Journal of Practical Studies in Education
ISSN: 2634-4629

# Analysis of Opinions and Guidelines for Online English Teaching to Enhance Teaching Quality and Lecturer Overall well-being at a Public University in Chonburi

Piyatida T. Chaisuwan
*Faculty of Science and Technology, Rajamangala University of Technology Tawan-ok, Chonburi, Thailand*

Sinsup Nubpetchploy
*Faculty of Science and Technology, Rajamangala University of Technology Tawan-ok, Chonburi, Thailand*

Paveena Meteevorakij
*Faculty of Humanities and Social Sciences, Rajamangala University of Technology Tawan-ok, Chonburi, Thailand*

Warinthon Dandee
*Faculty of Humanities and Social Sciences, Rajamangala University of Technology Tawan-ok, Chonburi, Thailand*

Kulwadee Tanwong (Corresponding Author)
*Faculty of Physical Education, Sports and Health, Srinakharinwirot University, Nakhonnayok, Thailand*
Email: kulwadee@g.swu.ac.th

Received: 29/06/2025
Accepted: 21/09/2025
Published: 27/09/2025

Volume: 6 Issue: 6

How to cite this paper: Chaisuwan, P. T., Nubpetchploy, S., Meteevorakij, P., Dandee, W., & Tanwong, K. (2025). Analysis of Opinions and Guidelines for Online English Teaching to Enhance Teaching Quality and Lecturer Overall well-being at a Public University in Chonburi. *Journal of Practical Studies in Education*, *6*(6), 26-36
DOI: https://doi.org/10.46809/jpse.v6i6.146



**Abstract**

This research aimed to (1) examine the relationship between factors affecting teaching quality and lecturer well-being at public universities in Chonburi province, and to prioritize needs using the Modified Priority Need Index ($PNI_{modified}$), and (2) identify relationship patterns in online teaching management that enhance teaching quality and lecturer well-being through association rule mining. The findings indicate that at the individual level, the highest needs were for allocated time for teaching and rest in a balanced way ($PNI_{modified}$ = 0.512), as well as appropriate ways to manage stress (0.487). At the institutional community level, the greatest need was for mental health counseling and support from peers, supervisors, or relevant departments (0.461), followed by organized learning exchange activities (Community of Practice) to promote well-being and share online teaching methods (0.454). At the institutional level, the highest priorities were establishing a unit that provides counseling and support for lecturers in online teaching (0.691), and developing a policy or plan to support the overall well-being of online lecturers (0.655). Association analysis further corroborates that lack of mentoring and insufficient training are linked to lecturer stress (Lift = 1.42; Confidence = 82%). Meanwhile, absence of CoPs together with instructional-design difficulties is associated with

a stress management program that should be designed to take care about the overall well-being of the lecturers. This will help enhance teaching quality and elevate the learning experience for students in the 21st century.

**Keywords**: Online English Teaching, Teaching Management Approaches, Lecturers' Overall Well-Being, Pnimodified, Association Rule

## 1. Introduction

Information technology changes in the 21st century have transformed the education system, particularly at the higher education level, where universities worldwide are adapting their teaching strategies to align with the flexible online environment that allows learners unlimited access to knowledge (Moorhouse & Wong, 2022). Lecturers of language skills courses, such as English, need to adjust their teaching methods to effectively deliver online learning, including communication, assessment, and classroom management.

Although online learning has advantages in terms of flexibility and providing wider access to education, many lecturers experience fatigue, increased work-related stress, and a decline in teaching motivation, especially when the educational institution's context cannot adequately support resources and assistance systems (Deep, Ghosh, & Chen, 2025). These conditions affect both the quality of teaching and the overall well-being of lecturers in a correlated manner, which aligns with Greenberg's (2002) concept highlighting the influence of the environment on the overall well-being of lecturers. This leads many lecturers to feel their overall well-being has declined (Ryan & Deci, 2020) and is consistent with the concept of health education at the higher education level, which emphasizes promoting mental and overall well-being in the workplace (Nutbeam, 2000), significantly impacting the effectiveness of online teaching and learning management (Baheti, Ray, Shyam, & Sancheti, 2021).

Therefore, understanding the "relationship between online teaching environment factors" and "teaching quality and overall well-being of lecturers" is extremely challenging and necessary. It has been found that most research during the transition to online education has focused only on lecturers' adaptation (González, Ponce, & Fernández, 2023), the use of technology in teaching (Chan, Lee, & Tam, 2022), or student satisfaction levels (Mazlan, Saja, Norwahi, Mat, & Saad, 2022). However, issues related to teaching quality and the overall well-being of lecturers in the context of regional public universities have been explored to a limited extent, particularly the analysis of professional environment factors such as resources, psychosocial support, and organizational structure, all of which play a role in maintaining lecturers' overall well-being (Al-Freih & Khoja, 2023). Therefore, this study aims to analyze these factors both quantitatively to prioritize needs using the $PNI_{modified}$, helping to identify the order of corrective measures.

Furthermore, analyzing the relationship between factors related to teaching quality and overall well-being in complex structural or behavioral terms is necessary for a more profound understanding. Research using advanced data analysis techniques such as association rule mining, which has the potential to discover hidden connections between variables and discover deep relationships in hidden patterns, is therefore suitable in this context (Romero & Ventura, 2020). Additionally, these techniques are suitable for research focused on finding management approaches to support targeted and data-driven policy development.

Thus, the researcher aims to analyze opinions and approaches to online English language teaching that enhance teaching quality and support the overall well-being of lecturers at public universities in Chonburi province. The objectives are to examine the relationship between factors affecting teaching quality and lecturer well-being at public universities in Chonburi province, and to prioritize needs using $PNI_{modified}$ in order to propose guidelines for promoting lecturers' overall well-being at the higher education level and to identify relationship patterns in online teaching management that enhance teaching quality and lecturer well-being through association rule mining. This will be done using association rule mining techniques to discover hidden trends, which can then be used to determine policies or targeted lecturer development guidelines.

All of this analysis was conducted under the conceptual framework of Greenberg (2002) on lecturers' overall well-being. The study also draws on Senge's (1990) concept of a learning organization, Dittmar and McCracken's (2012) META Model for effective lecturer development, Lim, Oh, and Lee's (2015) study on developing a lecturer training model for future education, and Looi, Lim, Pang, Koh, Seow, Sun, Boticki, Norris., and Soloway's (2016) study on activities, content, teaching methods, and lecturer development methods in online teaching. These concepts were integrated to reflect the importance of having support systems from organizations, professional societies, and internal school policies aimed at sustainable learning management in terms of both teaching quality and lecturers' overall well-being.

