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Stress Levels and Coping Strategies of First-Year Computer Science Students in Relation to Computer Laboratory Capacity

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Abstract: *This study aimed to determine the stress levels and coping strategies of first-year Computer Science students in relation to computer laboratory capacity. Specifically, it examined how limited laboratory resources, insufficient computer units, overcrowding, and restricted laboratory schedules affect the academic stress experienced by students. The study also identified the common coping mechanisms students use to manage stress related to laboratory activities and computer-based requirements. A descriptive-correlational research design was utilized, with data gathered through survey questionnaires administered to first-year Computer Science students. The findings revealed that students experienced moderate to high levels of stress due to inadequate laboratory capacity, particularly during programming classes, practical examinations, and project activities. Time pressure, limited access to functioning computers, and competition for laboratory usage were identified as major stress factors. Furthermore, the study found that students commonly employed coping strategies such as time management, peer collaboration, self-study, and seeking assistance from instructors and classmates. Results also indicated a significant relationship between computer laboratory capacity and the stress levels of students, suggesting that insufficient laboratory resources contribute to academic pressure and learning difficulties. The study concludes that improving computer laboratory facilities, increasing the number of available units, and implementing better laboratory scheduling may help reduce student stress and enhance academic performance. The findings may serve as a basis for institutional improvements and student support programs in Computer Science education.*

Keywords: stress levels, coping strategies, computer laboratory capacity, first-year Computer Science students, academic stress, laboratory resources.

I. INTRODUCTION

In recent years, stress among university students has become a major concern because of its effects on students' academic performance, mental well-being, and learning experiences. This issue has become more evident among students enrolled in computing-related programs where computer laboratories are essential for practical activities, programming exercises, and project development. However, problems such as overcrowded laboratories, insufficient computer units, limited schedules, and inadequate laboratory resources may create difficulties for students in completing academic requirements. These challenges may increase stress levels and influence the coping strategies used by students to manage academic pressure. This study aimed to examine the stress levels and coping strategies of first-year Computer Science students in relation to computer laboratory capacity in order to better understand its effects on students' academic experiences and well-being.

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Several recent studies have emphasized that university students commonly experience stress due to academic and environmental challenges. Alkhawaldeh et al. (2023) reported that university students experienced moderate stress levels caused by academic workload, examinations, and environmental factors, which affected their emotional and academic functioning. Saleem, Chikhaoui and Malik (2024) explained that students experienced technostress due to technological demands and difficulties in accessing learning resources, which negatively affected the quality of learning. Takaoka and Sharma (2024) further highlighted that students in computing-related fields were more vulnerable to stress because of the demanding nature of computing education and continuous technological requirements. Alduais et al. (2022) also found that university students experienced stress related to academic pressure and learning conditions, particularly when resources and support systems were limited. Moreover, Muhammat Pazil, Mahmud, and Jamaluddin (2021) stated that students commonly encountered stress from academic responsibilities, time management, and learning environments.

Studies have also shown that students apply different coping strategies to manage stress and academic difficulties. Muhammat Pazil et al. (2021) found that students commonly used time management, social support, and problem-solving strategies to reduce stress. Likewise, Alkhawaldeh et al. (2023) revealed that university students applied coping mechanisms such as seeking support from peers and adapting their study habits to manage stress effectively. In addition, Alduais et al. (2022) explained that adaptive coping strategies helped students manage academic and emotional stress during challenging learning situations. These studies suggested that coping strategies played an important role in helping students deal with stress caused by academic and environmental factors.

Despite the presence of studies regarding stress and coping strategies among university students, limited studies have specifically focused on the relationship between computer laboratory capacity and the stress experienced by first-year Computer Science students. In the context of Surigao del Norte State University, inadequate computer laboratory capacity may affect students' ability to perform laboratory activities efficiently and may contribute to stress-related experiences. Therefore, this study aimed to determine the stress levels and coping strategies of first-year Computer Science students in relation to computer laboratory capacity. The findings of the study may provide valuable information for school administrators, instructors, and students in improving laboratory resources, strengthening support systems, and creating a more effective learning environment for computing students.

Purpose of the Study

The purpose of this study is to examine the stress levels and coping strategies of first-year Computer Science students in relation to computer laboratory capacity at Surigao del Norte State University. Specifically, the study aims to determine how limited computer laboratory resources, overcrowding, insufficient computer units, and restricted laboratory schedules affect the academic experiences and stress levels of students. Furthermore, the study seeks to identify the coping strategies commonly used by students to manage stress related to laboratory activities and computer-based academic requirements. The findings of this study may help the institution improve computer laboratory facilities, enhance student support services, and develop strategies that can promote a better learning environment for Computer Science students.

