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## Codechum Integration in Hyflex Learning: A Readiness Assessment of DCI Faculty and Students in City College of Calamba

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### ABSTRACT

*This study assessed the readiness of faculty and students of the Department of Computing and Informatics (DCI) at City College of Calamba for the implementation of the CodeChum programming platform in a HyFlex learning environment. Specifically, it examined respondents' readiness, familiarity with similar online programming platforms, perceived usefulness, anticipated challenges, and support mechanisms needed for successful integration. The study employed a quantitative descriptive research design integrated with the Knowledge Discovery in Databases (KDD) framework. Data were collected from 315 respondents, including BSIT and BSCS students and DCI faculty members, using a structured survey questionnaire with a four-point Likert scale. Results revealed that respondents generally agreed that they were ready to adopt CodeChum ( $M = 3.01$ ), familiar with similar platforms ( $M = 2.81$ ), willing to adopt the platform ( $M = 2.83$ ), and perceived CodeChum as useful for improving programming instruction and learning outcomes ( $M = 3.20$ ). Respondents also expressed agreement regarding their preparation for implementation ( $M = 3.14$ ). However, challenges emerged as the highest-rated factor ( $M = 3.28$ , Strongly Agree), particularly concerning internet connectivity, technical issues, device accessibility, and the need for training and orientation. Based on the findings, the study concludes that DCI faculty and students demonstrate a satisfactory level of readiness for CodeChum integration. Nevertheless, successful implementation requires adequate training programs, technical support, learning resources, and infrastructure improvements to address potential barriers and ensure effective adoption in HyFlex learning.*

**Keywords:** - CodeChum, HyFlex Learning, Readiness Assessment, Knowledge Discovery in Database (KDD)

### INTRODUCTION

The rapid shift toward flexible learning environments has increased the demand for digital tools that support programming education. In the Department of Computing and Informatics (DCI) of the City College of Calamba, HyFlex learning continues to be implemented to accommodate students attending either on-site or online. To further strengthen programming instruction under this modality, the program intends to introduce CodeChum, an online

programming platform designed to provide an interactive coding environment suitable for hybrid and flexible learning contexts.

As CodeChum is set to be implemented in the upcoming semester, it is necessary to determine whether faculty and students are prepared for its adoption. Readiness plays a vital role in the successful integration of any new educational technology. It includes familiarity with similar platforms, perceived usefulness, technological competence, and the availability of supportive resources. Understanding these factors ahead of implementation will allow the department to identify areas requiring training, orientation, or infrastructural improvement.

This study therefore seeks to assess the readiness of DCI faculty and students in adopting CodeChum for HyFlex learning. The findings will support the effective rollout of the platform and ensure that both teaching and learning processes benefit from its integration.

### Statement of the Problem

This study aims to evaluate the readiness of DCI faculty and students for the implementation of the CodeChum programming platform in HyFlex learning. Specifically, it seeks to answer the following questions:

1. What is the current readiness level of DCI faculty and students to adopt CodeChum in their HyFlex programming courses?
2. How familiar are faculty and students with online programming platforms that are similar to CodeChum?
3. What are the expectations and perceived usefulness of CodeChum prior to its actual implementation?
4. What potential challenges or barriers may hinder the adoption of CodeChum?
5. What support mechanisms (training, resources, orientation) are needed to ensure successful integration of CodeChum in HyFlex learning?

### Scope and Delimitations

This study focuses on assessing the readiness of DCI faculty and students prior to the introduction of the CodeChum programming platform in the next semester. It includes faculty members handling programming-related courses and students enrolled in programming subjects. The assessment examines key areas such as readiness, familiarity with similar platforms, perceived usefulness, expectations, and anticipated challenges. However, the study has several limitations. Since CodeChum has not yet been implemented, the responses are based on perceptions and expectations rather than actual usage. In addition, the data collected are self-reported, which may be affected by personal biases or differences in technological exposure. Lastly, the scope of the study is limited to the Department of Computing and Informatics only.

## METHODOLOGY

This quantitative research assesses the readiness of DCI faculty and students for the upcoming implementation of the CodeChum programming platform, focusing on their

familiarity, perceived usefulness, expectations, and anticipated challenges, with findings based on perceptions and self-reported data from the Department of Computing and Informatics prior to actual implementation.

## Research Design

This study used a quantitative descriptive research design integrated with a Knowledge Discovery in Databases (KDD) analytical framework (Fayyad, 1996). The quantitative approach was used to collect and analyze numerical data describing students' readiness, familiarity, perceived usefulness, expectations, and anticipated difficulties in using the CodeChum platform for programming courses. In order to extract significant patterns and insights, the KDD framework directed the methodical processing, analysis, and interpretation of huge datasets.