### *1.1. Research Objectives*

The present study attempts:

1. To examine the relationship between factors affecting teaching quality and lecturer well-being at public universities in Chonburi province, and to prioritize needs using the Modified Priority Need Index ($PNI_{modified}$)

2. To identify relationship patterns in online teaching management that enhance teaching quality and lecturer well-being through association rule mining

## 2. Research Framework

This study is based on the conceptual frameworks of Greenberg (2002*)* regarding lecturers' overall well-being (physical, mental, social, and spiritual), Senge's (*1990)* concept of a learning organization, and the META Model for lecturer development proposed by Dittmar and McCracken (2012), which includes four components: *1)* mentoring, *2)* skills and competency development, *3)* technology, and *4)* evaluation. Additionally, the study draws upon the conceptual framework of Lim et al. (2015), which examines the development of a lecturer training model for future education. This model has 3 key conceptual frameworks: technology, art, and online networks. Furthermore, the study incorporates the conceptual framework of Looi et al. (*2016),* which investigates online teaching activities, content, teaching methods, and lecturer development in four Asian countries and regions: *1)* Singapore, *2)* Hong Kong, *3)* Taiwan, and *4)* Beijing. For this research, the researcher integrates the 3 conceptual frameworks mentioned above to study the development of an online English teaching model for public university lecturers in Chonburi province. Therefore, it was applied at three levels: individual, institutional community and institutional. This framework is summarized and presented in figure 1.

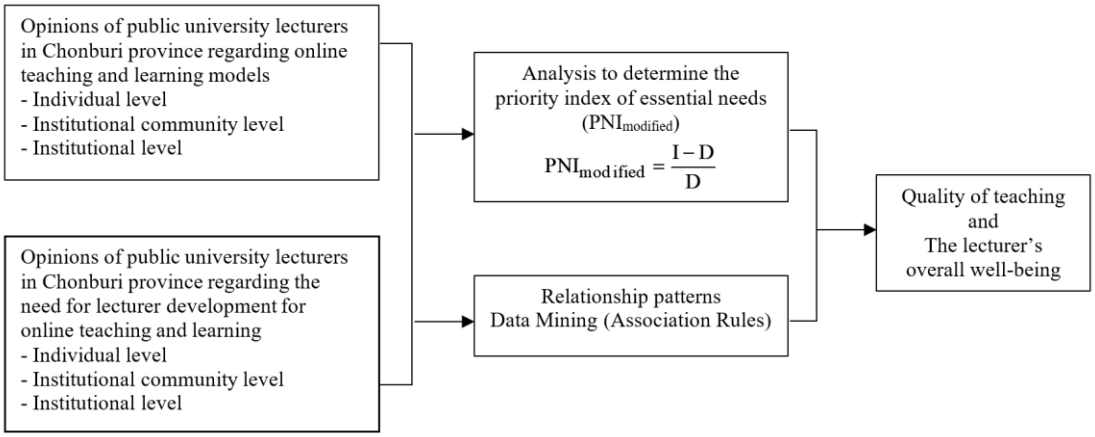


**Figure 1. Research Conceptual Framework**

## 3. Methodology

*3.1. Study Group*

The sample group consisted of all full-time lecturers teaching online English courses at public universities in Chonburi province. It comprises a total of 64 lecturers included: 1. Burapha University, Chonburi Campus (40 lecturers: 15 males, 25 females), 2 Rajamangala University of Technology Tawan-ok, Bang Phra Campus (10 lecturers: 5 males, 5 females), and 3 Kasetsart University, Sriracha Campus (14 lecturers: 2 males, 12 females).

The age of the respondents was not considered in this study. Data collection was conducted after the conclusion of the first semester of the 2024 academic year.

*3.2. Research Tools*

The data collection tools were questionnaires, consisting of 2 versions. The quality of the tools was assessed by examining content validity, evaluating the consistency of the questions in the tools with the content to be measured by 3 experts. The IOC (Index of Item Objective Congruence) values were .60 or higher, indicating that the questions accurately measured the objectives or content. Reliability was analyzed using Cronbach's alpha, which should be .80 or higher. Therefore, this questionnaire is considered reliable, indicating that it can be used to collect data as follows:

1. The questionnaire regarding the opinions of public university lecturers in Chonburi province on online teaching and learning formats is divided into 2 parts as follows:

Part 1 is a questionnaire about the respondent's personal status, which is a closed and open-ended questionnaire. The questionnaire format requires respondents to select only one answer that is true for each item, with a total of 4 items: gender, affiliation, education level, and teaching experience.

Part 2 is a questionnaire about the opinions of public university lecturers in Chonburi province regarding online teaching and learning methods. The questionnaire is a 7-point Likert scale, with respondents selecting only one level that corresponds to the truth for each item. There are 22 items in total, with the following scoring criteria: 7 means strongly agree, 6 means agree, 5 means somewhat agree, 4 means uncertain, 3 means somewhat disagree, 2 means disagree, and 1 means strongly disagree.

2. The questionnaire divides into 2 parts as follows: it gathers the opinions of public university lecturers in Chonburi province on guidelines for developing online teaching skills.

Part 1 consists of a questionnaire that gathers general information about the respondents, featuring both closed and open-ended questions. The questionnaire format requires respondents to select only one correct answer for each of the 6 items. These include education level, affiliation, work experience, academic position, experience in online teaching and learning, and online teaching and learning format.

Part 2 is a questionnaire about opinions on guidelines for developing lecturers for online teaching and learning, divided into 2 levels: 1) the level of what should be the guidelines for developing lecturers in online teaching, and 2) the level of what

should be the guidelines based on expectations for developing lecturers in online teaching. Each level is further divided into individual, institutional community, and institutional levels. The questionnaire is a 5-point Likert scale, with respondents selecting only one level that matches the truth for each item, totaling 25 items. The scoring criteria are as follows: 5 means the highest level of opinion, 4 means a high level of opinion, 3 means a moderate level of opinion, 2 means a low level of opinion, and 1 means the lowest level of opinion.