Objectives of the Study

This study aimed to determine the stress levels and coping strategies of first-year Computer Science students in relation to computer laboratory capacity at Surigao del Norte State University.

Specifically, the study sought to:

Describe the demographic profile of the respondents in terms of:

- Age
- Gender
- Section

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2. Determine the level of stress experienced by first-year Computer Science students in relation to computer laboratory capacity.
3. Identify the coping strategies used by students in managing stress related to computer laboratory capacity.
4. Determine the relationship between stress levels and coping strategies of first-year Computer Science students.

Conceptual Framework

This study was guided by the Stress and Coping Theory, which suggested that environmental demands and resource limitations influenced students' stress levels and coping strategies. Computer laboratory capacity served as the independent variable, while stress levels and coping strategies served as the dependent variables.

Computer laboratory capacity was examined in terms of availability of computers, accessibility of laboratory facilities, and adequacy of equipment. These factors were expected to influence the stress levels and coping strategies of first-year Computer Science students.

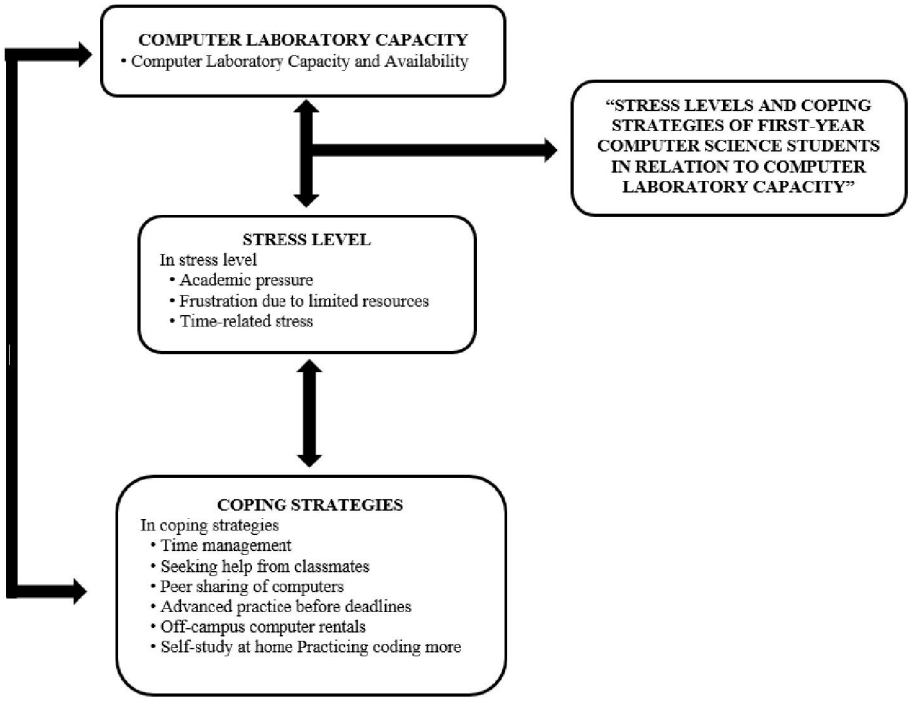

Fig.1 Conceptual Framework of the Study

II. REVIEW OF RELATED LITERATURE

Recent studies have emphasized that academic stress has become one of the major concerns among university students, particularly those enrolled in technology-related programs that require extensive computer usage and laboratory activities. According to Psychology studies conducted by Barbayannis et al. (2022), university students experienced increased levels of academic stress due to academic workload, technological demands, and environmental pressures that affected their mental well-being. Similarly, Kristensen et al. (2023) explained that academic stress was strongly associated with psychological distress and reduced academic self-efficacy among students. Their findings indicated that students who lacked confidence in managing academic responsibilities were more vulnerable to stress-related difficulties.

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Learning Methods

The reviewed studies highlighted various learning methods and coping approaches used by students in managing academic stress in technology-related environments. Researchers found that students commonly relied on coping strategies such as time management, peer support, emotional regulation, and stress management interventions to adapt to academic challenges and laboratory activities (Park et al., 2022; Napoles et al., 2022). Other studies also emphasized the importance of experiential learning, online support systems, and adaptive coping mechanisms in helping students improve their learning experiences and reduce stress in academic settings (Shi et al., 2020; Drüge et al., 2022).