## Population and Participants of the Study

The total number of participants in this research is currently 1,429, comprising first-year and second-year students of the Bachelor of Science in Information Technology (BSIT) and Bachelor of Science in Computer Science (BSCS) programs who were officially enrolled in the first semester of AY 2025-2026 and 22 full-time faculty members of Department and Computing . Using Cochran's Formula, the minimum sample size is 315.

**Table 1. Total Population and Participants**

| Academic Program          | 1 <sup>st</sup> Year | 2 <sup>nd</sup> Year | N (population) | n (sample) | rf%   |
|---------------------------|----------------------|----------------------|----------------|------------|-------|
| BS Information Technology | 641                  | 436                  | 1,077          | 228        | 75.36 |
| BS Computer Science       | 162                  | 190                  | 352            | 75         | 24.63 |
| DCI Faculty               |                      |                      | 22             | 12         | 19.5% |
| <b>TOTAL</b>              |                      |                      |                | <b>315</b> |       |

## Sample Technique

The study used stratified random sampling. The population was initially grouped based on academic program (BSIT and BSCS) and DCI Faculty Members, and respondents from each group were then randomly chosen in proportion to their respective population sizes. This method reduced sampling bias and ensured equitable representation of both programs.

## Statistical Treatment of Data

The Likert scale offers a structured method for analyzing and interpreting data. It was selected as the primary instrument for this study's questionnaire analysis because of its ease of use and effectiveness in measuring the intensity of respondents' opinions. The use of a four-point Likert scale enables the researchers to obtain meaningful insights from the data and contribute to the existing body of knowledge related to the study.

### Weighted Mean

The weighted mean was used to determine the overall tendency of respondents' answers for each indicator. This statistical measure is appropriate for Likert-scale data as it accounts for the frequency of responses and their corresponding weights.

### Formula:

$$\text{Weighted Mean (WM)} = \frac{\sum(f \times w)}{N}$$

Where:

$f$  = frequency of responses

$w$  = numerical weight assigned to each scale

$N$  = total number of respondents

### Four-point Likert Scale

To interpret the result of the survey questionnaire, the researchers utilized the Likert Scale. This scale has classified numerical values such as 4 = Strongly Agree, 3 = Agree, 2 = Disagree, 1 = Strongly Disagree. It is used to assess the respondent's views and opinions.

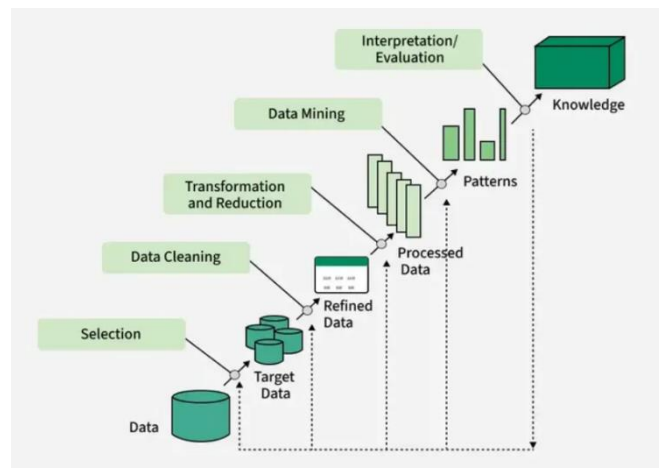
The following ranges were used to interpret the computed weighted means:

**Table 2. Four-point Likert Scale**

| Rating | Weighted Mean Range | Interpretation    |
|--------|---------------------|-------------------|
| 4      | 3.26 – 4.00         | Strongly Agree    |
| 3      | 2.51 – 3.25         | Agree             |
| 2      | 1.76 – 2.50         | Disagree          |
| 1      | 1.00 – 1.75         | Strongly Disagree |

### Software Development Methodology

The researchers employed the Knowledge Discovery in Databases (KDD) process as a methodological framework for analyzing large datasets and extracting significant patterns. Through this process, data were systematically selected and analyzed to generate meaningful insights. The analysis specifically aimed to assess the areas of readiness, familiarity with similar platforms, perceived usefulness, expectations, and anticipated challenges among DCI faculty and students.



**Figure 1. Knowledge Discovery in Databases (KDD)**  
<https://www.geeksforgeeks.org/dbms/kdd-process-in-data-mining/>

### Data Selection

In data selection, the respondents consisted of first- and second-year BSIT and BSCS students who officially enrolled in Academic 2025–2026. These students served as the primary data sources for assessing their readiness and familiarity with using CodeChum in programming subjects. A survey questionnaire was used as the primary data-gathering instrument. Only responses from are officially enrolled students were included in the dataset.

