to acquire very good results on their perceived cognitive learning acquisition,

including knowledge of synchronous and asynchronous communications (μ=4.01) and awareness of refresh rate and browsing management (μ=4.13) (*see Appendix E*). Additionally, their acquired ability to read and understand English commands on online portals, proper management of personal digital technology devices, and acquired knowledge of connectivity and internet bandwidth resulted from having a good prior knowledge of computer basics and storage management (*see Appendices D and E*).

A similar finding was revealed in the study of Feng et al. (2023), affirming the "positive impact of students' ICT self-efficacy in online English learning." Possessing a quality background in understanding digital technology gave the students concrete advantages to adapt to standardized digital learning. Further, Sayaf et al. (2021) anchored to students' digital learning sustainability wherein language familiarization played an essential role as their scaffold for acquiring more advanced knowledge while adapting to the fast-changing digital society.

**Table 1**

*t-Test of Students' Perceived Prior Knowledge of Digital Technology and Perceived Cognitive Learning*

| | EIC | | | CHI | | | JAP | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean | Variance | P-value | Mean | Variance | P-value | Mean | Variance | P-value |
| **Prior KTD** | 18.24 | 9.43 | 0.014*** | 17.65 | 10.48 | 0.023*** | 17.05 | 15.02 | 0.000*** |
| **COGNITIVE** | 19.50 | 5.28 | | 18.79 | 8.88 | | 19.07 | 7.99 | |

****Influence is significant at p < 0.05 level*

## Differences in the students' perceived learning acquisition

The result in Table 2 depicts statistically significant differences between the cognitive, affective, and psychomotor learning perceived by the EIC group (F=3.73, p=0.027), CHI group (F=3.403, p=0.036), and JAP group (F=4.714, p=0.010). The significant differences are explicated and verified in Table 3, entailing that all three groups of respondents favored their affective learning acquisition, showing a relatively high score of 20.02 (*see Appendix A*).

**Table 2**

*ANOVA of Three Groups of Students and Their Perceived Learning Acquisition*

| | *Source of Variation* | *SS* | *df* | *MS* | *F* | *P-value* | *F crit* |
|---|---|---|---|---|---|---|---|
| EIC | Between Groups | 42.54 | 2 | 21.27 | 3.73 | 0.027 | 3.08 |
| | Within Groups | 632.47 | 111 | 5.70 | | | |
| | Total | 675.02 | 113 | | | | |
| CHI | Between Groups | 61.56 | 2 | 30.778 | 3.403 | 0.036 | 3.050 |
| | Within Groups | 1519.61 | 168 | 9.045 | | | |
| | Total | 1581.17 | 170 | | | | |
| JAP | Between Groups | 68.53 | 2 | 34.263 | 4.714 | 0.010 | 3.050 |
| | Within Groups | 1221.16 | 168 | 7.269 | | | |
| | Total | 1289.68 | 170 | | | | |

****Difference is significant at p < 0.05 level*

**Table 3**

*z-Test of Students' Perceived Learning Acquisition*

| | Mean | Variance | P-value |
|---|---|---|---|
| Cognitive | 19.07 | 7.63 | 0.079 |
| Psychomotor | 18.62 | 8.13 | |
| Cognitive | 19.07 | 7.63 | 0.001 |
| Affective | 20.02 | 6.99 | |
| Psychomotor | 18.62 | 8.13 | 0.000 |
| Affective | 20.02 | 6.99 | |

****Difference is significant at p < 0.05 level*

Though cognitive and psychomotor learning were likewise perceived with favorable scores, all groups of respondents were inclined more toward their affective learning. This infers that learners could profoundly collaborate with peers or friends while completing learning tasks (μ=4.2). Noticeably, respondents showed appreciation of their learned digital citizenship behaviors and their importance (μ=4.5). Their observed netiquette and confidence in using digital technologies, such as the Internet of Things and various English signature applications, likewise aided them in easily grasping the meaning of the subject matter in producing precise task output. This further insinuates that students were confident, motivated, collaborative, and observant in acquiring new and additional information on digital technology and communication (*see Appendix F*).

As a result, the respondents, first-year Liberal Arts students of the Academic Year 2022, were undoubtedly considered to be novice digital resilient. This implies that students could become independent as first-time distance and online learners to survive and progress their student status during the confinement period. The difficult situations have shaped them into tough, self-regulated digital learners of the post-pandemic. These students were the first batch of learners to spend their first university experience on-site after two years of remote learning. That means most of them have adopted the mechanism of digital learning.

Several recent studies were found parallel to this present research. These include learning strategies visualization, and digital literacy support (Chiu, 2021; Wijaya et al., 2021; Yusoff et al., 2021). Also, aside from the pedagogical impact, the perceived ease of use of digital technologies was found to positively influence students' behavior in digital learning, which shaped them to be digitally resilient (Belda-Medina, 2021; Kintu et al., 2017; Lang and Sorgo, 2023; Li, 2023).

