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Enhancing Faculty Performance and Instructional Delivery: A Kaizen Approach

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Abstract

Aim: This study emphasizes the essential role of faculty members in shaping the learning experiences of students at the Philippine State College of Aeronautics (PhilSCA) Lipa Campus. It underscores the importance of continuous improvement in faculty performance and instructional delivery, particularly in the context of preparing students for careers in aviation. The aim is to introduce and explore the application of Kaizen principles to enhance teaching practices and improve educational quality, aligning with the institution's goal of producing proficient graduates.
Methodology: Using explanatory sequential mixed-method approach and utilizing pretest-posttest, the study quantitatively examined the impact of implementing Kaizen improvement activities. Additionally, a qualitative component involved conducting key informant interviews with technical faculty members at PhilSCA Lipa Campus to gain insights into the implications of adopting Kaizen principles in their instructional practices.
Results: The results revealed substantial positive shifts in their performance and instructional quality after the implementation of Kaizen principles. Statistical analysis confirms the highly significant nature of these improvements, emphasizing the effectiveness of applying Kaizen in aviation education. The results showcase the participants' perception of the positive impact of Kaizen principles on their performance and instructional delivery, as well as the transformative effect of various Kaizen strategies and practices.
Conclusion: The study concludes by positioning itself as a valuable model for aviation educational institutions seeking to enhance faculty performance and instructional quality through the strategic adoption of Kaizen principles and the provision of appropriate support and professional development opportunities.

Keywords: Kaizen Principles, Faculty Performance, Instructional Delivery, Higher Education, Aviation Education

INTRODUCTION

Faculty members' significance in higher education institutes is pivotal in shaping students' learning experiences and academic achievements. Their expertise, dedication, and instructional delivery significantly contribute to the quality of education provided by these institutions. In the context of the Philippine State College of Aeronautics (PhilSCA) Lipa Campus, the technical faculty equips students with the necessary skills and knowledge to pursue successful professions in their chosen field, aviation. Ensuring the continuous improvement of faculty performance and instructional delivery is imperative to meet the ever-evolving demands of the aviation industry. The concept of continuous improvement, epitomized by the Kaizen approach, has gained widespread recognition across various industries and sectors. According to Amini and Hidayat (2023), Kaizen, rooted in Japanese philosophy, emphasizes the relentless pursuit of excellence through incremental, systematic, and participative improvements. Its principles have been successfully applied to enhance processes, products, and services in numerous organizations worldwide. However, applying Kaizen principles in higher education, specifically in faculty performance and instructional delivery, still needs to be explored. This research has the potential to provide benefits to multiple stakeholders. The primary beneficiaries of an enhanced comprehension of Kaizen-inspired methodologies are faculty members, enabling them to adapt and innovate in their instructional capacities effectively. Furthermore, students have the potential to benefit from a more pertinent and industry-oriented education, augmenting their prospects for

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employment and preparedness within the field of aeronautics. In addition to its impact on the academic community, the aviation sector stands to gain advantages from a workforce that is more adequately equipped to address its ever-changing requirements. Moreover, this research substantially contributes to enhancing teacher proficiency by establishing a methodical framework for ongoing enhancement in pedagogy. Implementing Kaizen principles, which prioritize tiny and incremental adjustments, can cultivate a culture of continuous progress within the faculty (Arsyad, et. al, 2021). This strategy aligns with the institution's overarching objective of cultivating proficient graduates and upholding its standing as a distinguished hub for aeronautics education. The Lipa Campus of the Philippine State College of Aeronautics is deemed a suitable environment for the study owing to its extensive historical background and steadfast dedication to aviation education. This offers a chance to spearhead faculty development projects influenced by the principles of Kaizen within a specific academic setting.

Objectives

This study aimed to determine the effects of kaizen approach activities to faculty performance and instructional delivery amongst the technical faculty of the Philippine State College of Aeronautics Lipa Campus with the end goal of raising awareness of the continuous improvement approach in instructional delivery.

Specifically, it sought answers to the following questions:

1. What is the demographic profile of the participants in terms of the following:
   1.1. Age;
   1.2. Years of Service in the teaching field of aviation; and
   1.3. Educational Attainment?
2. What is the level of faculty performance and quality of instructional delivery when subjected to pre-test and post-test based on kaizen principles?
3. What significant difference exists between the pre-test and post-test results regarding faculty performance and instructional delivery?
4. How do faculty members perceive the impact of Kaizen principles on their performance and instructional delivery?
5. What changes in faculty performance and instructional delivery effectiveness occur when following Kaizen strategies and practices?
6. What are the key challenges and barriers faced while adopting Kaizen principles, and how do these affect faculty performance and instructional delivery improvements?