### Data Cleaning

Data cleaning was conducted to maintain the accuracy, consistency, and reliability of the dataset. This process included the removal of incomplete and duplicate responses, the exclusion of questionnaires with missing or inconsistent information, the validation of numerical data ranges, and the standardization of response coding. These steps helped minimize data inconsistencies and prevented inaccurate or misleading results during analysis.

### Transformation and Reduction

At this phase, the processed data were transformed into formats suitable for analysis. Four-point Likert scale were assigned numerical values, and variables were organized based on the predefined research constructs, including readiness, familiarity, usefulness, expectations, and challenges. Data reduction techniques were also employed by removing irrelevant variables to improve analytical efficiency and maintain focus on relevant factors.

### Data Mining

Data mining techniques were applied to identify patterns and relationships within the transformed dataset. Descriptive statistical methods such as frequency distribution, and, mean were used to analyze students' perceptions and readiness levels. Pattern identification enabled

the researchers to recognize trends in students' familiarity with CodeChum and their anticipated challenges in programming subjects.

### Interpretation / Evaluation

The evaluation phase focuses on interpreting and assessing the identified patterns in alignment with the study's research objectives. The results were interpreted in relation to current practices in programming subjects. Their significance, validity, and practical implications were carefully evaluated, serving as the foundation for the study's conclusions and recommendations on integrating CodeChum in programming subjects.

## RESULTS AND DISCUSSION

### *SOP 1. What is the current readiness level of DCI faculty and students to adopt CodeChum in their HyFlex programming courses?*

This section presents the results on the readiness of DCI faculty and students to adopt the CodeChum programming platform. It highlights their skills, experience, and preparedness for its use.

**Table 3. Representation for Readiness**

| Readiness                                                                                                                                    | SA | A   | DA | SDA | Mean        | Verbal Interpretation |
|----------------------------------------------------------------------------------------------------------------------------------------------|----|-----|----|-----|-------------|-----------------------|
| I have reliable access to the required device(s) and internet connection to use CodeChum in both online and on-site (HyFlex) sessions.       | 57 | 222 | 35 | 3   | 3.05        | Agree                 |
| I feel confident navigating CodeChum features needed for our courses (e.g., joining activities, submitting tasks, viewing feedback/results). | 49 | 230 | 37 | 1   | 3.03        | Agree                 |
| I understand how CodeChum will be used within HyFlex Learning Delivery (when, where, and how activities will be conducted).                  | 45 | 217 | 52 | 3   | 2.96        | Agree                 |
| I am willing to regularly use CodeChum as part of HyFlex learning, even when switching between online and face-to-face modes.                | 46 | 225 | 29 | 3   | 3.04        | Agree                 |
| I believe I have sufficient support and resources (training, guides, technical help) to successfully adopt CodeChum in HyFlex Learning.      | 44 | 229 | 40 | 4   | 2.99        | Agree                 |
| <b>OVERALL</b>                                                                                                                               |    |     |    |     | <b>3.01</b> | <b>Agree</b>          |

Table 3 shows the level of readiness of DCI faculty and students to adopt the CodeChum programming platform in a HyFlex learning environment. According to the table, the average computed mean is 3.01, which is interpreted as Agree and shows that most respondents are prepared to use CodeChum. According to the indicators, the respondents had the highest mean (3.05), indicating a willingness to utilize the CodeChum in HyFlex learning on a regular basis. Additionally, data shows that the majority of respondents personal the

required technology and have a positive perspective toward adopting the platform into their learning experience.

Similarly, the mean scores for availability of resources and support (2.99) and confidence in navigating CodeChum features (3.03) show that users feel capable of utilizing the platform and that there is enough help available. Even while it is still considered as "Agree," the significantly lower mean for knowing how CodeChum will be used in HyFlex delivery (2.96) indicates that there might be a need for clearer instructions or guidance about its implementation.

As a result, it is shown in the analysis that respondents are moderately to highly prepared. Although access, willingness, and basic competency are clear indicators of readiness, there is room for improvement in terms of orientation and communication on platform use in HyFlex settings.

This section presents the results on the extent of familiarity of DCI faculty and students with similar online programming platforms. It shows their prior exposure and experience with different coding platforms used for programming practice and learning.

