School Support System and Total Quality Management Practices on the Digital Competency of Educators in a Local College

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ABSTRACT

This study addresses a critical issue in education: the need to develop educators' digital technology competence more due to inadequate school support systems and the lack of effective Total Quality Management (TQM) practices. In the context of Don Carlos Polytechnic College, limited resources and support hinder educators from enhancing their digital skills, which are essential in today's technology-driven educational landscape. The research aimed to evaluate the effectiveness of the school support system across several dimensions, including professional development opportunities, resource availability, administrative support, and collaborative networks. Additionally, it sought to assess the extent of TQM practices as perceived by educators, focusing on leadership, Communication, customer satisfaction, and organizational Culture. This study involved 100 respondents, all of whom are faculty members from the College of Criminology and the College of Education of Don Carlos Polytechnic College. The study employed a descriptive-correlational research designs, utilizing a researcher-developed questionnaire validated through pilot testing. Statistical analyses, including correlation and regression modeling, were conducted to explore the relationships between these factors and educators' digital technology competence. Findings revealed that educators experienced only an average level of school support and marked TQM practices as present but still need to be realized fully. Consequently, their digital technology competence was rated as moderate. A statistically significant positive relationship was identified between the school support system TQM practices and educators' digital technology competence. Furthermore, TQM practices were found to be significant predictors of this competence. This study underscores the urgent need for educational institutions to enhance support systems and implement vigorous TQM practices to foster educators' digital skills. The insights gained can guide policy-makers and educational leaders in developing targeted interventions that address these pressing educator training and development challenges.

Keywords: School Support System, Total Quality Management, Digital Technology Competence

INTRODUCTION

The research "School Support Systems and Total Quality Management Practices on the Digital Competency of Educators in Local Colleges" explores the intersection of educational support systems and quality management practices in enhancing digital competencies among Don Carlos Polytechnic College educators. This local institution, situated in Bukidnon, Philippines, has been identified as facing significant challenges in equipping its instructors with the necessary digital technology skills essential for effective teaching in today's increasingly digital landscape. As educational environments evolve, integrating technology into teaching practices has become critical, necessitating a thorough investigation into how institutional support and management practices can facilitate this transition.

The challenges faced by Don Carlos Polytechnic College regarding the digital technology competence of its instructors are echoed in the findings of the DigCompEdu framework, which identifies 22 essential digital competencies that educators must develop to effectively integrate technology into their teaching practices. This framework emphasizes that teachers' proficiency in using digital tools is critical not only for enhancing their

instructional methodologies but also for fostering student engagement and learning outcomes in a rapidly evolving educational landscape (Castaño Muñoz et al., 2023). Furthermore, studies indicate that educators often feel overwhelmed and unprepared to utilize online teaching strategies, highlighting the necessity for structured training programs that address these gaps in digital competence (Trust & Whalen, 2020).

The significance of this research lies in its potential to inform educational policies and practices that can enhance the digital competencies of educators. Focusing on school support systems and total quality management, this study aims to develop frameworks that local colleges can adopt to improve teaching effectiveness and student engagement. Enhancing digital competency is crucial for individual educator development and fostering a culture of continuous improvement within educational institutions. This research could serve as a model for other local colleges facing similar challenges, contributing to broader educational reform efforts. The implications of this study extend beyond Don Carlos Polytechnic College; they may resonate with other institutions striving to adapt to the digital age, highlighting the universal need for strong support structures and effective management practices. Without adequate support and resources, instructors may struggle to adapt their pedagogical approaches, ultimately undermining the institution's mission to provide high-quality education and prepare students for a digital future (Martín-Párraga et al., 2023).