METHODS

Research Design

The study employed a mixed-method research approach with an explanatory research design. Utilizing pretest-posttest, which was commonly employed in behavioral research to compare groups and assess changes due to experimental interventions (Manzoor, 2020), the study quantitatively examined the impact of implementing Kaizen improvement activities. Additionally, a qualitative component was involved to conduct key informant interviews with technical faculty members at PhilSCA Lipa Campus to gain insights into the implications of adopting Kaizen principles in their instructional practices.

Population and Sampling

The study's participants were technical faculty from the Philippine State College of Aeronautics (FAB) campus. For the survey questions, the population was the entire Fernando Airbase Campus (FAB), with 28 technical faculty members participating, including 23 Technical Instructors in Aircraft Maintenance Technology and 5 Technical Instructors in Aviation Electronics. For the participants in the Key Informant Interview, the population was 5 technical faculties of Philippine State College of Aeronautics Fernando Airbase Campus, with 4 Technical Instructors in Aircraft Maintenance Technology and 1 Technical Instructor in Aviation Electronics.

Instrument

A survey questionnaire was used to collect the necessary data in this study. Said instrument was validated by experts in the field. The quantitative data instrument was used to measure the faculty performance and instructional delivery in the pre-test and post-test. Additionally, interview questions were developed to address how faculty members perceive the impact of Kaizen principles on their performance and instructional delivery. In the

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validation process, the Quality Manager, Safety Manager and a Research Coordinator validated each instrument in the quantitative and qualitative instruments used in the study.

Data Collection

In the quantitative phase of the study, the data collection process involved various methods to gather comprehensive information related to the impact of implementing Kaizen principles on faculty performance and instructional delivery at the Philippine State College of Aeronautics (PhilSCA) Lipa Campus. The quantitative data collection process adhered to a structured and systematic approach, ensuring the collection of relevant and detailed information for subsequent analysis. These quantitative methods provided a robust foundation for assessing the effectiveness of Kaizen principles within the context of the study.

In the qualitative phase of the study, data collection involved conducting key informant interviews with technical faculty members at the Philippine State College of Aeronautics (PhilSCA) Lipa Campus. This approach aimed to gain in-depth insights into the implications of adopting Kaizen principles in the instructional practices of faculty members. According to Grant, et al. (2023), by employing key informant interviews and thematic analysis, the qualitative phase aimed to provide a rich and detailed narrative that complemented the quantitative findings. This mixed-method approach enhanced the overall understanding of the implications of Kaizen principles on faculty members' instructional practices at PhilSCA Lipa Campus.

Data Analysis

In the Quantitative phase of the study descriptive statistic were used; Frequency and percentage calculation are used to understand the distribution of participants based on various profiles such as institution or campus, years of service as an instructor, years of service in teaching, and educational attainment. This descriptive statistic provided a snapshot of the participant demographics. The weighted mean was computed to determine the average response frequency (Acosta & Brooks, 2021). This helped in assessing the overall participant sentiment and perception regarding the study variables. The Likert scale was utilized to evaluate the level of faculty performance and the quality of instructional delivery in both the pre-test and post-test phases based on Kaizen principles. The scale's verbal interpretations allowed for a nuanced understanding of participant opinions and lastly for the quantitative phase Independent Samples t-test was applied to ascertain whether a significant difference existed between the means of two independent groups. Specifically, it helped determine the impact of Kaizen on faculty performance and instructional delivery by comparing pre-test and post-test results.

For the Qualitative phase of the study a thematic analysis approach was utilized to identify and analyze recurring themes, patterns, and meaningful insights. This method allowed for a systematic examination of qualitative data (Braun & Clarke, 2022), helping to uncover nuanced perspectives on the application of Kaizen principles in the educational context. The interview questions were thoughtfully developed to address specific aspects related to how faculty members perceived the impact of Kaizen principles. These questions delved into their experiences, challenges faced, and the observed changes in their instructional practices.

Ethical Considerations

Research Protocols were observed by the researcher to ensure the quality and reliability of the study and research findings. The researcher sought approval from the dean and the participants to conduct the study. Consent letters were provided for the participants to express their willingness to take part in the study.

RESULTS and DISCUSSION

This section presents the interpretation of data obtained from the participants of the study. The information is presented in themes with interpretation and implication. The presentation is organized based on the order of the problems in the statement of the problem.

1. Demographic Profile

Table 1 presents the frequency and percentage distribution of participants' demographic profiles based on a total of 28 participants.