**Table 4. Representation for Adoption**

| Adoption                                                                                                      | SA | A   | DA  | SDA | Mean        | Verbal Interpretation |
|---------------------------------------------------------------------------------------------------------------|----|-----|-----|-----|-------------|-----------------------|
| I am familiar with the basic features and functions of the CodeChum programming platform.                     | 31 | 146 | 127 | 12  | 2.62        | Agree                 |
| I feel confident that I can use CodeChum to conduct/complete programming activities without major difficulty. | 34 | 196 | 83  | 1   | 2.84        | Agree                 |
| The available hardware and internet connection in our campus are sufficient for regular use of CodeChum.      | 31 | 146 | 98  | 38  | 2.54        | Agree                 |
| I am willing to adopt CodeChum as a primary tool for teaching/learning programming.                           | 54 | 240 | 19  | 2   | 3.10        | Agree                 |
| I believe that the institution provides adequate training and support to help me effectively use CodeChum.    | 50 | 228 | 32  | 3   | 3.04        | Agree                 |
| <b>OVERALL</b>                                                                                                |    |     |     |     | <b>2.83</b> | <b>Agree</b>          |

Table 4 presents the level of adoption, which plays a crucial role in how users accept and integrate a new system into their activities. The mean score of 2.62 for familiarity with basic features indicates that respondents possess a moderate level of prior exposure to similar platforms. Furthermore, the higher mean score of 2.84 suggests that respondents are confident in adopting and using CodeChum. This implies that their existing familiarity is adequate to support the initial adoption and effective utilization of the platform. Nonetheless, the respondents' lowest mean (2.54) indicates that there is a hardware and internet sufficiency barrier. Inadequate infrastructure can prevent consistent and efficient use, preventing full

acceptance in practice even if users are familiar with similar systems. While users are willing and somewhat capable, enhancing familiarity through training and addressing infrastructure limitations will be essential to ensure smoother and more effective adoption.

**SOP 2. How familiar are faculty and students with online programming platforms that are similar to CodeChum?**

**Table 5. Representation for Familiarity**

| Familiarity                                                                                                                             | SA | A   | DA  | SDA | Mean        | Verbal Interpretation |
|-----------------------------------------------------------------------------------------------------------------------------------------|----|-----|-----|-----|-------------|-----------------------|
| I have previously used online programming platforms (e.g., hackerRank, leetcode, codeforces, repl.it, github classroom, etc.).          | 40 | 147 | 106 | 24  | 2.64        | Agree                 |
| I can comfortably create, run, and debug code using browser-based coding tools.                                                         | 38 | 204 | 72  | 4   | 2.87        | Agree                 |
| I am familiar with online features such as auto-checking of code, test cases, and instant feedback.                                     | 29 | 177 | 104 | 7   | 2.72        | Agree                 |
| I can easily adapt to a new online programming platform because of my experience with similar tools.                                    | 37 | 197 | 79  | 4   | 2.84        | Agree                 |
| I know how to access help resources in online platforms (tutorials, documentation, forums, or support chats) when I encounter problems. | 46 | 225 | 46  | 0   | 3.00        | Agree                 |
| <b>OVERALL</b>                                                                                                                          |    |     |     |     | <b>2.81</b> | <b>Agree</b>          |

Table 5 presents the familiarity of the similar online programming platforms. The overall mean of 2.81 (Agree) indicates that respondents have a moderate level of familiarity. The indicators' mean of 2.64 indicates that most respondents had previously used online programming platforms (such as HackerRank, LeetCode, and Codeforces). This suggests that the majority of respondents are not totally unfamiliar with these kinds of settings. Additionally, the highest mean (3.00) indicates that respondents are aware of how to access support materials like documentation and tutorials. This is significant because it implies that users are capable of self-directed learning even in the face of challenges.

Regarding the Table 4 and Table 5, the results show that respondents have a moderate level of experience with comparable online programming platforms, which has a positive effect on their adoption of CodeChum. Although more exposure and practical experience could still improve their degree of familiarity and ease of transfer, their past experience, technical expertise, and the ability to ask for support all contribute to a favorable condition for adoption.

### ***SOP 3. What are the expectations and perceived usefulness of CodeChum prior to its actual implementation?***

This section presents the results on the expectations and perceived usefulness of CodeChum in enhancing HyFlex programming instruction. It examines how respondents perceive its potential benefits for learning, practice, and instruction.

