UNDERSTANDING LEARNING EXPERIENCES AND MAJOR MISMATCH AMONG INFORMATICS STUDENTS

Luh Gede Surya Kartika, I Putu Adi Saskara, Gede Wahyu Sanjaya, Putu Kussa Laksana Utama

1(Dept. of Informatics, UHN I Gusti Bagus Sugriwa Denpasar, Indonesia, suryakartika@uhnsugriwa.ac.id)

[2](Dept. of Informatics, UHN I Gusti Bagus Sugriwa Denpasar, Indonesia, putuadisaskara@uhnsugriwa.ac.id)

[3](Dept. of Communication Studies, UHN I Gusti Bagus Sugriwa Denpasar, Indonesia, wahyu_sanjaya@uhnsugriwa.ac.id)

[2](Dept. of Informatics, UHN I Gusti Bagus Sugriwa Denpasar, Indonesia, kussa_laksana@uhnsugriwa.ac.id)

ABSTRACT

This study investigates the academic experiences, perceptions, and practical skill development of first- and second-year students in the Informatics Study Program at UHN I Gusti Bagus Sugriwa Denpasar. As a newly established program with students from diverse educational backgrounds, several challenges have emerged, including perceptions of being in the "wrong major," dissatisfaction with learning facilities, and difficulties in mastering technical content. The research employs a descriptive quantitative design involving all 66 active students in 2024, of whom 47 provided valid responses to an online survey. The instrument consisted of open-ended questions covering motivations for choosing the major, learning materials, practical skills, satisfaction with campus facilities and lecturers, general complaints, and perceptions of academic misalignment. Data were analyzed using topic classification and frequency analysis, allowing identification of dominant themes associated with student satisfaction and dissatisfaction. The findings show that the primary source of "wrong major" perceptions is the difficulty of understanding technical subjects such as programming, algorithmic logic, and computational mathematics. Students also reported a mismatch between initial expectations and the actual curriculum, which emphasizes computational problem-solving rather than basic computer operations. General complaints centered on inadequate laboratory facilities, limited practicum opportunities, and inconsistent pedagogical support. Despite these issues, many students expressed satisfaction with improvements in their coding and problem-solving abilities, reflecting the benefits of the program's computational thinking–based approach. The study concludes that strengthening digital infrastructure, expanding practice-based learning, and improving academic support systems are essential to enhancing student satisfaction and reducing academic misalignment in the early years of the program.

Keywords: Computational thinking, Informatics education, Learning facilities, Student satisfaction, Wrong major

INTRODUCTION

I Gusti Bagus Sugriwa Hindu State University (UHN) Denpasar, operating under the Ministry of Religious Affairs of the Republic of Indonesia, has broadened its academic scope by opening the Informatics Study Program in 2023. The program is designed to develop student competencies in software engineering, data analytics,

and artificial intelligence systems. In 2023, public interest was strong, as reflected in the enrollment of 89 students in 2024. Yet, by 2025, the number of active students declined to 66. This decline not only reflects potential recruitment problems, but also an indication of retention issues — most likely related to students' satisfaction levels with educational delivery. According to (Utaminingsih et al., 2024) in various contexts, factors such as the quality of learning facilities, access to technology, and academic services are the main determinants of student satisfaction and retention.

Student satisfaction in higher education is closely related to the quality of lecturers and the learning process. When lecturers perform well — that is, lecturers who are able to convey material clearly, interactively, and relevantly — students are more likely to feel that their education is meaningful and in line with their expectations. In studies by (Syamsuar et al., 2024) the Informatics and Computer Engineering programs, it was found that lecturers' performance has a significant effect on student satisfaction. Conversely, research by (De Guia, 2024) showed that teaching methods that are too theoretical, lacking practicum, or irrelevant to the needs of the industry can reduce motivation and trigger consideration for quitting.