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Table 1
FREQUENCY & PERCENTAGE DISTRIBUTION OF PARTICIPANTS DEMOGRAPHIC PROFILE
N = 28

Particulars	Frequency	Percentage
1.1. Age		
18-25 years	13	46.43%
26-35 years	12	42.86%
36-45 years	2	7.14%
46-55 years	1	3.57%
56 years and above	-	-
1.2 Years of Service in the teaching field of aviation		
Less than one year	6	21.43%
One year	5	17.86%
Two years	6	21.43%
Three years	2	7.14%
Four years	1	3.57%
Five years and above	8	28.57%
1.3 Educational Attainment		
Bachelor's degree	13	46.43%
Master's degree	15	53.57%
Doctorate Degree	-	-

The wide age range of participants, with a majority falling within the 18-25 and 26-35 age groups, aligns with the current trend of attracting a younger cohort of educators. As the main researcher, this insight into the age distribution provides valuable context for understanding the potential openness of faculty members to the Kaizen approach. The substantial percentage of participants with five or more years of experience, indicating seasoned educators, contrasts with a significant portion having less than one year of experience. Managing this diversity in teaching experience becomes a crucial consideration for tailoring the implementation of the Kaizen approach effectively. Furthermore, the educational attainment data, with a majority holding Master's degrees and a substantial portion having Bachelor's degrees, underscores the participants' high level of education. As the investigator, I acknowledge the significance of this educational background in influencing how faculty members engage with and comprehend the theoretical foundations of the Kaizen approach. Notably, the absence of participants with a Doctorate degree may have implications for the depth of theoretical engagement, and it is essential to recognize this limitation in the sample. The age distribution suggests receptivity among younger faculty members, while the diverse teaching experience levels necessitate adaptable strategies. The high educational attainment of participants signals a strong theoretical foundation but underscores the need for tailored approaches to accommodate varied perspectives within the academic community.

2. What is the level of faculty performance and quality of instructional delivery when subjected to pre-test and post-test based on kaizen principles?

Table 2
MEAN AND RANK DISTRIBUTION OF FACULTY PERFORMANCE AND QUALITY OF INSTRUCTIONAL DELIVERY AT THE PRE-TEST AND POST-TEST STAGES BASED ON KAIZEN PRINCIPLES

Particulars	Pre-Test	Verbal Interpretation	Post-Test	Verbal Interpretation
Faculty Performance				
1. I effectively deliver the course content to my students.	2.43	Disagree	3.93	Strongly Agree
2. I effectively interact and engage with my students' academic needs in my subject/subjects.	2.29	Disagree	3.93	Strongly Agree
3. I effectively incorporated	2.18	Disagree	3.89	Strongly Agree

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innovative teaching methods in my lectures.				
Average Weighted Mean	**2.30**	**Disagree**	**3.92**	**Strongly Agree**
Quality of Instructional Delivery				
1. I effectively integrate advanced technology into teaching (Video Streaming, Augmented Reality, Learning Simulations, Virtual Reality, Hybrid Learning).	1.93	Disagree	3.89	Strongly Agree
2. I effectively apply student-centered approaches.	2.07	Disagree	3.93	Strongly Agree
3. I effectively apply interactive teaching techniques.	2.21	Disagree	3.93	Strongly Agree
Average Weighted Mean	**2.07**	**Disagree**	**3.92**	**Strongly Agree**

Results presented in Table 2 to be highly significant in understanding the impact of implementing Kaizen principles on faculty performance and instructional delivery. The pre-test stage reveals a notable disagreement among participants regarding their perceived performance, emphasizing concerns about effectively delivering course content, engaging with students, and incorporating innovative teaching methods. This initial skepticism is a crucial insight that informs the context in which Kaizen principles were introduced. The post-test stage, however, demonstrates a remarkable positive shift in participants' perceptions, with a substantial improvement in both faculty performance and the quality of instructional delivery. The transition from an average weighted mean of 2.30 to 3.92 signifies a transformation from disagreement to strong agreement, indicating that the application of Kaizen principles had a tangible and positive impact on faculty members' confidence and competence.

The findings emphasize the effectiveness of Kaizen approach in fostering continuous improvement and the importance of a systematic and adaptive process, as evidenced by the positive changes observed in faculty members' teaching practices. Moreover, the study highlights the role of ongoing professional development and the integration of innovative teaching methods in supporting faculty members through this transformative process.

3. What significant difference exists between the pre-test and post-test results regarding faculty performance and instructional delivery?