*3.3. Data analysis*

Descriptive statistics describes data characteristics for general data analysis. It includes frequency distributions, percentages, means ($\bar{x}$), and standard deviations (S.D.).

The following analysis finds the formula for the Modified Priority Need Index ($PNI_{modified}$) (Wongwanich, 2007), which improves upon the traditional PNI:

$$PNI_{modified} = \frac{I - D}{D}$$

Where "I" (Important) means the level of importance or the level of expectation or the desired public.

"D" (Degree of success) means the level of success or the current reality.

A high $PNI_{modified}$ value signifies a greater need than items with a lower $PNI_{modified}$ value. And the criteria for interpreting the data, with scores divided into 5 levels as follows:

1.00-1.80 means the lecturer's level of opinion is lowest.

1.81-2.60 means the lecturer's level of opinion is low.

2.61-3.40 means the lecturer's level of opinion is moderate.

3.41-4.20 means the lecturer's level of opinion is high.

4.21-5.00 means the lecturer's level of opinion is highest.

Comparative analysis of the differences was conducted between actual and desired mean values for faculty development in online teaching and learning, using the t-test statistic.

Patterns were identified in data relationships (Descriptive modeling) related to online teaching and learning that promote teaching quality and the overall well-being of lecturers using association rule. Start with data preparation (Data preprocessing) and convert it into transaction data (items) as follows:

*3.4. Data Cleaning and Transformation*

Irrelevant data was removed, missing data was eliminated, and the sample size was equal to that used for statistical analysis, which was 64 lecturers.

3.5. Create a Transaction Dataset

The concept is to consider the difference value ($PNI_{modified}$) to categorize the "person" level as follows:

| **Development Needs Group** | **Meaning** | **$PNI_{modified}$** |
|---|---|---|
| No urgent need | no urgent need | $PNI_{modified} \leq 0$ |
| Low need | with low need | $0 < PNI_{modified} \leq 0.30$ |
| Moderate need | should be improved | $0.30 < PNI_{modified} \leq 0.50$ |
| High/urgent need | with high need | $PNI_{modified} > 0.50$ |

When converted into transactions, create transaction data to generate association rules.

*3.6. Analyze and Process Association Rules*

Based on the data size and research objectives, set the Support and Confidence values for frequent itemsets as Support ≥ 0.2, and Confidence ≥ 0.6.

By the Apriori algorithm:

```
frequent_itemsets = apriori(df, min_Support=0.2, use_colnames=True)
rules = association_rules(frequent_itemsets, metric="Confidence", min_threshold=0.6)
print(rules[['antecedents', 'consequents', 'Support', 'Confidence', 'Lift']])
```

Create association rules using the mlxtend library with the Apriori algorithm, formatted as "if... then..." consists of 2 main parts:(1) Antecedent: one or more conditions, and (2) Consequent: the outcome that occurs when the condition is true.

Select statistically significant association rules based on the following 2 values:

1. Support: reflects the frequency of the condition and outcome occurring together in the dataset. 2. Confidence: indicates the probability that the outcome will occur when the condition is true. Only rules whose Support and Confidence surpassed user-defined minimum-support (minsup) and minimum-confidence (minconf) thresholds were retained, yielding high-confidence, large-support rules with improved predictive power. (Bachtiar, Sulistyo, Cooper, & Kamei, 2014).

Lift-based rule interest assessment: for every rule of the form $X \rightarrow Y$, Lift (also called interest measure) was computed as the extent to which the presence of the antecedent (If) increases the probability of the consequent (Then) relative to its baseline occurrence. Lift values were subsequently interpreted to validate the reliability and practical utility of the extracted rules, compared to when the outcome occurs without the condition.

The Lift value was interpreted to verify the reliability of the acquired rules.

Lift = 1: the conditions and outcomes are independent of each other (no relationship).

Lift > 1: the condition and outcomes are positively correlated (they occur together more often than expected by chance). The higher the Lift value, the stronger the relationship.

Lift < 1: the condition and outcomes are negatively correlated (they occur together less often than expected).

In summary, high Support and high Confidence values, along with Lift > 1, indicate a high probability of occurrence and a genuine relationship. This results in favorable and highly consistent outcomes, exhibiting the characteristics of frequent rules.

For example, if there is no mentoring system and insufficient training, it will be significantly associated with lecturer stress (Support = 0.35 (>0.2), Confidence = 82% (>0.6), Lift = 1.42 (>1)). This clearly demonstrates the link between "internal support systems" and "lecturers' overall well-being," and so on.

## 4. Research Results

Classified by objective 1: to examine the relationship between factors affecting teaching quality and lecturer well-being at public universities in Chonburi province, and to prioritize needs using the Modified Priority Need Index ($PNI_{modified}$), divided into 3 levels: individual, institutional community level, and institutional. The questionnaire format was a 5-point Likert scale with 25 questions. The results were as follows:

**Table 1. Results of the Analysis of Means and Standard Deviations of Opinions on the Guidelines for Developing Online Teaching Skills at the Individual Level**

| Item | Actual Condition | | Desired Condition | | t | p | Essential Requirements | |
|---|---|---|---|---|---|---|---|---|
| | $\bar{x}$ | S.D. | $\bar{x}$ | S.D. | | | $PNI_{modified}$ | Rank |
| 1. Online teaching workshop | 2.93 | 0.53 | 4.25 | 0.71 | 9.756 | .000 | 0.451 | 4 |
| 2. Online teaching training courses or programs | 3.30 | 0.52 | 4.28 | 0.64 | 7.706 | .000 | 0.297 | 9 |
| 3. Using technological tools for online teaching | 3.28 | 0.55 | 4.30 | 0.72 | 9.294 | .000 | 0.311 | 8 |
| 4. Measuring and evaluating learners | 3.43 | 0.50 | 4.13 | 0.72 | 4.857 | .000 | 0.204 | 10 |
| 5. Designing and managing online teaching content | 3.23 | 0.48 | 4.50 | 0.51 | 13.471 | .000 | 0.393 | 6 |
| 6. Designing online teaching methods | 3.23 | 0.53 | 4.63 | 0.49 | 14.994 | .000 | 0.433 | 5 |
| 7. Individualized online tutoring assistance | 3.10 | 0.84 | 4.53 | 0.51 | 9.157 | .000 | 0.461 | 3 |
| 8. Allocated time for teaching and rest in a balanced way to maintain mental and physical health | 3.03 | 0.53 | 4.58 | 0.71 | 9.944 | .000 | 0.512 | 1 |
| 9. Appropriate ways to manage stress caused by online teaching | 2.98 | 0.86 | 4.43 | 0.50 | 9.836 | .000 | 0.487 | 2 |
| 10. Basic knowledge or skills in physical health care (e.g., stretching, preventing Office Syndrome) during online teaching | 3.45 | 0.64 | 4.55 | 0.64 | 8.270 | .000 | 0.319 | 7 |
| **Overall** | **3.19** | **0.63** | **4.42** | **0.64** | | | | |