In addition, aspects of infrastructure and learning facilities also play a key role in determining the success of education, especially in the field of informatics which relies heavily on technology, hardware, and internet connections. Studies on hybrid learning and learning facilities show that the availability of adequate facilities — including stable connectivity, computer devices, and a conducive learning environment — has a direct impact on student satisfaction. If these facilities are problematic, the learning load increases, student frustration increases, and academic endurance tends to decrease (Utaminingsih et al., 2024).

Moreover, the global literature on student retention indicates that a combination of internal factors (students' perception of the quality of education, relevance of the curriculum, sense of fit for the major) and external factors (institutional support, facilities, learning conditions) determine whether students stay or resign. Therefore, systematic evaluations of student satisfaction are essential. The evaluation not only as a diagnostic tool, but also as a policy basis for improving the quality of education, adjusting the curriculum, and improving campus services (Sivili & Baysah, 2024). Without such an evaluation, the risk of further decline and potential student loss could increase, ultimately affecting the sustainability of the course.

Evaluation of the implementation of education has been carried out by most campuses. Ideally, this evaluation is carried out at the end of each semester. The research related to this study is summarized through Table 1 below:

Table 1. Related Work

No	Year	Research Focus	Methodology	Relevance to this research	Author
1	2022	Student satisfaction with lecturers in online lectures	Quantitative surveys, descriptive analysis	similar to the analisis of student satisfaction with lecturers in the Informatics Study Program	(Rani et al., 2022)
2	2023	Student satisfaction with the quality of learning & academic services	Surveys + statistical analysis + triangulation	Assess the various dimensions of campus services (facilities, lecturers, learning)	(Maharani et al., 2023)
3	2021 – 2024	The effect of academic service quality (tangibles, reliability, empathy) on student satisfaction	Quantitative surveys, SERVQUAL model	Relevant to evaluate campus facilities and the quality of lecturers	(Nofrida & Najib, 2023)

4	2025	The main factors of student satisfaction related to the campus environment	Survei kuantitatif & mixed-method	Provide a global perspective on campus environmental factors that affect student retention	(Eddaou, 2025)

With this background, this study aims to investigate the factors that cause the decline in the number of students in the Informatics study program of UHN I Gusti Bagus Sugriwa Denpasar, through a student satisfaction analysis approach: including campus infrastructure, lecturer quality, and learning methods. The results of the research are expected to provide policy recommendations and tactical improvements so that the study program can retain students and improve the quality of education in the future.

METHODS

This study uses a descriptive quantitative approach to evaluate student satisfaction and factors that affect their perception of the Informatics study program at UHN I Gusti Bagus Sugriwa Denpasar. The research population includes all active students of the Informatics study program in 2024, which totals 66 students. All students were asked to fill out an online survey that was systematically designed to obtain information about their academic experience. Out of a total of 66 students, 48 students responded to the survey, but only 47 data were valid and could be used for further analysis.

The research instrument is in the form of an online questionnaire consisting of open-ended questions. The question covers various dimensions, including:

1. The reason for choosing to study in the Informatics study program.
2. Lecture materials and their suitability with student expectations.
3. Practical skills acquired (coding, problem-solving, projects).
4. The relevance of lectures to future job prospects.
5. Satisfaction with campus facilities (laboratories, internet networks, software, and infrastructure).
6. Satisfaction with the quality of lecturers and the learning process.
7. Main and specific complaints related to learning facilities and processes.
8. Students' perceptions of the wrong choice of majors.

The collected data was analyzed using the analysis of topics and their frequency of occurrence. Each student's answer is coded into a main category based on the theme that appears, such as "difficulty following technical material", "quality of lecturers", or "campus facilities". The frequency of occurrence of each topic is calculated to show the priority and intensity of the issue felt by students. This approach allows the identification of dominant factors that affect student satisfaction, the perception of material relevance, and the potential risk of declining student numbers due to dissatisfaction or wrong majors.

The results of this topic and frequency analysis are then used as a basis for compiling short, medium, and long-term policy and tactical recommendations, with the aim of improving the quality of academic services, improving facilities, and adjusting the learning process according to the needs of students and industry demands. This methodology is also aligned with previous research that emphasizes the importance of student satisfaction surveys and thematic analysis for understanding student retention in higher education.