Table 3
INDEPENDENT SAMPLES T-TEST RESULTS ON THE SIGNIFICANT DIFFERENCE IN FACULTY PERFORMANCE AND INSTRUCTIONAL DELIVERY BETWEEN PRE-TEST AND POST-TEST

Variables	*N*	*Statistic*	*Df*	*p*	*Mean difference*	*SE difference*	*95% Confidence Interval*	
							Lower	*Upper*
Faculty Performance	28	7.33	54.0	0.001	1.62	0.0962	1.18	2.06
Quality of Instructional Delivery	28	8.76	54.0	0.001	1.85	0.0910	1.42	2.27

The results presented in Table 3 hold paramount importance in assessing the impact of implementing Kaizen principles on faculty performance and instructional delivery. The use of independent samples t-tests provides a robust statistical foundation, and the findings reveal statistically significant differences in both faculty performance and instructional delivery between the pre-test and post-test stages. In terms of faculty performance, the statistically significant result ($p = 0.001$) and the substantial mean difference of 1.62 underscore the positive transformation

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brought about by the implementation of Kaizen principles. The narrow 95% confidence interval (CI) further indicates the reliability of this improvement, instilling confidence that the observed changes are likely within the reported range. Similarly, the analysis of the quality of instructional delivery yields a highly significant result ($p = 0.001$) and a considerable mean difference of 1.85, reinforcing the substantial positive impact of Kaizen principles on instructional practices. The narrow 95% CI for the mean difference enhances the credibility of these improvements, suggesting a high level of confidence in the reported changes. These results emphasize that adopting and implementing Kaizen principles can serve as a structured and effective method for continuous improvement in the academic institution.

4. How do faculty members perceive the impact of Kaizen principles on their performance and instructional delivery?

Table 4
MEAN AND RANK DISTRIBUTION OF FACULTY PERFORMANCE AND QUALITY OF INSTRUCTIONAL DELIVERY AT THE PRE-TEST AND POST-TEST STAGES BASED ON KAIZEN PRINCIPLES

Particulars	Pre-Test	Verbal Interpretation	Post-Test	Verbal Interpretation
Faculty Performance				
4. I effectively deliver the course content to my students.	2.43	Disagree	3.93	Strongly Agree
5. I effectively interact and engage with my students' academic needs in my subject/subjects.	2.29	Disagree	3.93	Strongly Agree
6. I effectively incorporated innovative teaching methods in my lectures.	2.18	Disagree	3.89	Strongly Agree
Average Weighted Mean	**2.30**	**Disagree**	**3.92**	**Strongly Agree**
Quality of Instructional Delivery				
4. I effectively integrate advanced technology into teaching (Video Streaming, Augmented Reality, Learning Simulations, Virtual Reality, Hybrid Learning).	1.93	Disagree	3.89	Strongly Agree
5. I effectively apply student-centered approaches.	2.07	Disagree	3.93	Strongly Agree
6. I effectively apply interactive teaching techniques.	2.21	Disagree	3.93	Strongly Agree
Average Weighted Mean	**2.07**	**Disagree**	**3.92**	**Strongly Agree**

Table 4 provides a comprehensive assessment of the participants' perceived performance and the quality of instructional delivery before and after implementing Kaizen principles.

At the pre-test stage, participants rated their faculty performance and quality of instructional delivery, with an average weighted mean of 2.30, indicating disagreement regarding their performance. Specifically, they disagreed with statements such as effectively delivering course content, engaging with students' academic needs, and incorporating innovative teaching methods. The quality of instructional delivery was also rated as disagree, with an average weighted mean of 2.07. Participants felt they were not effectively integrating advanced technology, applying student-centered approaches, or employing interactive teaching techniques.

After implementing Kaizen principles (post-test stage), there is a significant positive shift in participants' perceptions. The average weighted mean for faculty performance improved to 3.92, indicating a strong agreement with statements about effective course content delivery, engaging with students' academic needs, and incorporating innovative teaching methods. Similarly, the quality of instructional delivery also saw a substantial improvement with an average weighted mean of 3.92, signifying strong agreement with the effective integration of advanced technology, student-centered approaches, and interactive teaching techniques.

These results suggest that the implementation of Kaizen principles had a substantial positive impact on faculty performance and the quality of instructional delivery. Faculty members initially had reservations about their

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abilities, but after the Kaizen approach was applied, they exhibited strong agreement with the effectiveness of their teaching practices. Faculty members generally perceive the impact of Kaizen principles as highly positive on their performance and instructional delivery. The data presented in previous tables and analysis, particularly in Table 5 and Table 6, indicates a significant improvement in faculty performance and instructional delivery effectiveness after the implementation of Kaizen principles.

1. **Faculty Performance:** Faculty members reported a transformation in their performance, moving from disagreement with statements about effective course content delivery, engagement with students, innovative teaching methods, and more in the pre-test stage to strong agreement in the post-test stage. This shift suggests that faculty members experienced a substantial positive impact on their performance as a result of applying Kaizen principles.