The results of the individual-level analysis indicated that lecturers' overall opinions on guidelines for lecturer development in online teaching and learning were as follows: the average actual condition was at a moderate level

($\bar{x}$ = 3.19, S.D. = 0.63), while the desired condition was at its highest level ($\bar{x}$= 4.42, S.D. = 0.64), with all items showing statistically significant differences in mean values at the .05 level ($p < .05$).

When analyzing needs using the $PNI_{modified}$, the top 5 are as follows:1. allocated time for teaching and rest in a balanced way to maintain mental and physical health ($PNI_{modified}$ = 0.512) 2. appropriate ways to manage stress caused by online teaching ($PNI_{modified}$ = 0.487) 3. individualized online tutoring assistance ($PNI_{modified}$ = 0.461) 4. online teaching workshop ($PNI_{modified}$ = 0.451) 5. designing online teaching methods ($PNI_{modified}$ = 0.433). The results reflect that lecturers have an urgent need for overall well-being promotion alongside developing teaching skills to sustainably improve the quality of online teaching and learning.

**Table 2. Results of the Analysis of Means and Standard Deviations of Opinions on the Approach to Lecturer's Development in Online Teaching at the Institutional Community Level**

| Item | Actual Condition | | Desired Condition | | t | p | Essential Requirements | |
|---|---|---|---|---|---|---|---|---|
| | $\bar{x}$ | S.D. | $\bar{x}$ | S.D. | | | $PNI_{modified}$ | Rank |
| 1. Group learning exchange at the university | 3.23 | 0.80 | 4.00 | 0.68 | 4.374 | .000 | 0.238 | 6 |
| 2. Support programs that assist groups (Collaborative software or Groupware), such as teaching observation and teaching evaluation | 3.13 | 0.40 | 4.38 | 0.54 | 12.540 | .000 | 0.399 | 3 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 3. A mentoring system | 3.28 | 0.55 | 4.58 | 0.50 | 13.531 | .000 | 0.396 | 4 |
| 4. A team created to develop online teaching | 3.15 | 0.80 | 4.30 | 0.65 | 6.354 | .000 | 0.365 | 5 |
| 5. Support for overall well-being from a network of colleagues and professionals at the university | 3.43 | 0.50 | 4.23 | 0.83 | 5.551 | .000 | 0.233 | 7 |
| 6. Organized learning exchange activities (Community of Practice) to promote well-being and shared online teaching methods at the university | 3.13 | 0.82 | 4.55 | 0.50 | 9.410 | .000 | 0.454 | 2 |
| 7. Mental health counseling and support from peers, supervisors, or relevant departments at the university | 3.08 | 0.94 | 4.50 | 0.51 | 9.157 | .000 | 0.461 | 1 |
| **Overall** | **3.20** | **0.72** | **4.36** | **0.64** | | | | |

The institutional community-level analysis revealed that lecturers' opinions on the development of the institutional community level as a whole showed that the actual situation was at a moderate level ($\bar{x}$ = 3.20, S.D. = 0.72), while the desired condition was at its highest level ($\bar{x}$ = 4.36, S.D. = 0.64), with all items showing statistically significant differences in mean values at the .05 level ($p < .05$).

From the $PNI_{modified}$, it was found that the lecturers placed the highest importance on the following 5 items, ranked from most to least important:1. mental health counseling and support from peers, supervisors, or relevant departments at the university ($PNI_{modified}$ = 0.461) 2. organized learning exchange activities (Community of Practice) to promote well-being and shared online teaching methods at the university ($PNI_{modified}$ = 0.454) 3. support programs that assist groups (Collaborative software or Groupware), such as teaching ($PNI_{modified}$ = 0.399) 4. a mentoring system ($PNI_{modified}$ = 0.396) 5. a team created to develop online teaching ($PNI_{modified}$ = 0.365). The analysis results reflect the need to develop a collaborative support system within the institution, both professionally and in terms of well-being, to comprehensively improve the quality of online teaching and learning.

**Table 3. Results of the Analysis of the Means and Standard Deviations of Opinions on the Approach to Faculty Development in Online Teaching at the Institutional Level**

| Item | Actual Condition | | Desired Condition | | t | p | Essential Requirements | |
|---|---|---|---|---|---|---|---|---|
| | $\bar{x}$ | S.D. | $\bar{x}$ | S.D. | | | $PNI_{modified}$ | Rank |
| 1. A good organizational culture in online education | 2.85 | 0.80 | 4.10 | 0.44 | 9.415 | .000 | 0.439 | 6 |
| 2. A unit that provides counseling and support for lecturers in online teaching | 2.65 | 0.77 | 4.48 | 0.51 | 12.787 | .000 | 0.691 | 1 |
| 3. An online teaching training program within the university | 2.58 | 0.68 | 4.13 | 0.33 | 8.652 | .000 | 0.601 | 3 |
| 4. An external online teaching training course | 3.00 | 0.78 | 4.13 | 0.40 | 8.342 | .000 | 0.377 | 8 |
| 5. Standards set for the development of online teaching | 2.75 | 0.78 | 4.20 | 0.69 | 10.140 | .000 | 0.527 | 5 |
| 6. A policy or plan to support the overall well-being of online lecturers | 2.78 | 0.80 | 4.60 | 0.50 | 11.429 | .000 | 0.655 | 2 |
| 7. Welfare or budget provisions for health check-ups, therapy, or relaxation activities for lecturers | 2.83 | 0.75 | 4.43 | 0.50 | 11.615 | .000 | 0.565 | 4 |
| 8. A special unit established to take care of and promote the well-being of online lecturers | 2.70 | 0.61 | 3.85 | 0.83 | 7.895 | .000 | 0.426 | 7 |
| **Overall** | **2.77** | **0.75** | **4.24** | **0.59** | | | | |

The results of the institutional-level analysis showed that faculty members' opinions on institutional-level guidelines for faculty development in online teaching and learning were that the actual situation was at a moderate level ($\bar{x}$ = 2.77, S.D. = 0.75), while the desired condition is at its highest level ($\bar{x}$ = 4.24, S.D. = 0.59), with all items showing statistically significant differences in mean values at the .05 level ($p < .05$).