**Table 6. Representation for Usefulness**

| Usefulness                                                                                                                  | SA | A   | DA | SDA | Mean        | Verbal Interpretation |
|-----------------------------------------------------------------------------------------------------------------------------|----|-----|----|-----|-------------|-----------------------|
| I expect CodeChum will improve students' programming skills through regular hands-on practice in HyFlex classes.            | 88 | 218 | 11 | 0   | 3.24        | Agree                 |
| I believe CodeChum's automated checking and feedback will help users identify and correct coding errors faster.             | 73 | 235 | 9  | 0   | 3.20        | Agree                 |
| I expect CodeChum will make programming assessment more efficient and consistent for both online and face-to-face sessions. | 81 | 216 | 19 | 1   | 3.19        | Agree                 |
| I believe using CodeChum will increase engagement and motivation in HyFlex programming instruction.                         | 66 | 232 | 17 | 2   | 3.14        | Agree                 |
| I expect CodeChum will be a useful tool for improving learning outcomes in HyFlex programming courses.                      | 84 | 223 | 9  | 1   | 3.23        | Agree                 |
| <b>OVERALL</b>                                                                                                              |    |     |    |     | <b>3.20</b> | <b>Agree</b>          |

The expectations and perceived significance of CodeChum in improving HyFlex programming teaching are analyzed in Table 6. Respondents have very high expectations and believe CodeChum is a helpful tool for enhancing teaching and learning outcomes in a HyFlex context, according to the overall mean of 3.20 (Agree). Every indication has a high mean score, indicating a high degree of agreement across several usefulness factors. The highest mean of 3.24 (Agree) indicates that consistent hands-on practice with CodeChum will enhance students' programming abilities. In the same manner, a strong view that the platform will improve overall learning outcomes is shown by the mean of 3.23. The slightly lower mean of 3.14 suggests that respondents think CodeChum can increase motivation and engagement, although this may vary depending on how the platform is used in practical teaching.

The perceived usefulness of CodeChum clearly indicates that respondents strongly recognize it as an effective tool for enhancing HyFlex programming instruction. According to the respondents, it can improve learning outcomes by facilitating skill development, increasing the effectiveness of assessments, and providing better feedback. Overall, this positive perception suggests that CodeChum has good potential to be adopted and used effectively in the learning environment.

#### **SOP 4. What potential challenges or barriers may hinder the adoption of CodeChum?**

This section presents the results on the anticipated challenges or barriers to the implementation of CodeChum. It highlights the possible issues and concerns identified by the respondents before its adoption.

**Table 7. Representation for Challenges**

| Challenges                                                                                                                         | SA  | A   | DA | SDA | Mean        | Verbal Interpretation |
|------------------------------------------------------------------------------------------------------------------------------------|-----|-----|----|-----|-------------|-----------------------|
| Unstable internet connectivity may hinder effective use of CodeChum during HyFlex classes.                                         | 120 | 186 | 11 | 0   | 3.34        | Strongly Agree        |
| Limited access to appropriate devices (Laptop/PC) may prevent consistent participation in CodeChum activities.                     | 100 | 192 | 21 | 4   | 3.22        | Agree                 |
| Lack of training or orientation may make it difficult for users to use CodeChum effectively at the start.                          | 111 | 191 | 15 | 0   | 3.30        | Strongly Agree        |
| Technical issues (login problems, system errors, submission issues) may disrupt programming lessons and assessments.               | 122 | 184 | 10 | 1   | 3.35        | Strongly Agree        |
| Adapting existing course activities and assessments to CodeChum may require significant time and effort from faculty and students. | 68  | 241 | 7  | 1   | 3.19        | Agree                 |
| <b>OVERALL</b>                                                                                                                     |     |     |    |     | <b>3.28</b> | <b>Strongly Agree</b> |

The expected difficulties or obstacles before the CodeChum is implemented in the HyFlex learning are listed in Table 7. The respondents highly anticipate the barriers, as indicated by the overall mean of 3.28, which is read as Strongly Agree. With a mean score of 3.35 (Strongly Agree), the respondents' main concern is technical concerns like login difficulties, system faults, and submission problems. This suggests that respondents consider reliability of the system to be a crucial obstacle that has the potential to seriously interfere with the processes of teaching and learning. Unstable internet connectivity follows next (3.34, Strongly Agree), highlighting limitations on infrastructure as a significant issue in maintaining regular CodeChum use during HyFlex learning.

Meanwhile, inadequate training and restricted device access are also major challenges. If appropriate guidance is not given, the respondents anticipate challenges during the initial implementation phase. They also worry about the availability of resources, which could have an impact on students' full participation. It still demonstrates that respondents anticipate a considerable amount of work and adaptation when transitioning to the platform.

The anticipated challenges in implementing CodeChum in HyFlex learning point to several potential barriers, particularly in terms of technical infrastructure, system reliability, training needs, and instructional adjustments. While respondents strongly support its adoption and recognize its usefulness, these concerns suggest that successful implementation will require sufficient technical support, targeted training programs, and improvements in infrastructure to ensure smooth integration into HyFlex programming instruction.