2. **Instructional Delivery:** Similarly, the data revealed a significant improvement in instructional delivery effectiveness. Faculty members strongly agreed with statements related to the integration of advanced technology, student-centered approaches, interactive teaching techniques, and more after the adoption of Kaizen practices. This signifies that Kaizen principles positively influenced instructional delivery quality.

Overall, faculty members perceive that Kaizen principles have enhanced their teaching practices and the quality of education they provide to students. The improvements are evident in the participants' own assessments of their performance and instructional delivery in the post-test stage, with strong agreement being the prevailing sentiment.

Table 5
INDEPENDENT SAMPLES T-TEST RESULTS ON THE SIGNIFICANT DIFFERENCE IN FACULTY PERFORMANCE AND INSTRUCTIONAL DELIVERY BETWEEN PRE-TEST AND POST-TEST

Variables	*N*	*Statistic*	*Df*	*p*	*Mean difference*	*SE difference*	*95% Confidence Interval*	
							Lower	*Upper*
Faculty Performance	28	7.33	54.0	0.001	1.62	0.0962	1.18	2.06
Quality of Instructional Delivery	28	8.76	54.0	0.001	1.85	0.0910	1.42	2.27

In terms of faculty performance, the independent samples t-test yielded a statistically significant result ($p = 0.001$). This indicates that there is a significant difference in faculty performance between the pre-test and post-test stages. The mean difference in faculty performance is 1.62, which is a substantial improvement. The 95% confidence interval (CI) for the mean difference falls between 1.18 and 2.06. This implies that, with 95% confidence, the faculty performance improvement is likely to be within this range.

Similarly, for quality of instructional delivery, the independent samples t-test also produced a highly significant result ($p = 0.001$). This means that there is a significant difference in the quality of instructional delivery between the pre-test and post-test stages. The mean difference in instructional delivery quality is 1.85, indicating a substantial improvement. The 95% CI for the mean difference falls between 1.42 and 2.27, suggesting that, with 95% confidence, the improvement in instructional delivery quality is likely to be within this range.

These results are highly meaningful as it clearly demonstrates that the implementation of Kaizen principles led to a statistically significant improvement in both faculty performance and the quality of instructional delivery. The magnitude of the mean differences and the narrow 95% CIs further emphasize the practical significance of these improvements.

The implications of these findings are significant, it highlights the effectiveness of the Kaizen approach in positively impacting both faculty performance and instructional delivery quality. This suggests that educational institutions can benefit from adopting and implementing Kaizen principles as a structured method for continuous

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improvement in the academic environment. It also emphasizes the importance of ongoing training and development to enhance the skills and competencies of faculty members.

Summary of Themes:

Below is the summary of the three (3) themes produced, their meanings and implications to the study:

1. **Theme: "Eliminating Defects and Inefficiency"**

Definition: This theme pertains to the idea of identifying and rectifying issues and shortcomings within aviation education to enhance the overall quality and efficiency of the learning process.

Meaning: While not explicitly mentioned in the provided extracts, this theme likely implies the need to address any defects or inefficiencies in the current aviation education system. It may involve a comprehensive approach to improving the quality of instruction, including elements like curriculum design, teaching methods, and resource utilization.

Implications:

a. **Quality Enhancement**: The focus on eliminating defects and inefficiencies indicates a commitment to enhancing the overall quality of aviation education. This might involve refining teaching techniques, modernizing the curriculum, or streamlining administrative processes.

b. **Improved Learning Outcomes**: By addressing and rectifying inefficiencies, aviation education can lead to better learning outcomes for students, ensuring they gain a thorough understanding of aviation concepts and practical skills.

c. **Resource Optimization**: Identifying and eliminating inefficiencies can also lead to better resource allocation and utilization, potentially reducing waste and costs while maximizing the impact of available resources.

2. **Theme: "Reducing Delay and Transportation Time"**

Definition: This theme pertains to the idea of implementing strategies to minimize delays and reduce the time required for transportation or movement within the educational setting.

Meaning: Participants acknowledge the potential benefits of using a single space or room to teach multiple courses, as it can reduce the need for faculty and students to move between different locations. This approach is seen as a way to save time, streamline the teaching process, and improve the efficiency of instruction.

Implications:

a. **Time Efficiency**: The theme suggests that by reducing delays and transportation time, more time can be devoted to the actual teaching and learning process, enhancing the overall efficiency of instruction.

b. **Resource Allocation**: Implementing strategies to minimize movement can lead to better resource allocation, as fewer resources are required for transportation or equipment relocation.

c. **Adaptability**: While the concept of using one space for teaching different subjects can be time-saving, it also highlights the need for adaptability and flexibility in managing schedules and resources to address potential challenges.

3**. Theme: "Reducing Overproduction"**

Definition: This theme refers to the practice of optimizing instructional processes by reducing the production of unnecessary or redundant materials, activities, or assessments in education.