Existing literature highlights the importance of technology in education and the necessity for educators to possess adequate digital skills. A literature review commissioned by the Scottish Government emphasizes that digital technology can significantly support teachers in improving educational outcomes (Scottish Government, 2015)

The review identifies key areas where digital technologies contribute positively, including raising attainment, tackling inequalities, enhancing parental engagement, and improving system efficiencies (Scottish Government, 2015). Furthermore, Taylor et al. (2021) assert that integrating digital tools into classroom practice improves communication and collaboration between teachers and students, fostering engaging learning environments (Taylor et al., 2021). In addition to these benefits, the incorporation of digital technologies has been shown to create more dynamic and interactive learning experiences. For instance, utilizing tools such as projectors and tablets not only captivates students' attention but also encourages active participation and collaboration among peers. Research indicates that when students engage with technology, they are more likely to retain information and develop critical thinking skills (Education SA, 2021). Moreover, the flexibility of digital resources allows for personalized learning pathways, accommodating diverse learner needs and promoting inclusivity within the classroom (Scottish Government, 2015). Ultimately, the effective integration of digital tools can transform traditional pedagogical approaches, making learning more relevant and accessible in today's technology-driven society (Taylor et al., 2021).

Research indicates that teacher proficiency in technology directly correlates with student academic performance and engagement (Koehler, 2016). Studies show that effective school support systems can significantly enhance teachers' abilities to integrate technology into their classrooms (Wilson, 2020). Additionally, total quality management practices have been recognized as essential in fostering an environment conducive to continuous professional development among educators. These findings highlight that successful implementation of digital learning requires comprehensive training and support for teachers to overcome anxieties associated with new pedagogies (Scottish Government, 2015). Moreover, ongoing professional development tailored to specific technologies is crucial for building teacher confidence and competence. When teachers are equipped with the necessary skills and knowledge, they are more likely to adopt innovative teaching methods that leverage technology effectively. This not only enhances their instructional practices but also positively impacts student engagement and learning outcomes. Furthermore, research emphasizes the importance of collaborative learning environments where teachers can share experiences and strategies related to technology integration. Such collaborative efforts can lead to a culture of continuous improvement, enabling educators to adapt to the rapidly evolving educational landscape. Ultimately, prioritizing teacher training in technology is essential for maximizing the benefits of digital tools in education and ensuring that all students have access to high-quality learning experiences.

The primary objectives of this research are as follows: To assess the current level of digital technology competence among educators at Don Carlos Polytechnic College; to identify existing school support systems

and their effectiveness in enhancing educators' digital skills; to evaluate the role of total quality management practices in fostering a culture of continuous improvement regarding digital competency; and to propose actionable recommendations for enhancing digital competencies through improved support systems and management practices. These objectives will guide the research methodology and ensure the findings are relevant and applicable locally.

This research was conducted during the first semester of the Academic Year 2024-2025 at Don Carlos Polytechnic College. The timing is strategic, allowing for implementing findings within the academic cycle and providing immediate opportunities for feedback and adjustment based on educator experiences. By aligning the research with the academic calendar, results can be integrated into ongoing professional development initiatives, maximizing their impact on teaching practices.

METHOD

The research design employed for this study was descriptive-correlational. It was conducted during the academic year 2023-2024. The participants comprised 100 faculty members from the College of Teacher Education and the College of Criminology. The selection of this group allowed the researchers to capture current and real-world data, enabling a comprehensive analysis of the dynamic interplay between the study variables.

The survey instrument utilized in this study underwent a rigorous validation process by three experts, all school administrators holding PhD degrees in Educational Administration, ensuring credibility and expertise. Following validation, the questionnaire underwent pilot testing with 40 teachers at Roman C. Villalon Memorial Colleges Foundation, Inc., Kibawe, Bukidnon, assessing usability and effectiveness. Cronbach's Alpha was employed to evaluate reliability. The School Support System instrument has a high index of .969; Total Quality Management, .989; and Digital Technology Competence, which has .978, affirming internal solid consistency. The survey instruments use the five-point Likert scale with the following rating scale:

School Support System:

Scale	Range	Descriptive Rating	Qualitative Interpretation
1	1.00-1.80	Strongly Disagree (SD)	Very Low School Support System
2	1.81-2.60	Disagree (D)	Low School Support System
3	2.61-3.40	Moderately Agree (MA)	Average School Support System
4	3.41-4.20	Agree (A)	High School Support System
5	4.21-5.00	Strongly Agree (SA)	Very High School Support System

Total Quality Management

Scale	Range	Descriptive Rating	Qualifying Statement
5	4.21-5.00	Strongly agree	Highly Practiced
4	3.41-4.20	Agree	Practiced
3	2.61-3.40	Neutral	Moderately Practiced
2	1.81-2.60	Disagree	Less Practiced
1	1.00-1.80	Strongly disagree	Not Practiced