FINDINGS

In this section, it will be divided based on the interesting things of each student answer group.

Table 2. Student perceptions regarding "wrong major"

Student perceptions	Occurrence Frequency
Difficulty understanding technical material (coding, logic, math)	25
Initial expectations are not up to reality	17
Lack of interest in the field of Informatics	2
Parent/social environment pressure	2
feel not wrong major	4

Based on a survey of students of the Informatics Study Program (Table 2), the majority experienced difficulties in understanding technical materials such as programming, logic, and mathematics (25 students), followed by a mismatch between initial expectations and lecture reality (17 students). Other perceptions that emerged with a lower frequency included lack of interest in the field of Informatics (2 students), pressure from parents or the environment (2 students), and the feeling of not choosing the wrong major (4 students). This shows that the main challenge for students lies in technical materials and expectations, while motivation and environmental factors have a smaller influence but still need to be considered.

Table 3. Student Complains Topic

Complaint / Issue	Occurrence Frequency
Inadequate facilities (lab, internet, computers, classrooms)	32
Lack of practical learning / laboratory sessions	22
Material too difficult / hard to understand	17
Feeling in the wrong major	9
Curriculum does not meet expectations	3
Instructors are not communicative	3
Too many assignments from instructors	1

Based on the survey results (Table 3), the main complaints of students of the Informatics Study Program were related to inadequate facilities, such as laboratories, internet networks, computers, and classrooms, which were reported by 32 students. In addition, 22 students felt that they did not get practical learning or practicum, while 17 students considered the material too difficult or difficult to understand. Some students also expressed feelings of being in the wrong department (9 students), incompatibility with expectations (3 students), lecturers who were less communicative (3 students), and too many assignments from lecturers (1 student). These findings suggest that the main issues revolve around facilities and practical learning experiences, while curriculum factors, lecturer communication, and workload have a more minor influence.

Table 4. Student responses related to technical skills development

Practical Skills (Topic)	Occurrence Frequency
Satisfied / fairly satisfied with coding skills	27
Dissatisfied due to difficulties in coding	18
Lack of real project experience / hands-on practice	10
Limited facilities & insufficient guidance from lecturers	6
Improved problem-solving skills (satisfied)	14
Weak problem-solving skills / difficulty finding solutions	8
Difficulty understanding the material, needs additional practice	11

The Table 4 shows that students have mixed experiences regarding the development of practical skills in the Informatics program. A considerable number of students (27) reported being satisfied or fairly satisfied with their coding skills, yet a significant portion (18) still experienced challenges in coding, suggesting uneven mastery levels. Additionally, limited exposure to real project experience (10) and insufficient facilities or lecturer guidance (6) were identified as contributing factors to practical skill gaps. While many students acknowledged improvement in their problem-solving abilities (14), others still struggled with analytical reasoning and finding solutions (8). Furthermore, difficulties in understanding certain materials and the need for additional practice (11) highlight the importance of strengthening hands-on learning strategies. Overall, these findings emphasize the need for more structured practical activities, enhanced mentoring, and improved learning infrastructure to support student skill development more effectively.

DISCUSSION

The UHN I Gusti Bagus Sugriwa Denpasar Informatics Study Program has received two batches of students with a total of 66 active students in 2025. All of these active students are first and second year students. The background of the students of the Informatics Study Program comes from Public High School both majoring in Science, Social Studies, and Language. There are also students with a Vocational High School background majoring in Accounting, Multimedia, Software Engineering, Computer and Network Engineering, Office, and Culinary Departments. The diversity of educational backgrounds of new students of the Informatics Study Program provides various implications, especially for students with significantly different backgrounds. The next subsection will analyze the student feeling regarding "wrong major", student complaints in general, and student responses related to practical skills development.