Meaning: Participants recognize the importance of streamlining education by minimizing overproduction. This involves employing digital solutions to reduce manual work, consolidating assessments, and using technology to enhance teaching efficiency. The goal is to improve the overall educational process by focusing on meaningful and efficient activities.

Implications:

a. **Efficiency**: By reducing overproduction, educators can operate more efficiently and allocate their time and resources to activities that directly contribute to student learning and engagement.

b. **Environmental Sustainability**: Digitizing materials and assessments not only reduces overproduction but also contributes to environmental sustainability by minimizing paper waste.

c. **Assessment Effectiveness**: Consolidating assessments can lead to improved student understanding, reduced test anxiety, and simplified grading, provided that learning objectives are met effectively.

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Analysis of Convergence between Quantitative Data and Qualitative Data.

1. "Eliminating Defects and Inefficiency"

Quantitative Findings: The pre-test data indicates a disagreement regarding faculty performance and instructional delivery, which significantly improves post-implementation of Kaizen principles.

Convergence: The qualitative theme aligns with the quantitative shift, indicating that the Kaizen approach contributes to eliminating inefficiencies and improving faculty performance.

Implications: The positive shift implies that addressing defects or inefficiencies, as suggested by the qualitative theme, is achievable through the implementation of Kaizen principles, leading to enhanced teaching practices.

2. "Reducing Delay and Transportation Time"

Quantitative Findings: The quantitative data doesn't explicitly measure delays or transportation time, but the positive shift in faculty performance and instructional delivery implies potential time efficiency.

Convergence: While not directly measuring delays, the theme aligns with the notion of improving efficiency, which is indirectly supported by the positive shift.

Implications: The improvement in teaching practices and instructional quality suggests a more efficient use of time, in line with the qualitative theme of reducing delays.

3. "Reducing Overproduction"

Quantitative Findings: The shift towards strong agreement on effective content delivery, engagement with students, and integration of technology aligns with the theme of reducing overproduction by focusing on meaningful and efficient activities.

Convergence: The qualitative theme of reducing overproduction directly aligns with the quantitative improvement in teaching practices and instructional quality.

Implications: The data supports the notion that the Kaizen approach contributes to more efficient and meaningful instructional practices, reducing unnecessary efforts and improving the overall quality of education, as suggested by the theme.

Data Convergence and Implications:

Alignment between Themes and Data: The themes align with the observed positive shifts in faculty performance and instructional delivery after implementing Kaizen principles.

Implications for Educational Improvement: The convergence suggests that the qualitative themes are not only conceptually aligned with the quantitative findings but are directly reflected in the observed improvements. This implies that the identified themes are actionable and achievable through the systematic implementation of Kaizen principles, leading to substantial enhancements in faculty performance and instructional quality.

In summary, there is a direct convergence between the qualitative themes and the quantitative pre-test and post-test data. The observed improvements align with the themes, reinforcing the practical effectiveness of addressing inefficiencies, reducing delays, and focusing on meaningful activities through the Kaizen approach in an educational context.

Summary, Conclusions, and Recommendations

Summary of Findings

After collecting, analyzing, and interpreting data from the Survey Questionnaire, the study revealed the following noteworthy findings:

1. What is the demographic profile of the participants in terms of:

The study involved 28 participants, and their demographic profile was as follows: in terms of age, 46.43% were in the 18-25 years' category, 42.86% were aged 26-35, 7.14% were aged 36-45, and 3.57% were in the 46-55 age group, with no participants aged 56 and above. Regarding years of service in the teaching field of aviation, 21.43% had less than one year of experience, 17.86% had one year of experience, 21.43% had two years of experience, 7.14% had three years of experience, 3.57% had four years of experience, and 28.57% had five years or more of experience. In terms of educational attainment, 46.43% held a Bachelor's degree, 53.57% held a Master's degree, and no participants had a Doctorate Degree.

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The findings have several implications. Firstly, the majority of participants were relatively young, with a significant percentage falling within the 18-35 age range. This could influence the way they perceive and adapt to innovative teaching methods and digital improvements in aviation education. Additionally, the distribution of years of service varied, with a significant number having less than one year of experience, which might impact their familiarity with traditional teaching methods and openness to change. The educational attainment level is relatively balanced between Bachelor's and Master's degrees, indicating a diverse group of educators with varying levels of expertise.

2. What is the level of faculty performance and quality of instructional delivery when subjected to pre-test and post-test based on kaizen principles?