Digital Technology Competence:

Scale	Range	Descriptive Rating	Qualifying Statement
5	4.21-5.00	Strongly agree	High Level of Competence
4	3.41-4.20	Agree	Moderate Level of Competence
3	2.61-3.40	Neutral	Average Level of Competence
2	1.81-2.60	Disagree	Low Level of Competence
1	1.00-1.80	Strongly disagree	No Level of Competence

The study employed descriptive statistics, including measures such as mean, standard deviation, frequency, and percentages, to determine the level of school support system and digital technology competence of educators as well as the extent of the practice of administrators in total quality management as perceived by educators. Furthermore, the research utilized Pearson's product-moment correlation to assess the relationships between independent and dependent variables. In addition, a stepwise linear regression analysis was applied to identify the factor or combination of factors that most effectively predict the Digital Technology Competence of the respondents.

RESULT AND DISCUSSION

The results and discussion are explained below.

Summary of Mean Scores of Faculty's Perceived Level of School Support System

Table 1. Summary of the Mean Distribution of Faculties' Perceived Level of School Support System

Key Areas	Mean	SD	Descriptive Meaning	Qualitative Description
Professionalism Development Opportunities	3.39	.83	Moderately Agree	Average School Support System
Availability of Resources	3.17	.90	Moderately Agree	Average School Support System
Administrative Support	3.32	.82	Moderately Agree	Average School Support System
Collaboration and Networking	3.34	.84	Moderately Agree	Average School Support System
Overall	3.31	.46	Moderately Agree	Average School Support System

The summary of faculty's perceived level of the school support system indicates an overall average perception of support, with a mean score of 3.31 across four key areas. Each area received a qualitative description of the Average School Support System, suggesting that while faculty members recognize some level of support, there are significant opportunities for improvement.

The overall mean score of 3.31 reflects a consensus among faculty that the school support system is perceived as average. This suggests that while faculty members acknowledge the presence of support mechanisms, they may feel they need more support in their roles, which can impact their effectiveness and job satisfaction. Specific Areas of Support: Professional Development Opportunities, mean: 3.39 indicates that faculty members moderately agree that there are adequate opportunities for professional growth. However, this score suggests that there is still room for enhancement in the availability and quality of these opportunities; Availability of Resources, mean: 3.17 scored the lowest among the areas, indicating that faculty may feel

under-resourced in terms of materials and tools necessary for effective teaching; Administrative Support, mean, 3.32 and Collaboration and Networking, mean, 3.34 also reflect moderate agreement, suggesting that while there is some level of administrative backing and collaborative opportunities, these aspects could be strengthened to foster a more supportive environment.

The findings indicate a need for schools to evaluate and enhance their support systems. By addressing areas such as resource availability and improving professional development programs, schools can create a more conducive environment for faculty, which may lead to improved student outcomes.

A study by Pavelea and Moldovan (2020) found a significant positive correlation between faculty support and students' academic motivation. This highlights the importance of a robust support system for faculty and enhances student engagement and performance, reinforcing the need for adequate support structures in educational institutions.

This is also supported by the study of Korkmaz et al. (2021) case, which showed that adequate administrative support significantly impacts faculty satisfaction and instructional quality during transitions to online learning environments. The study emphasized institutions' need to provide comprehensive academic support services to enhance faculty effectiveness. Similarly, a study by Tagadiad et al. (2024) assessed how school support systems shape teachers' research competence, revealing that solid professional development opportunities correlate with higher teacher competence and satisfaction levels. The findings suggest that improving school support systems can lead to better educational practices.

Furthermore, Gibbs (2012) examined the relationship between school support services and overall effectiveness. The results indicated that comprehensive support services positively influence academic outcomes, reinforcing the need for robust support mechanisms within educational institutions.