The $PNI_{modified}$ indicates that the top 5 most essential needs are:1. a unit that provides counseling and support for lecturers in online teaching ($PNI_{modified}$ = 0.691) 2. a policy or plan to support the overall well-being of online lecturers ($PNI_{modified}$ = 0.655) 3. an online teaching training program within the university ($PNI_{modified}$ = 0.601) 4. welfare or budget provisions for health check-ups, therapy, or relaxation activities for lecturers ($PNI_{modified}$ = 0.565) 5. standards set for the development of online teaching ($PNI_{modified}$ = 0.527). These results reflect the need to develop policy mechanisms and structural support to

enhance the quality of online teaching and learning alongside the well-being of faculty at the institutional level in a systematic manner.

Classified by objective 2: to identify relationship patterns in online teaching management that enhance teaching quality and lecturer well-being through association rule mining. The results were as follows:

**Table 4. Relationship Rules of Individual, Community, and Institutional Factors Affecting Teaching Quality and Overall Well-Being of English Language Lecturers in Online English Teaching at a Public University in Chonburi Province**

| Order | Association Rule | Support | Confidence | Lift |
|---|---|---|---|---|
| 1 | If "no mentor" and "training_needs improvement" ⇒ "stressed_needs urgent development" | 0.35 | 0.82 | **1.42** |
| 2 | If "no Community of Practice (CoP)" and "instructional design_should be improved" ⇒ "mental health_should be improved" | 0.30 | 0.77 | **1.37** |
| 3 | If "there is no health support" and "rest time is unbalanced" ⇒ "physical health_should be improved" | 0.33 | 0.74 | **1.35** |
| 4 | If "no mental health care" ⇒ "anxiety_needs urgent development" | 0.29 | 0.80 | **1.32** |
| 5 | If "no external training" ⇒ "overall health_should be improved" | 0.32 | 0.72 | **1.30** |
| 6 | If "no team consultation" ⇒ "mental health_should be improved" | 0.31 | 0.71 | **1.28** |
| 7 | If "trainable_developable" and "no teaching team" ⇒ "stressed_should be improved" | 0.27 | 0.68 | **1.25** |
| 8 | If "no joint assessment" ⇒ "overall health_ should be improved" | 0.25 | 0.70 | **1.22** |
| 9 | If "no time for breaks" and "media can be used for development" ⇒ "eye/back pain should be improved" | 0.22 | 0.66 | **1.18** |
| 10 | If "online teaching_needs improvement"⇒ "overall health_ should be improved" | 0.21 | 0.64 | **1.15** |

From the results of the association rules mining analysis, it was found that the rule with the highest Lift value indicates a very significant connection affecting both the quality of teaching and the overall well-being of lecturers. The most notable association is the lack of a mentoring system and insufficient training, which is linked to lecturer stress with a relationship strength (Lift) of 1.42, an 82% probability of occurrence, and is present in 35% of all relationships. Following this, the absence of a learning exchange group (Community of Practice; CoP) combined with teaching design problems is associated with a decline in lecturers' mental health, showing a relationship strength of 1.37, a 77% probability, and appearing in 30% of relationships. Additionally, lack of health support and unbalanced rest time are related to poor physical health among lecturers, with a Lift of 1.35, a 74% chance of occurrence, and being found in 33% of relationships. The absence of mental health care is also significant, correlating with increased anxiety, a relationship strength of 1.32, an 80% probability, and appearing in 29% of relationships. Furthermore, a lack of external training is associated with overall well-being issues, with a Lift of 1.30, a 72% probability, and present in 32% of relationships. Lastly, low quality of online teaching is linked to poor overall health, with a relationship strength of 1.15, a 64% probability, and is found in 21% of all relationships.

Graph showing the relationship rules regarding online English teaching management guidelines that promote teaching quality and the overall well-being of lecturers at public universities in Chonburi province, using the top 5 association rules mining techniques as shown in figure 2.

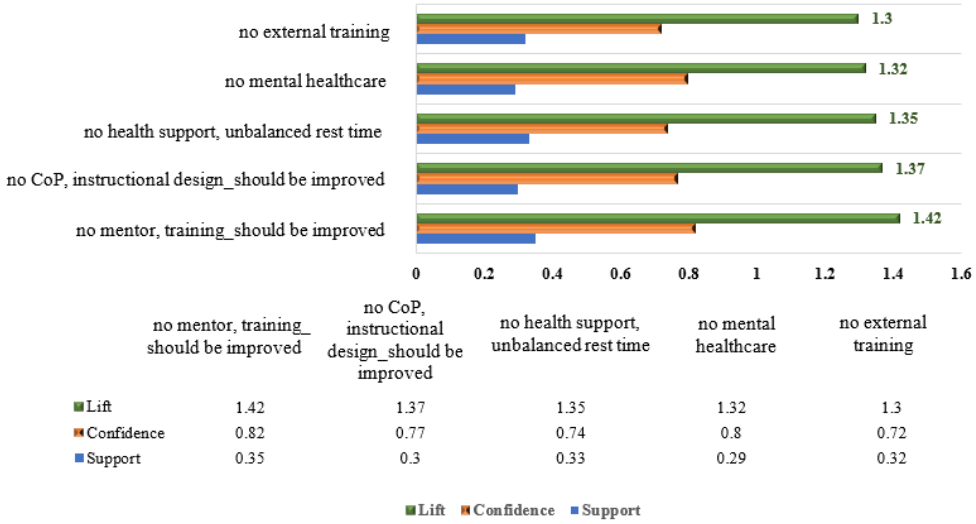


**Figure 2. Top 5 Association Rules on Online English Teaching and Lecturer Well-being**

This graph illustrates the association rules discovered from online English teaching data using the association rule mining technique. It shows the relationship between conditions (antecedents) and results (consequents) related to overall well-being (physical, mental, and overall health) and the quality of lecturers' teaching. This illustration clearly demonstrates the link between "internal support systems" and "lecturers' overall health."