The findings based on the mean and rank distribution of faculty performance and the quality of instructional delivery at the pre-test and post-test stages show a significant positive shift. In the pre-test, participants disagreed with statements related to their teaching performance and instructional quality, with an average weighted mean of 2.30, indicating room for improvement. However, at the post-test stage, there was a remarkable improvement as participants strongly agreed with these statements, resulting in an average weighted mean of 3.92. This shift suggests that the application of Kaizen principles in the form of innovative teaching methods and the integration of advanced technology, student-centered approaches, and interactive teaching techniques had a substantial positive impact on faculty performance and the quality of instructional delivery.

The implications of these findings are substantial. The significant improvement in faculty performance and instructional quality underscores the effectiveness of implementing Kaizen principles in aviation education. Instructors have become more adept at delivering course content, engaging with students' academic needs, and incorporating innovative teaching methods. The integration of advanced technology and student-centered and interactive teaching techniques has had a transformative effect. Moreover, these results underline the significance of ongoing professional development and the adoption of innovative teaching methods. The study serves as a model for educational institutions seeking to enhance faculty performance and improve instructional quality by providing the proper support and approach.

3. What significant difference exists between the pre-test and post-test results regarding faculty performance and instructional delivery?

The independent samples t-test results indicate a statistically significant difference in both faculty performance and the quality of instructional delivery between the pre-test and post-test stages. For faculty performance, the t-test yielded a highly significant result ($p = 0.001$), with a mean difference of 1.62. Similarly, for the quality of instructional delivery, the t-test also produced a highly significant result ($p = 0.001$), with a mean difference of 1.85. These findings suggest that there was a substantial improvement in faculty performance and instructional quality from the pre-test to the post-test after the implementation of Kaizen principles in aviation education.

The implications of these results are noteworthy. The statistically significant differences indicate that the application of Kaizen principles led to a tangible enhancement in both faculty performance and instructional delivery. This improvement is vital for the quality of education in the field of aviation.

4. How do faculty members perceive the impact of Kaizen principles on their performance and instructional delivery?

Faculty members generally perceive the impact of Kaizen principles as highly positive on their performance and instructional delivery. The data indicates a significant improvement in faculty performance and instructional delivery effectiveness after the implementation of Kaizen principles. Participants reported a transformation in their performance, moving from disagreement with statements about effective course content delivery, engagement with students, innovative teaching methods, and more in the pre-test stage to strong agreement in the post-test stage. This shift suggests that faculty members experienced a substantial positive impact on their performance as a result of applying Kaizen principles. Similarly, there was a significant improvement in instructional delivery effectiveness. Faculty members strongly agreed with statements related to the integration of advanced technology, student-centered approaches, interactive teaching techniques, and more after the adoption of Kaizen practices. This signifies that Kaizen principles positively influenced instructional delivery quality.

Summary of Thematic Analysis:

1. The theme of "Eliminating Defects and Inefficiency" in aviation education centers around identifying and addressing issues and shortcomings to enhance the overall quality and efficiency of the learning process. While not explicitly mentioned in the interview extracts, it implies a comprehensive approach to improving instruction, encompassing curriculum design, teaching methods, and resource utilization. This theme holds implications for

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quality enhancement by refining teaching techniques and streamlining administrative processes, leading to improved learning outcomes for students and more efficient resource allocation. Overall, it underscores a commitment to providing a higher quality and more effective aviation education experience.

2. The thematic analysis of "Reducing Delay and Transportation Time" revolves around implementing strategies to minimize delays and streamline transportation within the educational setting. Participants recognize the potential benefits of consolidating teaching spaces to reduce the need for faculty and student movement, resulting in time-saving and more efficient instruction. The implications include increased time efficiency for teaching and learning, optimized resource allocation, and the importance of adaptability in managing schedules and resources to overcome potential challenges. This theme underscores the significance of creating a more time-efficient and resource-effective educational environment.

3. The thematic analysis of "Reducing Overproduction" centers on the practice of optimizing educational processes by minimizing the production of unnecessary or redundant materials, activities, and assessments. Participants emphasize the importance of streamlining education through digital solutions, consolidation of assessments, and the use of technology to enhance teaching efficiency, aiming to improve the overall educational process by focusing on meaningful and efficient activities. This theme carries implications for increased educational efficiency, environmental sustainability through the reduction of paper waste, and the potential for enhanced assessment effectiveness when aligned with learning objectives, highlighting the value of a more streamlined and sustainable approach to education.

Summary of Data Convergence Between Quantitative and Qualitative Data.

The convergence between the qualitative themes and quantitative pre-test and post-test data is strikingly evident, affirming the practical effectiveness of implementing Kaizen principles in education. The significant positive shifts in faculty performance and instructional delivery directly align with the identified themes of eliminating inefficiencies, reducing delays, and focusing on meaningful activities. This alignment not only underscores the feasibility of addressing defects and enhancing teaching practices but also highlights the actionable impact of Kaizen principles on improving overall instructional quality. The convergence between qualitative concepts and observed quantitative improvements emphasizes the tangible and transformative outcomes achievable through a systematic approach to continuous improvement in educational settings.