Summary of the Mean Scores of Faculties' Perceived Extent Practice of Total Quality Management

Table 2. Summary of the Mean Scores of Faculties' Perceived Extent of Total Quality Management

Key Areas	Mean	SD	Descriptive Meaning	Qualitative Description
Leadership	3.67	.83	Agree	Practiced
Communication	3.57	.90	Agree	Practiced
Customer Satisfaction	3.74	.82	Agree	Practiced
Culture	3.84	.84	Agree	Practiced
Overall	3.70	.96	Agree	Practiced

The overall mean score of 3.70 reflects a consensus among faculty that TQM principles are being implemented in their school environment. This indicates a commitment to quality improvement and a recognition of the importance of TQM in educational settings. Leadership, mean,3.67, and Communication, mean, 3.57, received slightly lower scores, suggesting that while these areas are practiced, there may be opportunities for improvement in how leadership and Communication are executed within the framework of TQM. Customer Satisfaction, mean, 3.74, and Culture, mean, 3.84 scored higher, indicating that faculty members prioritize understanding and meeting the needs of their students (the "customers" in an educational context) and fostering a supportive school culture.

The findings suggest that while TQM practices are being implemented, there is room for further development, particularly in leadership and communication strategies. Continuous professional development focused on these areas could enhance the institution's overall effectiveness of TQM initiatives.

A study by Kigozi and On (2019) systematically reviewed the application of TQM practices in educational

institutions. It highlighted that effective implementation of TQM leads to improved academic outcomes and emphasizes the role of leadership and Communication in fostering a quality-driven culture within schools.

Research by Salem et al. (2023) explored academic and administrative perceptions of TQM practices in educational settings. The study found significant differences in how these groups perceive the implementation of various TQM dimensions, emphasizing the importance of aligning leadership practices with the broader goals of TQM.

This result agrees with the study by Allen and Kilmann (2001), which examined the relationship between TQM practices and school success. They concluded that schools implementing comprehensive TQM strategies experience better performance outcomes. This aligns with your results, suggesting that practicing TQM can enhance leadership effectiveness and improve Communication within educational institutions.

These studies collectively support the interpretation that while faculty members perceive their engagement with TQM as practiced, critical areas for development remain to maximize the benefits of these quality management principles in education.

Summary of the Mean Scores of Faculties' Perceived Level of Digital Technology Competence

Table 3. Summary of the Mean Scores of Faculties' Perceived Level of Digital Technology Competence

Key Areas	Mean	SD	Descriptive Meaning	Qualitative Description
Digital Technology Awareness	4.20	.66	Agree	Moderate Level of Competence
Digital Technology Literacy	4.24	1.06	Strongly Agree	High Level of Competence
Digital Technology Capability	4.20	.66	Agree	Moderate Level of Competence
Digital Technology Creativity	4.10	.64	Agree	Moderate Level of Competence
Overall	4.18	.75	Agree	Moderate Level of Competence

The overall mean score of 4.18 suggests that faculty members feel reasonably confident in their digital competencies, categorized as a Moderate Level of Competence. This reflects a positive attitude toward digital technology integration and indicates room for improvement.

Specific Competence Areas. Digital Technology Literacy received the highest mean score of 4.24, suggesting that faculty members are well-equipped to understand and utilize digital tools effectively. This high level of competence is crucial as it forms the foundation for other digital skills. Other areas like Digital Technology Awareness, Capability, and Creativity scored around 4.20 to 4.10, indicating moderate competence. This suggests that while faculty are aware and capable, they may need to fully leverage digital technologies creatively or innovatively in their teaching practices.

The findings imply a need for targeted professional development programs to enhance the areas where faculty feel less competent, particularly in creativity and innovative uses of technology. Continuous training can bridge the gap between current competencies and the evolving demands of digital education.

A study by Instefjord and Munthe (2021) found that university faculty often possess an intermediate level of digital skills, influenced by factors such as age and access to training programs. This aligns with the current findings that suggest moderate competence levels among faculty.

This is also supported by Durak and Saritepeci (2018), who emphasize the necessity of assessing digital competencies through structured frameworks like DigCompEdu, which categorizes competencies into various dimensions similar to those evaluated in your results. Their findings support that ongoing evaluation is

essential for aligning faculty perceptions with actual competencies.

A study highlighted by Scherer et al. (2019) demonstrated that regular training significantly enhances faculty members' digital skills, reinforcing the importance of institutional support in developing these competencies. The study indicated that 80% of teachers with advanced skills had access to continuous training, which reflects the need for similar initiatives in your context.

These studies underscore the importance of continuous professional development and institutional support in enhancing faculty digital competencies, particularly in areas where they currently exhibit moderate levels.