The research findings indicate that lecturers have essential needs for maintaining overall well-being alongside the development of online teaching skills. At the individual level, key issues include balanced time allocation and appropriate stress management; at the institutional community level, fostering mentoring systems and collaborative learning networks is vital; and at the institutional level, concrete policies and support structures are required. These empirical data demonstrate the link between a lack of support systems and reduced well-being, and highlight important directions for continuously improving teaching quality alongside teachers' overall health.

## 5. Discussion

The study examined the relationship between factors affecting teaching quality and lecturers overall well-being, and prioritized needs using $PNI_{modified}$. Across all levels–individual, institutional community, and institutional–the desired conditions were significantly higher than the actual conditions ($p < .05$), indicating substantial areas for development. At the individual level, lecturers reported moderate actual conditions ($\bar{x} = 3.19$) but expressed strong desires for improvement ($\bar{x} = 4.42$). Their key needs centered on achieving work–life balance, effective stress management, and access to personalized support and skill development opportunities. While at the institutional community level, the gap between actual ($\bar{x} = 3.20$) and desired conditions ($\bar{x} = 4.36$) highlighted needs for collegial mental health support, structured learning exchanges (e.g., Communities of Practice), and collaborative tools that facilitate peer observation, feedback, and mentoring systems. Lastly, At the institutional level, the gap was most pronounced, with actual conditions rated moderate ($\bar{x}= 2.77$) and desired conditions at the highest level ($\bar{x} = 4.24$). The top needs clustered around establishing counseling units, implementing well-being policies, and providing structured online teaching training programs, with $PNI_{modified}$ values ranging from 0.601–0.691. These findings emphasize the necessity for both systemic support and individual capacity-building to promote sustainable well-being and teaching quality among lecturers.

In summary, the analysis results at all 3 levels clearly reflect that faculty need to prioritize overall well-being and the development of online teaching potential. This is promoted through institutional-level mechanisms, community support systems, and systematic individual development. The $PNI_{modified}$ helps prioritize needs and align faculty development planning with the context of digital learning management.

The research results indicate that individual-level development should focus on enhancing digital technology and self-management skills, as well as promoting a positive attitude towards educational change. This aligns with Knowles' (1984) concept that adult learning requires self-control and self-assessment as core elements and with UNESCO's (2018) emphasis that digital-age lecturers should develop skills in lifelong learning and using technology for teaching, which reflects the needs lecturers want to strengthen at the individual level.

Strengthening networks in the professional community within the institution will significantly improve the quality of online teaching. This result aligns with Senge's (1990) concept of a learning organization, which emphasizes collaborative learning and knowledge transfer within the organization, as well as the work of DuFour and Eaker (2009), who published that development in the form of a PLC (Professional Learning Community) will lead to sustainable professional development and is an important tool for improving quality in educational organizations.

At the institutional level, appropriate policy-making and budget allocation will be a key driver in enhancing faculty capabilities and the overall quality of learning management. This aligns with OECD research (2020) stating that educational institutions must have clear infrastructure and technology support systems to improve the quality of learning management in the 21st century. It also aligns with the approach of Anderson and Dron (2011), who emphasize that "policy support systems" affect the practical implementation of online teaching and learning innovations.

Simultaneously, the academic workload often leads to the neglect of overall well-being, especially physical well-being. The findings of this study are consistent with Greenberg's (2002) research, which publics that lecturers' overall well-being is related to teaching effectiveness, and also align with Senge's (1990) concept that building a learning organization requires personnel who are both knowledgeable and holistically healthy.

Additionally, research by Sukong and Srisukwattananan (2021) found that activity design ability affects student motivation, which aligns with the findings of this study, indicating it is a top priority. This research therefore suggests that developing lecturers in these areas will systematically and sustainably enhance the quality of teaching and learning.

The study found that data analysis using association rule mining techniques to identify relationship patterns in online teaching management that enhance teaching quality and lecturer well-being at a public university in Chonburi province revealed association rules with high Lift values (1.15–1.42), Support ranging from 0.21 to 0.35, and Confidence ranging from 0.64 to 0.82, both of which are at a moderate to high level. These can be categorized into 3 main groups as follows:

1. Rules related to severe stress

• If there is no mentoring system and no training, then there will be urgent stress (Lift = 1.42, Support = 0.35).

• If there is no CoP system and there are limitations in the instructional design, then mental health declines (Confidence = 0.77, Lift = 1.37).

2. Laws related to declining physical health

Insufficient rest combined with continuous online media use was strongly associated with physical strain such as eye and back pain (Lift = 1.35). Similarly, the absence of ergonomic guidance was linked to fatigue (Confidence = 0.74).

3. Rules related to teaching quality

• If there is no teaching or consulting team, then there will be a lack of motivation to develop the curriculum (Lift = 1.25).

• If there is a lack of CoP and collaborative assessment, then it will affect teaching Confidence (Confidence = 0.71).

This analysis highlights the crucial role of support systems at the individual, community, and institutional levels, all of which are inextricably linked to both the quality of teaching and the overall well-being of lecturers (Ulla & Perales, 2021).

The research findings indicate that the quality of online teaching and the overall well-being of public university lecturers in Chonburi province are a multi-layered and complex system, encompassing individual, community, and institutional levels. The results from quantitative analysis using the $PNI_{modified}$ and correlation analysis using association rule mining techniques show a clear convergence on 2 key issues: mental health and institutional support systems, which have a direct impact on the effectiveness of online teaching and the well-being of lecturers.

The first issue is the relationship between teaching quality and the mental health of lecturers, particularly the stress caused by adapting to the online teaching system. The analysis results show that at the individual level, there is a high need for appropriate ways to manage stress caused by online teaching ($PNI_{modified}$ = 0.487), and at the institutional community level, there is a need for mental health counseling and support from peers, supervisors, or relevant departments at the university ($PNI_{modified}$ = 0.461). This aligns with the law of relationships, which publics that if lecturers are not trained or do not have a mentoring system, they will experience urgent stress (Lift = 1.42, Support = 0.35, Confidence = 0.82). Moreover, if they lack a CoP and face teaching limitations, it will lead to declining mental health (Lift = 1.37, Confidence = 0.77).