## Conclusions and Recommendations

### Conclusions

The students' perceived prior digital technology knowledge has significantly influenced their perceived cognitive learning acquisition. Therefore, students with prior knowledge of digital technology better understand the course concepts, leading them to operate on their digital devices easily and precisely.

The JAP, CHI, and EIC groups of respondents highly favored affective learning acquisition over cognitive and psychomotor, which conveys that learners were profoundly engaged with others using digital technologies as they grasped the meaning of the subject matter.

This means the course learning activities were designed with relevant content for active and constructive learning, aligned with well-defined objectives and learning support and communication. Therefore, it substantiates that the enhanced course for digital communication has been equipped with ergonomic design with clear goals and objectives.

### Recommendations

Based on the findings of the study, current and future researchers must employ qualitative methods to delve into a more profound discussion of the results of this study. It is further recommended that a prerequisite course in computer basics must be offered to students upon taking the Enhanced Course for Digital Communication to harness their cognitive computer skills and build more confidence in using digital technologies.

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## Appendices

### Appendix A

*Descriptive Statistics of Students' Perceived Learning Acquisition Scores*

| | COGNITIVE | AFFECTIVE | PSYCHOMOTOR |
|---|---|---|---|
| Sample | 152 | 152 | 152 |
| Mean | 19.07 | 20.02 | 18.62 |
| Standard Error | 0.22 | 0.21 | 0.23 |
| Median | 19.5 | 20 | 19 |
| Mode | 21 | 21 | 18 |
| Standard Deviation | 2.76 | 2.64 | 2.85 |
| Variance | 7.63 | 6.99 | 8.13 |
| Kurtosis | 0.24 | 1.03 | 0.11 |
| Skewness | -0.56 | -0.74 | -0.31 |
| Range | 14 | 14 | 14 |
| Minimum | 11 | 11 | 11 |
| Maximum | 25 | 25 | 25 |
| Sum | 2899 | 3043 | 2830 |
| Confidence Level(95.0%) | 0.443 | 0.424 | 0.457 |

### Appendix B

*Descriptive Statistics of Students' Perceived Learning Scores per Group*

| | PRIOR DTK | | | COGNITIVE | | | AFFECTIVE | | | PSYCHOMOTOR | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EIC | CHI | JAP | EIC | CHI | JAP | EIC | CHI | JAP | EIC | CHI | JAP |
| Sample | 38 | 57 | 57 | 38 | 57 | 57 | 38 | 57 | 57 | 38 | 57 | 57 |
| Mean | 18.24 | 17.65 | 17.05 | 19.5 | 18.79 | 19.07 | 20.55 | 20.09 | 19.60 | 19.11 | 18.84 | 18.07 |
| Standard Error | 0.50 | 0.43 | 0.51 | 0.37 | 0.39 | 0.37 | 0.35 | 0.40 | 0.33 | 0.44 | 0.40 | 0.36 |
| Median | 18 | 18 | 18 | 20 | 19 | 20 | 20.5 | 21 | 20 | 19 | 19 | 18 |
| Mode | 18 | 18 | 15 | 21 | 20 | 21 | 20 | 21 | 21 | 19 | 18 | 19 |
| Standard Deviation | 3.07 | 3.24 | 3.87 | 2.30 | 2.98 | 2.83 | 2.14 | 3.02 | 2.51 | 2.69 | 3.02 | 2.74 |
| Variance | 9.43 | 10.48 | 15.02 | 5.28 | 8.88 | 7.99 | 4.58 | 9.12 | 6.32 | 7.23 | 9.14 | 7.49 |
| Kurtosis | 0.46 | -0.44 | -1.10 | -0.68 | 0.25 | 0.40 | 0.29 | 0.57 | 1.57 | 1.17 | -0.12 | 0.00 |
| Skewness | -0.82 | -0.45 | 0.06 | -0.46 | -0.29 | -0.80 | -0.25 | -0.74 | -0.91 | -0.29 | -0.32 | -0.38 |
| Range | 12 | 11 | 12 | 9 | 14 | 13 | 9 | 14 | 13 | 13 | 14 | 13 |
| Minimum | 10 | 11 | 11 | 14 | 11 | 11 | 16 | 11 | 11 | 11 | 11 | 11 |
| Maximum | 22 | 22 | 23 | 23 | 25 | 24 | 25 | 25 | 24 | 24 | 25 | 24 |
| Sum | 693 | 1006 | 972 | 741 | 1071 | 1087 | 781 | 1145 | 1117 | 726 | 1074 | 1030 |
| Count | 38 | 57 | 57 | 38 | 57 | 57 | 38 | 57 | 57 | 38 | 57 | 57 |
| Confidence (95.0%) | 1.01 | 0.86 | 1.03 | 0.76 | 0.79 | 0.75 | 0.70 | 0.80 | 0.67 | 0.88 | 0.80 | 0.73 |