### ***SOP 5. What support mechanisms (training, resources, orientation) are needed to ensure successful integration of CodeChum in HyFlex learning?***

This section presents the baseline data gathered to support the planning, training, and implementation of CodeChum in the next semester. It provides insights that can help ensure effective adoption of the platform.

**Table 8. Representation for Preparation**

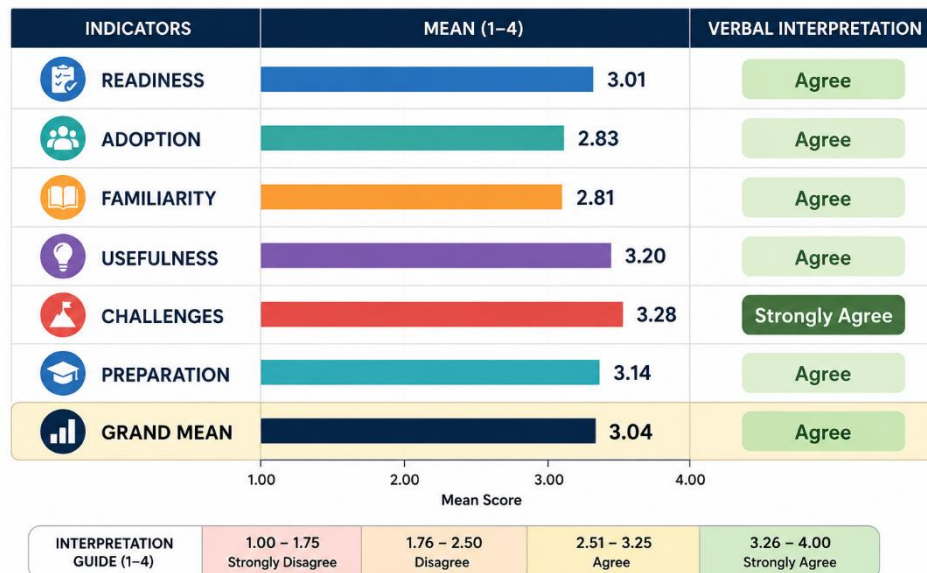
| Preparation                                                                                                                         | SA | A   | DA | SDA | Mean        | Verbal Interpretation |
|-------------------------------------------------------------------------------------------------------------------------------------|----|-----|----|-----|-------------|-----------------------|
| I am willing to participate in training/orientation sessions related to CodeChum before next semester starts.                       | 69 | 232 | 16 | 0   | 3.17        | Agree                 |
| I can allocate time to practice using CodeChum (e.g., completing sample tasks) prior to full implementation.                        | 45 | 239 | 30 | 3   | 3.03        | Agree                 |
| I can provide honest feedback about my needs (training topics, resources, and support) to help improve implementation planning.     | 74 | 226 | 16 | 1   | 3.18        | Agree                 |
| I prefer receiving structured materials (user guide, video tutorials, quick-help sheets) to support CodeChum use in HyFlex classes. | 91 | 212 | 14 | 0   | 3.24        | Agree                 |
| My current readiness and needs assessment results can help the department plan an effective rollout of CodeChum next semester.      | 44 | 251 | 21 | 1   | 3.07        | Agree                 |
| <b>OVERALL</b>                                                                                                                      |    |     |    |     | <b>3.14</b> | <b>Agree</b>          |

Table 8 presents the results on the gathering of baseline data, which will serve as a guide for planning, training, and the effective implementation of CodeChum in the next semester. The overall mean of 3.14 (Agree) suggests that respondents are generally prepared and willing to provide relevant baseline information to support the proper implementation of the platform. Meanwhile, the highest mean of 3.24 (Agree) indicates a strong preference for structured learning materials such as user guides, video tutorials, and quick-reference sheets. This shows that respondents value clear and accessible resources to help them transition smoothly to using CodeChum in HyFlex classes.

The indicators suggest that the implementation of CodeChum should include feedback on training needs and support requirements. Respondents are expected to participate in training and orientation sessions prior to its full implementation. It is also recommended that time be allocated for users to practice and explore the platform's functions. Lastly, the results indicate that readiness and needs assessment findings can help guide departmental planning, reflecting respondents' awareness of their role in shaping effective implementation strategies.

The preparation on the implementation of the CodeChum in HyFlex learning should provide essential baseline data and actively participate in preparatory activities, which can significantly support the planning, training design, and smooth implementation of CodeChum.