Resources and Digital Tools

The literature also emphasized the importance of resources and digital tools in supporting students' academic performance and learning experiences. Several studies revealed that inadequate ICT resources, limited computer accessibility, overcrowded laboratories, and excessive technology demands negatively affected students' engagement, learning performance, and stress levels (Ishola et al., 2022; Sharma & Gupta, 2023; Momanyi et al., 2025). Researchers further explained that computer laboratory accessibility, ICT integration, and the availability of digital learning tools significantly influenced students' participation, confidence, and academic achievement in technology-related programs (Gale et al., 2026; Veselkova, 2024; Ajani et al., 2025).

Motivation and Psychological Factors

This section is found in the discussions about academic stress, emotional well-being, coping strategies, self-efficacy, and mental health. It includes the studies of Barbayannis et al. (2022), Kristensen et al. (2023), Park et al. (2022), Neigel et al. (2024), Drüge et al. (2022), and Klapproth et al. (2020). These studies explained how stress, anxiety, emotional regulation, and coping abilities affect students' academic experiences and mental well-being.

Hands-On Laboratory Learning

This theme appears in the discussions about laboratory environments, laboratory accessibility, and learning experiences in computer-related programs. It includes studies by Napoles et al. (2022), Kumari and Gupta (2024), Ajani et al. (2025), Shi et al. (2020), and Gale et al. (2026). These studies emphasized the importance of adequate computer laboratories, experiential learning, laboratory preparation, and access to laboratory resources in improving learning outcomes and reducing stress.

Computer Science students. The reviewed literature revealed that academic stress, technostress, and limited access to educational resources significantly affect students' academic performance, emotional well-being, and learning experiences. Several studies showed that students enrolled in technology-related and laboratory-based programs commonly experience stress due to academic workload, insufficient technological resources, overcrowded laboratory facilities, and challenges in adapting to digital learning environments (Barbayannis et al., 2022; Ishola et al., 2022; Sharma & Gupta, 2023). Other researchers emphasized that coping strategies such as time management, peer support, emotional regulation, and stress management interventions help students reduce academic stress and improve adjustment to learning demands (Park et al., 2022).

The literature also highlighted the importance of computer laboratory accessibility and ICT resource availability in supporting effective learning experiences. Studies conducted by Momanyi et al. (2025), Veselkova (2024), Gale et al. (2026), and Ajani et al. (2025) demonstrated that insufficient computer laboratory resources and limited access to technology negatively affect students' engagement, confidence, and academic performance. Furthermore, studies focusing on computing and Information Technology students revealed that students in technology-related programs are more vulnerable to stress caused by intensive computer usage and limited laboratory access (Natividad-Franco & De Jesus, 2022; Takaoka & Sharma, 2024).

Despite the growing number of studies related to academic stress, coping strategies, technostress, and ICT accessibility, limited research has specifically examined the relationship between computer laboratory capacity and the stress levels and coping strategies of first-year Computer Science students in face-to-face learning environments. Most previous

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studies focused on online learning stress, digital engagement, or general academic stress rather than laboratory capacity in Computer Science programs.

III. METHODOLOGY

Research Design

This study employed a quantitative research design to examine the relationship between stress levels and coping strategies of first-year Computer Science students in relation to computer laboratory capacity. Quantitative research focused on collecting and analyzing numerical data to identify patterns, relationships, and trends using statistical techniques This approach was appropriate because it enabled the proponents to objectively measure the stress levels and coping strategies of students and determine how these were related to computer laboratory capacity. Through the use of surveys, questionnaires, and statistical analysis, the proponents obtained measurable and organized data relevant to the objectives of the study.

Participants and Sampling Method

The study involved first-year Computer Science students from Sections 1A and 1B of Surigao del Norte State University. A total population of 93 students was identified, and 65 students participated in the study. Respondents were selected using purposive sampling. The inclusion criteria required that participants be officially enrolled as first-year Computer Science students and have experience using the computer laboratory facilities. This sampling method was appropriate because it enabled the proponents to focus on a specific group that directly experienced the conditions being studied.

Data Collection Methods

Data were collected using a survey questionnaire created through Google Forms. A survey served as a research tool used to gather information from respondents through standardized questions. The purpose of the survey was to collect measurable data regarding students' stress levels, coping strategies, and experiences related to computer laboratory capacity.