The research findings align with the work of Cutri, Mena, and Whiting (2020) and Rapanta, Botturi, Goodyear, Guàrdia, and Koole (2020), which emphasize that stress from online teaching directly affects teaching quality, and institutional readiness plays a crucial role in mitigating such stress, especially in the post-COVID-19 era where teaching methods are rapidly changing and continuous support is needed (Lundberg & Stigmar, 2024). Meanwhile, Aljaradin, Almekhlafi, and Alkaabi (2024) also highlight the physical health impacts of continuous online media use, such as eye strain, back pain, and fatigue.

The second point is the importance of support systems at the institutional community and institutional levels. From objective 1, it was found that the highest needs at the institutional level were for a unit that provides counseling and support for lecturers in online teaching ($PNI_{modified}$ = 0.691), and at the institutional community level, for the use of CoP support programs and mentoring systems ($PNI_{modified}$ = 0.399–0.454). This aligns with the law of relationships, which publics that the absence of CoPs and collaborative assessment affects teaching Confidence (Lift = 1.22, Confidence = 0.71), and the lack of teaching teams or advisors affects motivation for curriculum development (Lift = 1.25).

Research by Ulla and Perales (2021) supports this finding, stating that mentoring systems and CoPs significantly reduce isolation, enhance skills, and boost lecturer morale. Bandura's concept of self-efficacy (1997) and the work of Bachtiar, Kusumawardhani, and Purwandari (2014) also confirms that having a mentor and a collaborative learning system can effectively build Confidence and reduce stress.

Additionally, the imbalance between work and overall well-being (work-life balance) is another factor that significantly impacts lecturers' health, especially when appropriate rest time is not allocated (Lizana & Vega-Fernadez, 2021). This leads to accumulated stress, eye strain, back pain, and feelings of isolation, which are linked to satisfaction with online teaching in terms of flexibility and interaction with students (Mosquera, Albuquerque, & Picoto, 2022).

In summary, the research findings indicate that the teaching quality and the overall well-being of lecturers are deeply interconnected systems. Especially in rapidly changing learning environments, strengthening support systems at the individual, institutional community, and institutional levels is a crucial factor in improving the effectiveness of online teaching and learning.

The integration of $PNI_{modified}$ analysis with association rule mining underscores two interrelated priorities: lecturers' mental health and institutional support systems. At the individual level, strong needs were identified in stress management and work–life balance, which correspond to rules showing that the absence of mentoring or training is strongly associated with severe stress. At the community level, the demand for peer counseling and Communities of Practice (CoPs) aligns with rules indicating that lacking CoPs leads to declines in mental health and lower teaching confidence. At the institutional level, the highest $PNI_{modified}$ values clustered around counseling units, well-being policies, and structured training programs, which are reinforced by rules showing that the absence of collaborative teams diminishes curriculum development motivation. Collectively, these findings highlight that lecturers' well-being cannot be addressed solely through individual coping strategies but requires systemic supports embedded at institutional and community levels. Strengthening these supports not only mitigates stress and health risks but also directly contributes to sustaining teaching confidence, motivation, and overall instructional quality in rapidly changing online learning environments.

## 6. Limitations of the Research

Since self-assessment relies on questionnaire data, there may be bias (self-report bias) and a lack of temporal data that could more accurately reflect the long-term development of overall well-being (Mosquera et al., 2022).

## 7. Recommendations for Applying Research Findings

Institutions should allocate resources to support faculty both physically and mentally, as well as for developing online teaching skills (Anderson & Clark, 2023), and create collaborative learning networks to reduce stress and improve teaching effectiveness (Lu & Smiles, 2022), as follows:

1. Develop training and skills:

• The institution should mandate at least one annual in-house online teaching training course that meets the needs of its personnel.

• Support external training programs that align with the context of each group of lecturers (Anderson & Clark, 2023).

2. Establish a mentoring system and create learning exchange groups:

• Network development should systematically provide mentoring systems and Communities of Practice (CoP) to enhance online teaching skills (Garcia-Martinez, Tadeu, Montenegro-Rueda, & Fernandez-Batanero, 2022).

• Improve the online teaching format to be more flexible and participatory by promoting Community of Practice (CoP) activities at the faculty and university levels (Lu & Smiles, 2022).

3. Design a comprehensive well-being policy for the organization:

• Provide health promotion benefits, such as health check-up programs, physical therapy, and relaxation activities.

• Work-life balance policies should have clear guidelines, such as setting break times and reducing unnecessary workloads.

4. Assess the overall well-being:

• Incorporate evaluation criteria that consider the satisfaction and overall well-being of the lecturer into the teaching evaluation.

## 8. Suggestions for Future Research

Integrate data from multiple sources (Multimodal data integration), especially biological stress levels such as wearable data or self-reported time periods, to obtain more realistic behavioral relationships or use Temporal association rule mining techniques to study long-term changes in overall health.

Connect with student learning outcomes, collect data on student performance/satisfaction, and link it to teaching quality and the overall well-being of the lecturer to analyze three-dimensional relationships, such as low lecturer overall well-being → reduced teaching quality → low student achievement.

## References

Aljaradin, M., Almekhlafi, A., & Alkaabi, A. (2024). Enhancing ergonomics in digital learning environments: Addressing health, safety, and environmental sustainability. *Universal Journal of Public Health, 12*(5), 1007–1014.

Al-Freih, M., & Khoja, S. (2023). Faculty well-being and institutional support in online teaching: A cross-sectional study. *Journal of Educational Technology & Society, 26*(1), 45–58.

Anderson, P., & Clark, S. (2023). Supporting faculty wellness in online teaching environments. *Journal of Online Higher Education, 5*(1), 45–60. https://doi.org/10.1002/johe.2023.451

Anderson, T., & Dron, J. (2011). Three generations of distance education pedagogy. *International Review of Research in Open and Distance Learning, 12*(3), 80–97. https://doi.org/10.19173/irrodl.v12i3.890

Bachtiar, F. A., Sulistyo, G. H., Cooper, E. W., & Kamei, K. (2014). Modeling student affect in English learning achievement using association rules. In *The Asian Conference on Society, Education and Technology 2014* (pp. 1–12). Osaka, Japan.

Bachtiar, R. R., Kusumawardhani, A., & Purwandari, E. (2014). Improving self-efficacy through mentoring. *International Journal of Instructional Psychology, 41*(2), 45–53.