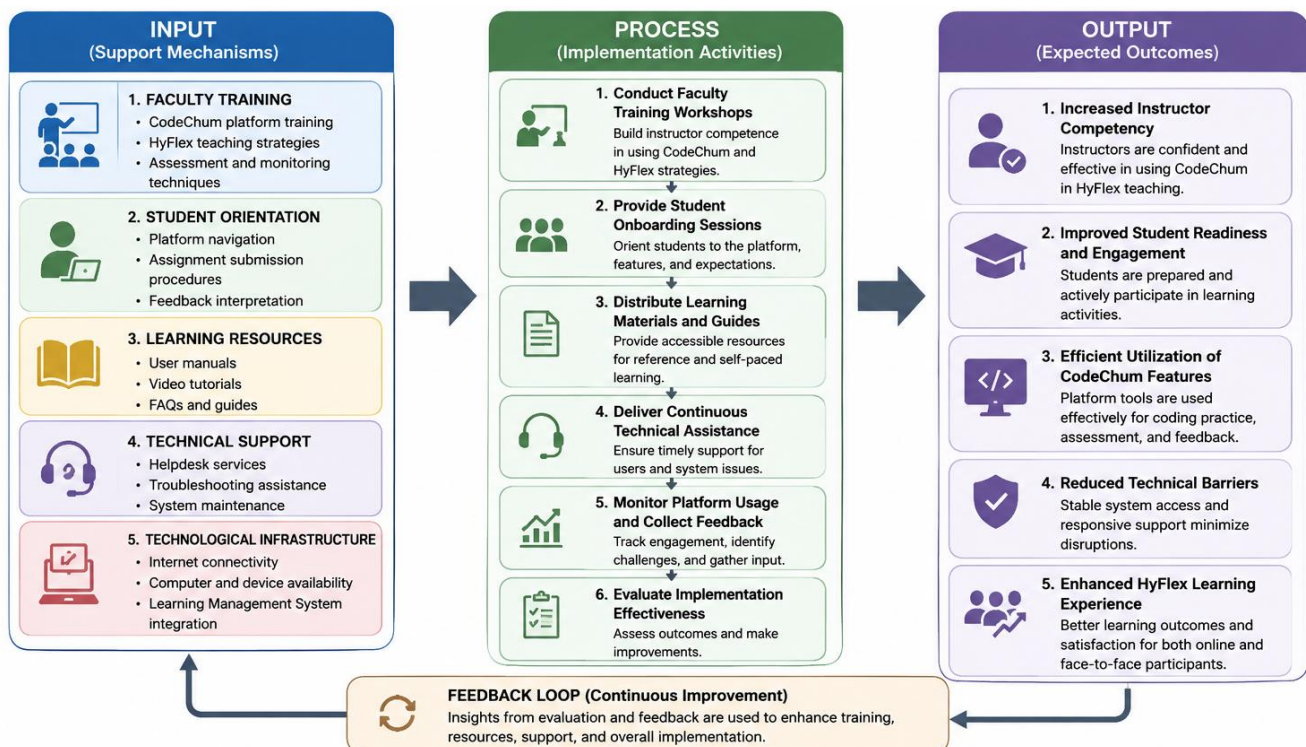
### SUMMARY OF INDICATORS



**Figure 2. Summary of Indicators**

Figure 2 above shows the result of the readiness assessment for CodeChum integration in HyFlex learning among DCI faculty and students at City College of Calamba show an overall positive perception across most indicators. The respondents generally “Agree” in terms of Readiness (Mean = 3.01), Adoption (Mean = 2.83), Familiarity (Mean = 2.81), Usefulness (Mean = 3.20), and Preparation (Mean = 3.14), suggesting that both faculty and students have a favorable disposition toward integrating CodeChum and possess a moderate level of readiness to engage with the platform in a HyFlex learning environment. Additionally, Usefulness received one of the higher mean values, indicating that participants consider CodeChum is a useful tool for improving programming training. Challenges, on the other hand, obtained a “Strongly Agree” interpretation with the highest mean (3.28) meaning that respondents expect major obstacles such technical, instructional, or implementation-related issues before widespread acceptance. Overall, there is a satisfactory readiness and acceptance of CodeChum integration; however, the existence of perceived difficulties emphasizes the significance of appropriate training, support systems, and organized preparation to assure successful implementation in the HyFlex learning environment.

In line with this, there is a need to establish baseline data that will serve as a guide for planning, training, and the effective implementation of CodeChum in HyFlex learning environments.



**Figure 3. Support Mechanisms Framework for the Successful Integration of CodeChum in HyFlex Learning**

Figure 3 illustrates the support mechanisms needed to successfully integrate CodeChum into HyFlex learning environments. The input stage identifies the foundational support systems required prior to implementation, including faculty training on CodeChum and HyFlex teaching strategies, student orientation on platform navigation and submission procedures, learning resources such as user manuals, video tutorials, FAQs, and guides, technical support through helpdesk services and troubleshooting assistance, and the necessary technological infrastructure such as stable internet connectivity, available devices, and LMS integration.