Student Feeling Regarding "Wrong Major"

Table 2 shows the most dominant reason students feel that they are in the wrong major is the difficulty of following technical materials, which appear 25 times. This shows that the technical aspects of informatics—such as programming, algorithmic logic, and computational mathematics—are significant challenges. In the Informatics Study Program curriculum, basic programming courses appear in first semester, and problem-solving with computational thinking is required in each semester in several courses. Until second year, students take mathematics courses (such as: linear algebra, calculus, or statistics). These findings are in line with research (Casanova et al., 2023; Shi, 2025) which explains that first-year students often experience academic shock in the STEM field due to the level of material complexity that has increased sharply compared to high school.

The second most common reason of "wrong major" experiencing is initial expectations that do not match reality (17 appearances). Many students think that Informatics is more about computer operation or visual design, when in fact it is dominated by logic, algorithms, and programming. This phenomenon has been discussed in the research of Informatics students in Southeast Asia(Denning et al., 2017), which found that the misalignment between the initial perception and the reality of the curriculum was the main factor in doubting the choice of majors.

Other topics of student feeling in "wrong major" are lack of interest (two appearances) and parent/environment pressure (two appearances). Study shows that non-autonomous major decisions increase the risk of academic regret and burnout in the first year of college (Bil Husna et al., 2025; March-Amengual et al., 2022). Although the number is not large, this social factor is still important to consider by the study program in the process of fostering students' careers.

Interestingly, there were four students who stated that they did not feel that they were in the wrong major, showing that some students still have confidence in their choices despite facing technical challenges. Research by (Meng & Zhang, 2023; Wang & Zhang, 2024) states that a good sense of self-efficacy and learning support can reduce the level of academic doubt. This finding is an opportunity for the study program to strengthen the mentoring strategy, especially at the beginning of the study period.

Student Complaints In General

The data processing results (Table 3) indicated that the predominant student grievances pertained to learning facilities, particularly laboratories, internet connectivity, computers, and classroom comfort. The facility has a computer laboratory with 30 PCs at the Denpasar-Bali Campus and a computer lab with 10 PCs at the Bangli-Bali Campus. Consequently, the computer-student ratio is 1:2. The volume of complaints regarding facilities indicates that the technological infrastructure has failed to satisfy the requirements of Informatics education, which relies heavily on computing and connection. The findings align with the studies of (Pandita & Kiran, 2023), which highlighted that the quality of digital infrastructure is a crucial determinant of student happiness and academic achievement in technology-based study programs.

The second most frequent issue is the absence of practical learning or practicum opportunities. Students perceive that education is excessively theoretical and lacks adequate integration of practical experience through projects or simulations. The present informatics curriculum prioritizes the comprehension of concepts in the initial years. Students will commence enrolment in project-based courses from the third semester (second year) until the completion of their studies. The participants in this study are first- and second-year students.

Table 3 shows a large number of complaints about difficult to understand the learning material, and inconsistent curricular demands, indicating pedagogical issues in the teaching process. When complex content is taught without scaffolding, imagery, or enough practicum assistance, students tend to become overwhelmed. This is consistent with research by (Romero-González et al., 2024) showed that the complexity of computer science material can diminish motivation and achievement if the teaching technique is not tailored to students' initial ability.

In Table 3, there are additional student perspectives such as "I believe I am in the wrong major." More than one student stated this. This situation implies that a more effective technique is required to reduce this. Some of the suggested measures for reducing the phenomena include education policy strategies such as career counselling (Diana et al., 2023), increasing knowledge about majors before entering college (Scherer et al., 2020), and modifying the curriculum to be relevant to industry demands (Ali, 2018).

Student Responses Related to Technical Skills Development

Because the findings of the investigation of the source of the incorrect feeling of majoring are related to Technical Skills, we shall go more into this topic. The tabulation findings in Table 4 reveal that most students are pleased with the practical skills they learned, particularly coding skills. Of the total respondents, 27 said they were satisfied or very satisfied with the coding abilities they learned through assignments, practicums, and basic projects. These findings support (Scherer et al., 2020), who found that active and practice-based learning strategies (e.g., project-based learning, visual programming tools such as Scratch) are more effective at increasing motivation, engagement, and achievement than traditional, overly theoretical methods. This situation is also consistent with the curriculum of the UHN I Gusti Bagus Sugriwa Denpasar Informatics Study Program, which promotes problem solving with computational thinking, allowing students to gradually become accustomed to addressing problems and producing algorithmic solutions.