The questionnaire consisted of 27 items designed to measure the variables of the study. Google Forms was utilized because it allowed efficient distribution and automatic collection of responses. The survey link was distributed through online platforms such as Messenger and Facebook. Respondents were given sufficient time to answer the questionnaire. Prior to data collection, permission was formally requested from the College of Computing and Information Sciences (CCIS). The proponents visited the office of the Dean, Dr. Vernille C. Francisco; however, she was unavailable at that time. The request was accommodated and approved by Mr. Renz Buctuan, who reviewed and signed the permission letter on behalf of the department. Informed consent was obtained from all respondents before participation in the study. Respondents were informed about the purpose of the research, and confidentiality and anonymity were strictly observed.

Data Analysis Techniques

The data collected through Google Forms were exported into a CSV file and organized into a tally sheet using a spreadsheet. Non-numeric responses, particularly those related to gender, section, and Likert-scale responses, were converted into numerical values to enable statistical analysis. After organizing the data, the dataset was analyzed using Jamovi statistical software. Descriptive statistics such as frequency counts, mean, median, mode, standard deviation, and variance were utilized to summarize and interpret the data. For the age, gender, section proponents used exel for the graph.

The number of respondents was computed to determine the sample size (n = 65). Mean scores were used to assess the stress levels and coping strategies of the respondents, while measures of variability such as standard deviation described the consistency of responses. These statistical techniques enabled the proponents to analyze patterns,

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TABLE 1. Scale of Interpretation for Likert Responses

Scale	Range	Verbal Description	Interpretation
5	4.50 – 5.00	Strongly Agree	Very High
4	3.50 – 4.00	Agree	High / Moderate
3	2.50 – 3.49	Neutral	Moderate
2	1.50 – 2.49	Disagree	Low
1	1.00 – 1.49	Strongly Disagree	Very Low

The scale presented in Table 1 was used as the basis for interpreting the responses gathered from the respondents. Each numerical range corresponds to a specific verbal description and interpretation level. Ratings between 4.50 and 5.00 were interpreted as “Strongly Agree” with a “Very High” interpretation, while ratings from 1.00 to 1.49 were interpreted as “Strongly Disagree” with a “Very Low” interpretation. This interpretation scale helped determine the level of stress and coping strategies experienced by the respondents.

IV. RESULTS AND DISCUSSION

Profile of the Respondents

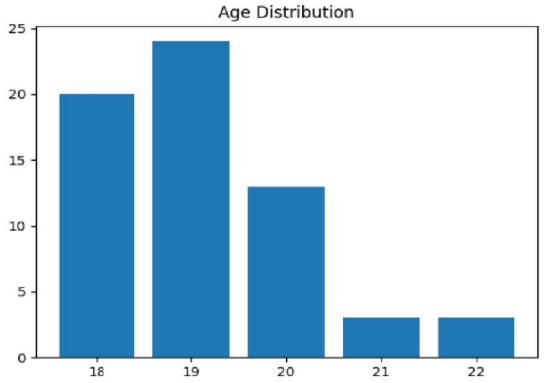

Figure 2: Age Distribution

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Figure 2 shows the age distribution of the respondents. Most of the participants were 19 years old with a total of 24 students. This was followed by 18-year-old respondents with 20 students and 20-year-old respondents with 13 students. Meanwhile, only a few respondents belonged to the ages of 21 and 22, with three students each.

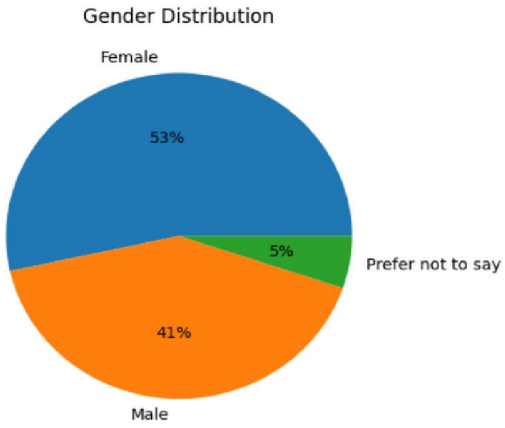

Figure 3: Gender Distribution

Figure 3 presents the gender distribution of the respondents. Female students made up the largest portion of the participants with 31, followed by male students with 24. 3 of the respondents chose not to disclose their gender. The results indicate that female students were more represented in the study compared to male students.

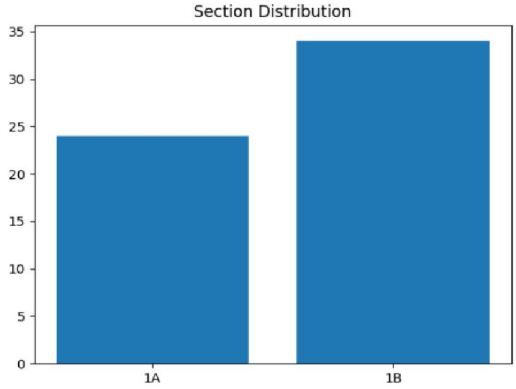

Figure 4: Section Distribution

Figure 4 illustrates the section distribution of respondents. Section 1B recorded the highest number of respondents with 34 students, while Section 1A consisted of 24 students. This indicates that a larger percentage of the participants came from Section 1B.