Baheti, R. S., Ray, M. M., Shyam, A., & Sancheti, P. (2021). Awareness of ergonomics for online teaching in school teachers. *International Journal of Community Medicine and Public Health, 8*(11), 5446–5450.

Bandura, A. (1997). *Self-efficacy: The exercise of control.* W. H. Freeman and Company.

Chan, M., Lee, J., & Tam, K. (2022). Technology acceptance and digital competence among university faculty during COVID-19. *Computers & Education, 181*, 104458. https://doi.org/10.1016/j.compedu.2022.104458

Cutri, R. M., Mena, J., & Whiting, E. F. (2020). Faculty readiness for online crisis teaching: Transitioning to online teaching during the COVID-19 pandemic. *European Journal of Teacher Education, 43*(4), 523–541. https://doi.org/10.1080/02619768.2020.1815702

Deep, P. D., Ghosh, N., & Chen, Y. (2025). Faculty burnout in higher education: Effects on student engagement, learning outcomes, and artificial intelligence-driven institutional responses. *Journal of Educational and Developmental Psychology, 15*(1), 29–42. https://doi.org/10.5539/jedp.v15n1p29

Dittmar, E., & McCracken, H. (2012). Promoting continuous quality improvement in online teaching: The meta model. *Journal of Asynchronous Learning Networks, 16*(2), 163–175.

DuFour, R., & Eaker, R. (2009). *Professional learning communities at work™: Best practices for enhancing student achievement.* Solution Tree Press.

Garcia-Martinez, I., Tadeu, P., Montenegro-Rueda, M., & Fernandez-Batanero, J. M. (2022). Networking for online teacher collaboration. *Interactive Learning Environments, 30*(9), 1736–1750. https://doi.org/10.1080/10494820.2020.1764057

González, C., Ponce, D., & Fernández, V. (2023). Teachers' experiences of teaching online during COVID-19: Implications for postpandemic professional development. *Educational Technology Research and Development, 71*(1), 55–78. https://doi.org/10.1007/s11423-023-10200-9

Greenberg, J. S. (2002). *Comprehensive stress management* (7th ed.). McGraw-Hill Education.

Knowles, M. S. (1984). *The adult learner: A neglected species* (3rd ed.). Gulf Publishing.

Lim, S. B., Oh, Y. J., & Lee, S. H. (2015). Establishing the future model of teacher training reflected the future educational. *International Journal of Learning and Teaching, 1*(1), 47–50. https://doi.org/10.18178/ijlt.1.1.47-50

Lizana, P. A., & Vega-Fernadez, G. (2021). Teacher teleworking during the COVID-19 pandemic: Association between work hours, work–family balance and quality of life. *International Journal of Environmental Research and Public Health, 18*(14), 7566. https://doi.org/10.3390/ijerph18147566

Looi, C. K., Lim, K. F., Pang, J., Koh, A. L. H., Seow, P., Sun, D., Boticki, I., Norris, C., & Soloway, E. (2016). Bridging formal and informal learning with the use of mobile technology. In *Future learning in primary schools: A Singapore perspective* (pp. 79–96). Springer Singapore.

Lu, H. S., & Smiles, R. (2022). The role of collaborative learning in the online education. *International Journal of Economics, Business and Management Research, 6*(6), 97–106. https://doi.org/10.51505/ijebmr.2022.6608

Lundberg, A., & Stigmar, M. (2024). Higher education teaching quality in the aftermath of the double disruption. *Innovative Higher Education, 50*(2), 541–562. https://doi.org/10.1007/s10755-024-09740-6

Mazlan, N. A., Saja, I., Norwahi, N. A., Mat, N. M. N., & Saad, M. F. M. (2022). Student satisfaction on teaching strategies and multimedia usage in online Arabic language course. In *Proceedings of International Academic Symposium of Social Science* (Vol. 82, No. 1, p. 51). Kelantan, Malaysia. https://doi.org/10.3390/proceedings2022082051

Moorhouse, B. L., & Wong, K. M. (2022). Blending asynchronous and synchronous digital technologies and instructional approaches to facilitate remote learning. *Journal of Computers in Education, 9*(1), 51–70. https://doi.org/10.1007/s40692-021-00195-8

Mosquera, P., Albuquerque, P. C., & Picoto, W. N. (2022). Is online teaching challenging faculty well-being? *Administrative Sciences, 12*(147), 1–16. https://doi.org/10.3390/admsci12040147

Nutbeam, D. (2000). Health literacy as a public health goal: A challenge for contemporary health education and communication strategies into the 21st century. *Health Promotion International, 15*(3), 259–267. https://doi.org/10.1093/heapro/15.3.259

OECD. (2020). *The impact of COVID-19 on education: Insights from Education at a Glance 2020.* https://www.oecd.org/education/

Rapanta, C., Botturi, L., Goodyear, P., Guàrdia, L., & Koole, M. (2020). Online university teaching during and after the COVID-19 crisis: Refocusing teacher presence and learning activity. *Postdigital Science and Education, 2,* 923–945. https://doi.org/10.1007/s42438-020-00155-y

Romero, C., & Ventura, S. (2020). Educational data mining and learning analytics: An updated survey. *Wiley Interdisciplinary Reviews: Data Mining and Knowledge Discovery, 10*(3), e1355. https://doi.org/10.1002/widm.1355

Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary Educational Psychology, 61,* 101860. https://doi.org/10.1016/j.cedpsych.2020.101860

Senge, P. M. (1990). *The fifth discipline: The art and practice of the learning organization.* Doubleday.

Sukong, T., & Srisukwattananan, P. (2021). A study of learning and teaching management during the COVID-19 pandemic and the COVID-19 relief of Phra Nakhon Si Ayutthaya Special Education Center. *Journal of Research and Development for Special Education, 10*(1), 93–108.

Ulla, M. B., & Perales, W. F. (2021). Emergency remote teaching during COVID-19: The role of teachers' online community of practice (CoP) in times of crisis. *Journal of Interactive Media in Education, 2021*(1), 1–11. https://doi.org/10.5334/jime.617

UNESCO. (2018). *ICT competency framework for teachers* (Version 3). United Nations Educational, Scientific and Cultural Organization (UNESCO). https://unesdoc.unesco.org/ark:/48223/pf0000265721

Wongwanich, S. (2007). *Assessment of learning outcomes: New approach* (2nd ed.). Chulalongkorn University Press.