1. What changes in faculty performance and instructional delivery effectiveness occur when following Kaizen strategies and practices?

The results of faculty performance and instructional delivery effectiveness changes resulting from various Kaizen strategies and practices indicate substantial improvements across the board. In the post-test, participants strongly agreed that the implementation of Kaizen principles had positively impacted faculty performance and instructional delivery. Specifically, there was significant improvement in eliminating defects and inefficiencies, reducing overproduction, and reducing delay and transportation time, with sub-total means of 3.89, 3.91, and 3.86, respectively.

The implications of these findings are significant. The consistent "Strongly Agree" responses reflect the effectiveness of various Kaizen strategies and practices in aviation education. These strategies have led to more effective course content delivery, increased engagement with students, incorporation of innovative teaching methods, and better utilization of advanced technology, interactive teaching techniques, and student-centered approaches. Additionally, practices related to reducing overproduction and delay in transportation and digitalizing materials have been highly successful.

2. What are the key challenges and barriers faced while adopting Kaizen principles, and how do these affect faculty performance and instructional delivery improvements?

The results of key challenges and barriers encountered in the adoption of Kaizen principles and their impact on faculty performance and instructional delivery improvements reveal a significant shift in perception from the pre-test to the post-test. Initially, participants disagreed with the statements related to challenges in adopting Kaizen principles, with an average weighted mean of 1.79. However, at the post-test stage, they strongly agreed with these challenges (average weighted mean of 3.76), highlighting the transformative effect of Kaizen practices.

The implications of these findings are profound. The shift from disagreement to strong agreement indicates that participants initially underestimated the challenges and barriers associated with adopting Kaizen principles in aviation education. However, as they implemented these principles, they gained a deeper understanding of the difficulties, including resistance to change, limited resources, training gaps, and long-term sustainability. Despite

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these challenges, their ability to make substantial improvements in faculty performance and instructional delivery demonstrates the effectiveness of Kaizen in overcoming these barriers.

Conclusions

Based on the study's findings, the following conclusions have been derived:

1. The study's participants demographics provide a thorough picture of the population of the technical faculty of the institution. The majority of participants fell within the 18-35 age range. In terms of the length of experience in teaching in aviation field majority of the participants have five or more years of experience and lastly most of the participants holds Master's Degree.
2. The significant positive impact of implementing Kaizen principles on faculty performance and instructional delivery, emphasizing the need for ongoing professional development and innovative teaching methods in educational institutions.
3. The effectiveness of Kaizen in enhancing faculty performance and instructional quality highlights the value of adopting Kaizen principles in education and underscores the importance of ongoing faculty development for improved teaching and learning.
4. Adopting Kaizen principles significantly enhances faculty performance and instructional delivery by promoting innovative teaching methods, technology integration, and efficient processes, thus improving the overall quality of education.
5. Faculty members, once resistant to change and constrained by limited resources, now demonstrate adaptability and the potential of Kaizen principles to enhance resource utilization, emphasizing the importance of ongoing support and training to improve faculty performance and instructional delivery.
6. Faculty members widely acknowledge that Kaizen significantly improves their teaching practices and educational quality.

Recommendations

Based on this study's significant findings and conclusions, the following recommendations are offered:

1. Tailored training, continuous professional development, mentorship, curriculum integration, and strong leadership support should be implemented to foster a culture of continuous improvement in faculty performance and instructional delivery at the Lipa Campus of Philippine State College of Aeronautics.
2. Educational institutions and aviation programs should consider adopting Kaizen principles to foster continuous improvement and innovation in teaching.
3. Educational institutions should consider adopting similar improvement strategies to ensure the ongoing development and success of aviation programs.
4. Educational institutions consider implementing Kaizen principles to promote positive changes in faculty performance and instructional delivery. Embrace strategies that promote innovative teaching methods, technology integration, student engagement, and responsiveness to students' needs. Additionally, focus on reducing overproduction and streamlining processes to make teaching practices more efficient and effective, ultimately enhancing the overall quality of education.
5. To enhance faculty performance and instructional quality, institutions should support faculty in embracing Kaizen principles, provide training and development opportunities, optimize resources through Kaizen, promote and foster a culture of ongoing enhancement by implementing effective methods.
6. Institutions should foster an environment that promotes and rewards continuous improvement, innovative teaching methods, and quality enhancement in faculty performance and educational outcomes. Additionally, institutions should actively involve faculty in the decision-making process, seeking their insights and feedback on sustaining and further developing Kaizen principles for ongoing improvement.

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