Relationship between Factors and LET Ratings

Table 4 Correlation Analysis of School Support System, Total Quality Management and Digital Technology Competence of Faculty in a Local College

	Pearson Correlation	Sig. (2-tailed)
School Support System	.416**	0.000
Professional Development Opportunities	.380**	0.000
Availability of Resources	.449**	0.000
Administrative Support	.339**	0.001
Collaboration and Networking	.330**	0.001
Total Quality Management	.505**	0.000
Leadership	.448**	0.000
Communication	.472**	0.000
Customer Satisfaction	.465**	0.000
Culture	.434**	0.000
**. Correlation is significant at the 0.01 level (2-tailed).		

The table's correlation analysis indicates significant relationships among faculty members between the School Support System, Total Quality Management, and Digital Technology Competence. The following sections detail the Pearson correlation coefficients and their statistical significance. The correlation coefficient for the school support system is r=0.416r=0.416 with a significance level of p<0.01p<0.01, indicating a moderate positive relationship with digital technology competence. Development Opportunities, r=0.380r=0.380, p<0.01p<0.01; Availability of Resources: r=0.449r=0.449, p<0.01p<0.01;Administrative Support: r=0.339r=0.339, p<0.01p<0.01; CollaborationandNetworking: r=0.330r=0.330, p<0.01p<0.01.These findings suggest that a robust school support system significantly enhances faculty members' digital technology competence, mainly through resource availability and professional development opportunities. Research from Krumsvik et al. (2016) supports this, emphasizing that educational systems providing essential resources can effectively develop teachers' digital competencies.

The correlation coefficient for total quality management is r=0.505r=0.505 with a p<0.01p<0.01 significancelevel.Leadership: r=0.448r=0.448, p<0.01p<0.01;Communication: r=0.472r=0.472, p<0.01p<0.01; Customer;Satisfaction: r=0.465r=0.465, p<0.01p<0.01;Culture: r=0.434r=0.434, p<0.01p<0.01.The data indicate that total quality management practices are strongly associated with digital technology competence, mainly through effective leadership and communication strategies. This aligns with the findings by Punie et al.

(2022), which highlight that integrating digital technologies within educational institutions requires a comprehensive approach that includes leadership and cultural shifts to enhance digital capacity.

The analysis rejects the null hypothesis, which posited no significant relationship between the school support system, total quality management, and digital technology competence among faculty members in a local college. The strong correlations suggest that effective school support mechanisms and total quality management practices are essential for improving faculty members' digital technology competence.

Predictors of Digital Technology Competence

Table 5 Regression Analysis Showing the Extent of Influence of Predictor Variables on the Digital Technology Competence of Faculty

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.547	.288		8.850	.000
	Total Quality Management	.443	.076	.505	5.821	.000

R= .505 R^2= .255 F=33.83 Sig= .000

Multiple regression generally allows this study to model, explain, and examine the relationship between numerous independent or various predictor variables and a dependent or criterion variable. As such, predictor variables included in the investigation were: a.) School Support System provides dimensions such as Professional Development Opportunities, Availability of Resources, Administrative Support, and Collaboration and Networking; b.) Total Quality Management consists of the following domains: Leadership, Communication, Customer Satisfaction, and Culture. Multiple regression analysis would observe the extent of influence of the predictor above variables on the criterion variable, the Digital Technology Competence of Faculty.

Table 5 gives information about the regression model of the study, estimating the impact of various simultaneous influences upon a single dependent variable. The Digital Technology Competence of faculty was affected by a 1-factor variable: Total Quality Management, $\beta = .443$, $t(5.8)$, $p<0.0$. More precisely, the predicted scores for particular values of the independent variables are indicated by the beta weights (β), which means that each additional score/unit accounted by this measure variable would imply an increase in the digital technology competence of faculty, holding other variables constant. Consequently, this suggests that the higher the scores prompted by total quality management, the better the digital technology of faculty.