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Table 2: Descriptive Statistics of Students' Stress Levels and Coping Strategies

	Stress level	Coping Strategies
N	65	65
Mean	2.35	2.28
Std. error mean	0.0808	0.0885
Median	2.22	2.17
Mode	2.00	2.00
Sum	153	148
Standard deviation	0.651	0.714
Variance	0.424	0.509
Range	3.22	3.56
Minimum	1.00	1.00
Maximum	4.22	4.56

Table 2 presents the descriptive statistics of the respondents' stress levels and coping strategies. The computed mean scores for stress level and coping strategies were 2.35 and 2.28, respectively, which both fall under the moderate interpretation level. The standard deviation values indicate that there was a moderate variation in the responses of the students. Furthermore, the median and mode values reveal that many respondents shared similar experiences regarding stress and coping strategies.

Level of Stress of Students

The overall stress level of students showed a mean of 2.35, with a standard deviation of 0.651, indicating a moderate level of stress among respondents. The median (2.22) and mode (2.00) further indicated that most students experienced similar stress levels.The stress scores ranged from 1.00 to 4.22, showing that while some students experienced low stress, others reported higher stress levels. This variation may have been influenced by academic pressure, limited computer laboratory capacity, and time-related challenges.

Coping Strategies of Students

The coping strategies of students yielded a mean of 2.28, with a standard deviation of 0.714, indicating a moderate use of coping strategies. The median (2.17) and mode (2.00) showed that most students used similar coping approaches.The results ranged from 1.00 to 4.56, suggesting differences in how students managed stress. Common coping strategies included time management, asking help from classmates, sharing computer resources, and practicing tasks before deadlines.

Interpretation of Findings

The findings of this study revealed that first-year Computer Science students experienced a moderate level of stress in relation to computer laboratory capacity. The computed mean score for stress levels indicated that students are moderately affected by limited computer laboratory resources, including insufficient computer units, overcrowding, slow performance of available computers, and restricted laboratory schedules. In terms of specific stress factors, students reported that waiting for available computers, competing with classmates for laboratory use, and difficulty completing programming tasks within the allotted time were the most common sources of stress. Time pressure and limited access to functional laboratory equipment were also identified as contributing factors to their academic stress.

Regarding coping strategies, the results showed that students moderately used various coping mechanisms to manage stress related to laboratory activities. The most common coping strategies included effective time management, seeking

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help from classmates, sharing computers, doing advance practice before deadlines, and self-study at home. These strategies helped students cope with limited laboratory access and academic demands.

Overall, the findings suggest that computer laboratory capacity has a noticeable impact on the stress levels of first-year Computer Science students. Limited resources and overcrowded laboratory conditions contribute to academic pressure, while students rely on both individual and collaborative coping strategies to manage their challenges.

V. CONCLUSION & RECOMMENDATION

This study examined the stress levels and coping strategies of first-year Computer Science students in relation to computer laboratory capacity at Surigao del Norte State University. The findings revealed that the majority of respondents were 19 years old, female, and from Section 1B. The study also found that students experienced a moderate level of stress, which may have been influenced by academic pressure, limited computer laboratory resources, and time-related challenges. Furthermore, the respondents demonstrated a moderate use of coping strategies such as time management, asking help from classmates, sharing computer resources, and practicing before deadlines. The results suggested that computer laboratory capacity played an important role in the stress experienced by first-year Computer Science students. The study contributed to understanding how students coped with stress related to limited laboratory resources and academic demands.

Recommendation

School administrators, particularly the College of Computing and Information Sciences, should improve computer laboratory capacity by increasing the number of available computers and ensuring proper maintenance of laboratory facilities.

Teachers should provide academic support and flexible laboratory activities to help students manage stress related to academic requirements and laboratory limitations.

Students are encouraged to continue developing positive coping strategies such as effective time management, seeking assistance from classmates or instructors, and practicing laboratory activities before deadlines.

Future researchers are encouraged to conduct similar studies involving larger sample sizes, other year levels, or different academic programs to obtain broader findings. Additional variables such as academic performance, mental health, and access to personal computers may also be explored for deeper understanding.

VI. ACKNOWLEDGMENT

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