However, there were still 18 students who stated that they were dissatisfied because they experienced difficulties in coding, such as confusion with data types, logical structures, and stress due to errors. This shows that there is a gap in the level of mastery of programming skills among students. This phenomenon is in line with the findings (Olipas, 2022) in a phenomenological study of IT students that found that students often experience confusion of basic concepts, stress due to errors, and frustration when coding. This has an impact on learning motivation and academic satisfaction. Programming is one of the most difficult courses for college students. The main difficulties include understanding data types, logical structures, debugging errors, and limitations of adaptive teaching strategies (Cheah, 2020).

In addition, 10 students highlighted their lack of experience working on projects with real-world case studies, which they considered important to prepare for industry needs. Collaboration and communication skills, project management, helping each other resolve technical issues, seeking assistance from industry mentors and academics, social aspects of work (working with clients and mentors), reflection skills, and technical skills have all been identified as important for employability (Prior et al., 2019). The lack of experience of this real project is also related to six students who complained about the limitations of facilities and lecturer guidance, especially when facing errors in coding. This lack of support is in line with the findings of Al-Hammadi and Hussain, who affirm the importance of quick feedback and direct interaction from teachers in improving the effectiveness of programming learning.

In addition to technical competence, problem-solving skills are also a concern. A total of 14 students reported an increase in problem-solving skills, indicating that the computational thinking-based approach is starting to feel the benefits. However, 8 students admitted that their problem-solving skills were still weak, and 11 students stated that they had difficulty understanding the material so that they needed more practice. These three findings consistently illustrate that while some students are starting to develop, others need more intensive support to master concepts while increasing confidence in applying programming and problem-solving skills. Overall, the pattern of numbers in the table shows that strengthening practice-based learning, increasing lecturer support, and providing adequate facilities are strategic steps to advance students' practical skills more evenly.

CONCLUSION

The overall findings of this study indicate that the decrease in the number of active students and the emergence of “wrong major” perceptions among Informatics students at UHN I Gusti Bagus Sugriwa Denpasar are strongly influenced by

academic, infrastructural, and pedagogical factors. Difficulties in understanding technical materials—particularly programming, algorithmic logic, and mathematics—emerged as the most dominant cause of academic misalignment, reflecting the challenge faced by students with diverse educational backgrounds. Additionally, many students entered the program with inaccurate expectations, believing Informatics to be centered on basic computer operations rather than intensive computational problem-solving.

General student complaints further highlight structural issues, especially inadequate learning facilities, limited computer availability, unstable internet connectivity, and perceived lack of practicum-based learning in the early semesters. These challenges disrupt the learning process in a discipline that fundamentally depends on computational resources and hands-on activities. Pedagogical concerns also surfaced, with students reporting difficulties in understanding complex material and inconsistent instructional approaches, underscoring the need for stronger scaffolding and clearer learning support.

Despite these issues, the analysis of practical skills development shows positive indicators. Many students expressed satisfaction with improvements in coding skills and problem-solving abilities, suggesting that the curriculum's emphasis on computational thinking is beneficial. However, disparities remain—some students continue to struggle with core programming concepts, lack exposure to real-world case study projects, and require more direct guidance from lecturers. These gaps highlight the need for enhanced mentoring systems, more frequent practicum sessions, and stronger integration of real-world projects to support student readiness and confidence.

Overall, the quantitative patterns across all tables reveal that strengthening infrastructure, refining pedagogical strategies, and expanding practice-based learning are essential interventions. Addressing these factors not only improves academic satisfaction but also plays a critical role in reducing the risk of students experiencing academic doubt, withdrawing from the program, or perceiving themselves as being in the wrong major.

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