The R2, the measure of the total variation of the dependent variable, consisted of 25.5, which reflects the amount of the variance explained by Total Quality Management on the Digital Technology Competence while 74.5.% of the variance can be credited to other factor variables apart from the regression model. From the preceding analysis, however, the equation helpful in predicting the percentage of Digital Technology Competence of faculty (Y) as indicated by F-value (33.83) with its corresponding probability value (0.000) is significant at $p<0.01$. This model is illustrated:

$Y=2.547+0.443X_1$

Where:

2.547 is constant

X1= Total Quality Management

This result is supported by Al-Debei, M. M., & Al-Lozi, E. M. (2014). "Exploring the Role of Total Quality Management in Improving Digital Learning and Teaching." Their findings indicate that TQM components, such as leadership, communication, and customer satisfaction, significantly influence the integration and utilization of digital technologies in the teaching and learning process. Specifically, the study suggests that schools or institutions with a strong TQM culture provide the necessary support systems for faculty to develop and enhance their digital competencies.

In consonance with this result, the study of Huang, M., Xiangming, L., & Zhang, J. (2021) employed hierarchical regression analysis to assess how individual demographic factors and school support influence teachers' intentions to use technology. The findings indicated that both separate and school support factors significantly predicted technology usage, increasing explained variance from 26% to 60% when combining both models. This supports the notion that a robust school support system can enhance technology competence among faculty.

CONCLUSION

The study highlights critical insights into faculty perceptions of the school support system, Total Quality Management (TQM) practices, and digital competencies. Faculty members generally perceive the school support system as average, indicating recognition of existing support mechanisms and signaling significant improvement opportunities. This perception suggests that while faculty acknowledge some support, enhancements such as resource availability and professional development are essential to foster a more supportive environment. Addressing these gaps could improve faculty effectiveness and ultimately enhance student outcomes.

Faculty members are committed to quality improvement within their educational settings when examining TQM practices. While adequate customer satisfaction and a supportive culture are recognized, areas such as leadership and Communication reveal potential for further development. Strengthening these aspects through continuous professional development could enhance the overall effectiveness of TQM initiatives within schools. The alignment of leadership practices with TQM goals is vital for fostering an environment prioritizing quality and responsiveness to student needs.

Faculty confidence in their digital competencies reflects a positive attitude towards technology integration in education. While many faculty members feel equipped to understand and utilize digital tools effectively, there remains room for growth in creativity and innovative technology applications. Targeted professional development programs focused on enhancing these skills are necessary to bridge the gap between current competencies and the evolving demands of digital education. Ongoing training can empower faculty to leverage technology more creatively in their teaching practices.

The correlation analysis reveals significant relationships among faculty members between the school support system, Total Quality Management (TQM), and digital technology competence. Specifically, a vigorous school support system improves digital competencies, mainly through the availability of resources and professional development opportunities. This finding underscores the importance of adequate support mechanisms in educational institutions, as they play a crucial role in fostering faculty members' ability to integrate digital technologies into their teaching practices. Additionally, the strong association between TQM practices and digital competence highlights the necessity for effective leadership and communication strategies to cultivate an environment conducive to quality education.

Furthermore, regression analysis indicates that TQM is a significant predictor of faculty digital technology competence, suggesting that improved TQM practices can enhance educators' digital skills. While TQM accounts for a notable portion of the variance in digital competence, it is essential to recognize that other factors also contribute to this relationship. The findings collectively emphasize the need for educational institutions to strengthen school support systems and TQM practices to improve faculty digital competencies. By doing so, schools can create an environment that supports faculty development and enhances overall educational quality and student engagement.

RECOMMENDATION

Educational institutions may prioritize improvements in their school support systems to enhance faculty effectiveness and student outcomes. This includes increasing the availability of resources and expanding professional development opportunities tailored to faculty needs. By addressing these gaps, schools can create a more supportive environment that empowers faculty members to integrate digital technologies effectively into their teaching practices. Additionally, institutions may regularly evaluate their support mechanisms to ensure they meet the evolving demands of educators and students alike.

Furthermore, strengthening Total Quality Management (TQM) practices is essential for fostering a culture of continuous improvement within educational settings. Institutions may focus on enhancing leadership and communication strategies, as these are critical components that influence the overall effectiveness of TQM initiatives. Continuous professional development aimed at these areas can help align leadership practices with TQM goals, ultimately improving faculty digital competencies. By investing in school support systems and TQM practices, educational institutions can cultivate an environment that supports faculty development and enhances the quality of education and student engagement.

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