These inputs are then applied through structured implementation activities in the process stage, which include conducting faculty training workshops to enhance competence, providing student onboarding sessions to ensure proper platform use and expectations, distributing learning materials for continuous reference, delivering ongoing technical assistance to address user concerns, monitoring platform usage and gathering feedback to identify challenges, and evaluating implementation effectiveness to improve the system.

The output stage reflects the expected results of these efforts, such as increased instructor competency in using CodeChum, improved student readiness and engagement in HyFlex learning, more efficient utilization of CodeChum features for coding, assessment, and feedback, reduced technical barriers and learning disruptions, and an overall enhanced HyFlex learning experience for both students and instructors. Finally, the framework emphasizes a

feedback loop for continuous improvement, where evaluation results and user feedback are used to further refine training programs, upgrade resources and support systems, and enhance the overall quality of implementation. In essence, the framework shows that successful integration of CodeChum in HyFlex learning depends on strong preparatory support, structured implementation, measurable outcomes, and continuous refinement through feedback.

## SUMMARY

The study entitled “CodeChum Integration in HyFlex Learning: Readiness Assessment of DCI Faculty and Students in City College of Calamba” aims to analyze the preparedness of the faculty and students to implement CodeChum as a programming platform in HyFlex learning. Specifically, the study examined the respondents level of preparedness, their knowledge of similar online programming platforms, their expectations and perceived use of CodeChum, anticipated challenges they faced before implementation and support structures that are needed to guarantee successful integration. Using a quantitative descriptive research design integrated with the Knowledge Discovery in Databases (KDD) framework, data were collected from BSIT and BSCS students and DCI faculty members.

The findings revealed that respondents generally demonstrated positive perceptions toward CodeChum, with overall results indicating agreement in terms of readiness, familiarity, adoption, usefulness, and preparation. Among all factors, usefulness had one of the highest mean values, indicating that respondents are confident that CodeChum can improve programming education, evaluation, and learning outcomes. Some of the potential concerns that were identified during the investigation include problems with the internet connection, technical challenges, lack of training, and device availability, which might become hurdles for the successful implementation of CodeChum. Despite the presence of such potential concerns, the members of the DCI community demonstrate a good level of readiness for implementing CodeChum.

## CONCLUSIONS

The study indicates that the highlights of faculty and students at DCI are adequately prepared for the integration of CodeChum into HyFlex learning. The participants displayed positive attitudes about the introduction of the platform and were willing to use it in their programming classes as a tool to make their learning experience more efficient.

The respondents had some level of familiarity with online programming platforms similar to CodeChum. The previous experience in using coding resources online can facilitate the adaptation to this particular platform. It should be noted that the participants view CodeChum as a very helpful tool that will assist in developing programming skills as well as provide instant feedback and simplify the process of assessment.

However, there are a number of obstacles that can interfere with the proper functioning of the tool. It is the problem of unstable internet connection, technological problems, lack of equipment, and additional training that might be required. Therefore, the success of the introduction of the tool depends upon the preparedness of the participants as well as the availability of resources and other factors.

## RECOMMENDATIONS

Based on the findings and conclusions of the study, the following recommendations are suggested:

The study suggests the Department of Computing and Informatics needs to perform training and orientation programs before it starts using CodeChum. In this matter, faculty and students will learn about CodeChum features, learn how to code, learn how to use the tools to check their work, and learn how to fix problems. This will make them feel more confident and able to use the system. The school should also prepare learning resources such as manuals, videos, and guidelines to address questions. This would assist the faculty and students in studying in their own way, and it would be easier for them to start using CodeChum.

The school should guarantee that the internet operates consistently and that all individuals have access to computers and other devices in order to resolve the challenges identified in the study. This is necessary so that CodeChum becomes available to anyone and that everyone can engage in HyFlex learning activities. The school should also have a system in place that supports faculty and students with any technological challenges they experience with CodeChum, such as login issues or errors. This will assist in the reduction of issues and the enhancement of the overall experience

The department is also encouraged to conduct pilot testing before full-scale implementation to identify potential issues, gather user feedback, and make necessary improvements to implementation strategies. This will help ensure that CodeChum is used as intended. In the future, researchers should study how CodeChum affects students' performance and learning. How engaged they are in learning. They should also talk to the faculty and students to get their thoughts on using CodeChum. This will help make technology-enhanced programming education.

## AI DECLARATION STATEMENT

AI-supported tools helped with grammar and structure in creating this article. No AI tools were used to collect, analyze, or interpret data; all authors are credited for their academic contributions.

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