## Appendix C

*Distribution of Independent Variables*

| Variable | Frequency | Percent |
|---|---|---|
| Gender | | |
| Male | 38 | 25 |
| Female | 114 | 75 |
| Degree / Major | | |
| English | 38 | 25 |
| Chinese | 57 | 37.5 |
| Japanese | 57 | 37.5 |
| Total | 152 | 100 |

## Appendix D

*Perceived Prior Digital Technology Knowledge Average Scores*

| INDICATORS | EIC | CHI | JAP | AVE. |
|---|---|---|---|---|
| 1. Knowledge of computer basics and storage management | 3.45 | 3.67 | 3.79 | 3.63 |
| 2. Understand internet connection on Wi-Fi and mobile data | 4.16 | 4.61 | 4.61 | 4.46 |
| 3. Knowledge of internet surfing and web browsing | 3.29 | 3.09 | 2.58 | 2.99 |
| 4. Awareness and management of social media, online gaming, and other related apps | 4.95 | 3.70 | 3.51 | 4.05 |
| 5. Ability to use email tools | 2.39 | 2.58 | 2.56 | 2.51 |

## Appendix E

*Perceived Cognitive Learning Acquisition Average Scores*

| INDICATORS | EIC | CHI | JAP | AVE. |
|---|---|---|---|---|
| 1. Ability to read and understand English commands on the web or applications | 3.68 | 3.51 | 3.42 | 3.54 |
| 2. Knowledge of synchronous and asynchronous communications | 4.05 | 3.93 | 4.05 | 4.01 |
| 3. Proper management of personal digital technology devices | 3.92 | 3.81 | 3.95 | 3.89 |
| 4. Knowledge of connectivity and internet bandwidth | 3.53 | 3.54 | 3.56 | 3.54 |
| 5. Awareness of refresh rate and browsing management | 4.32 | 4 | 4.09 | 4.13 |

## Appendix F

*Perceived Affective Learning Acquisition Average Scores*

| INDICATORS | EIC | CHI | JAP | AVE. |
|---|---|---|---|---|
| 1. Confidence in navigating and browsing various learning platforms | 3.92 | 3.82 | 4.05 | 3.93 |
| 2. Eagerness to learn beyond | 3.63 | 3.68 | 3.25 | 3.52 |
| 3. Observance of Netiquette in hybrid and blended learning | 3.97 | 4.02 | 3.81 | 3.93 |
| 4. Proufoundly collaborate with peers/ friends on learning tasks | 4.34 | 4.09 | 4.16 | 4.20 |
| 5. Appreciation of learned digital citizenship behaviors and their importance | 4.68 | 4.47 | 4.33 | 4.50 |

## Appendix G

*Perceived Psychomotor Learning Acquisition Average Scores*

| INDICATORS | EIC | CHI | JAP | AVE. |
|---|---|---|---|---|
| 1. Independently initate and access digital learning | 3.89 | 3.79 | 3.91 | 3.87 |
| 2. Operate on digital devices in English language procedures | 3.61 | 3.58 | 3.32 | 3.50 |
| 3. Work efficiently with assistive technology | 3.87 | 4.04 | 3.58 | 3.83 |
| 4. Go safely online | 4.13 | 3.91 | 3.70 | 3.92 |
| 5. Skilled in compressing and saving files | 3.61 | 3.53 | 3.56 | 3.56 |

## Appendix H

*t-Test of Students' Perceived Prior Knowledge of Digital Technology and Perceived Learning Acquisition of Enhanced Digital Communication Course*

| | | Prior DTK | COGNITIVE | AFFECTIVE | PSYCHOM |
|---|---|---|---|---|---|
| EIC | Mean | 18.24 | 19.50 | 20.55 | 19.11 |
| | Variance | 9.43 | 5.28 | 4.58 | 7.23 |
| | Pearson Corre | | 0.232 | 0.342 | 0.295 |
| | P-value | | 0.014*** | 0.000*** | 0.064 |
| CHI | Mean | 17.65 | 18.79 | 20.09 | 18.84 |
| | Variance | 10.48 | 8.88 | 9.12 | 9.14 |
| | Pearson Corre | | 0.083 | 0.226 | 0.252 |
| | P-value | | 0.023*** | 0.000*** | 0.011*** |
| JAP | Mean | 17.05 | 19.07 | 19.60 | 18.07 |
| | Variance | 15.02 | 7.99 | 6.32 | 7.49 |
| | Pearson Corre | | 0.277 | 0.345 | 0.274 |
| | P-value | | 0.000*** | 0.033*** | 0.000*** |

****Influence is significant at 0.05 level*