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*Research Article*

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# Electronic Communication and Public Relations in Secondary Education: A Quantitative Study

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**ABSTRACT**

This quantitative study exαmines the pivotal role of electronic communication (EC) and public relations (PR) within secondary education institutions. In an era of rapid digital transformation, educational organizations increasingly integrate modern communication practices to enhance transparency, collaboration, and active engagement within the school community. The research, based on a quantitative analysis of 196 educators and administrators, investigates perceptions regarding the frequency and effectiveness of digital tools using descriptive statistics, correlation analysis, and regression modeling. Key findings reveal a universal adoption of EC, with 72.96% of participants reporting daily use and 75.51% evaluating its effectiveness as high. Advanced statistical analysis through Multiple Linear Regression ( $R^2 = 0.538$ , $p < 0.001$ ) indicates that perceived effectiveness and frequency of use are the primary predictors of overall satisfaction. However, the study identifies significant institutional gaps, such as the absence of an official electronic communication protocol for crisis management (59.69%) and heightened concerns regarding data breaches (82.65%). The study concludes that there is an urgent need to establish unified communication strategies and provide continuous staff training in digital security and ethics.

**Keywords:** Electronic Communication, Public Relations, Educational Institutions, Communication Strategies, Digital Technology, Crisis Management

## Introduction

The rapid advancement of digital technologies has radically transformed the landscape of organizational communication, fundamentally altering public relations, educational governance, and the pedagogical process [1,2]. In contemporary educational environments, electronic communication (EC) is no longer merely a supplementary tool but a core operational component that facilitates dynamic interaction among teachers, students, parents, and administrative staff [1,3]. In the context of secondary education, the strategic management of communication through digital channels has been shown to enhance parental trust and reinforce collaboration between the school and its students [2]. Public relations professionals within public school units increasingly utilize digital strategies, such as social media and digital bulletins, to strengthen community engagement and project a positive institutional image [1]. Despite these evident benefits, significantchallenges persist, particularly concerning data security, the necessity for specialized staff training, and the ethical implications of pervasive digitalization [4].

## Purpose and Objectives of the Study

The primary aim of this research is to analyze how EC technologies and PR strategies influence the operational efficiency of secondary education units and to identify best practices that promote administrative transparency and institutional reliability [1,5]. By employing a rigorous quantitative methodology, this study seeks to provide empirical evidence on the factors that drive digital satisfaction and organizational trust within the educational system. In an era of rapid digitalization, school units must move beyond traditional methods to foster an environment of transparency and trust [2,6]. Specifically, the study seeks to:

Evaluate the frequency and effectiveness of digital tools used by educational leaders and teachers [6,7].

Determine how strategic school communication practices reinforce parental trust and student engagement [1,3].

Identify critical institutional gaps in crisis management and digital security protocols

Explore the ethical dimensions of technology use, including data privacy and the awareness of algorithmic bias [8].

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### Research Questions and Hypotheses

To address the research problem, the following questions and hypotheses were formulated:

- **Hypothesis 1:** Increased use of EC is associated with improved administrative efficiency [2,6].
- **Hypothesis 2:** School communication practices enhance transparency and trust among teachers, parents, and students [3,9].
- **Hypothesis 3:** Digital communication tools play a critical role in decision-making and crisis management [10,11].
- **Hypothesis 4:** Educators express significant concern regarding privacy and data protection in digital environments [11,12].

## Research Methodology

### Research Design

The study adopted a rigorous quantitative methodological approach, which is considered appropriate for measuring trends, investigating correlations among variables, and ensuring objective and replicable results [6]. This systematic design facilitates the generalization of findings to the broader secondary education sector [2].

### Sample and Stratified Sampling

The target population consisted of educators and administrators serving in Greek secondary schools. To ensure a representative sample, stratified sampling was employed, covering different professional roles and geographic regions [2,4].

The sample size (n) was determined using the statistical formula for finite populations:

$$n = \frac{Z^2 \cdot p \cdot (1-p)}{e^2}$$

**Table 1: Role Of the Educator in the School Unit**

| Role | Frequency | Percent (%) | Valid Percent (%) | Cumulative Percent (%) |
|---|---|---|---|---|
| Principal | 20 | 10.20 | 10.20 | |
| Vice-Principal | 12 | 6.12 | 6.12 | |
| Educational Leader (P + VP) | 32 | 16.33 | 16.33 | 16.33 |
| Teacher | 164 | 83.67 | 83.67 | 100.00 |
| Total | 196 | 100.00 | 100.00 | |

The demographic profile highlights a mature and experienced workforce [14]. Specifically, 58.98% of the participants possess over 10 years of experience, while a significant portion has exceeded 20 years of service. Detailed data regarding the professional experience of the respondents are summarized in Table 2.

**Table 2: Years of Professional Experience in Secondary Education**

| Years | Frequency | Percent (%) | Valid Percent (%) | Cumulative Percent (%) |
|---|---|---|---|---|
| 0–10 | 42 | 21.43 | 21.43 | 21.43 |
| 10–20 | 58 | 29.59 | 29.59 | 51.02 |
| 20–30 | 71 | 36.22 | 36.22 | 87.24 |
| 30+ | 25 | 12.76 | 12.76 | 100.00 |
| Total | 196 | 100.00 | 100.00 | |

### Data Collection and Instrumentation

Data were collected via an anonymous online questionnaire (Google Forms) [6]. The instrument utilized a five-point Likert scale (1 = Not at all, 5 = Extremely) to measure perceptions [4,13]. To ensure the clarity and logical flow of the questions, a pilot study was conducted with 6 participants (4 teachers and 2 leaders), and their feedback was incorporated into the final version [2]. The internal consistency of the scales was verified using Cronbach's alpha, yielding values > 0.76, indicating high reliability [15].

### Methods of Analysis

To ensure the objectivity and replicability of the results, the collected data were processed using IBM SPSS Statistics (version 25) and Microsoft Excel. The following statistical techniques were employed to address the research questions and test the hypotheses [5,6]:

- **Descriptive Statistics:** Frequencies, percentages, mean values, and standard deviations were calculated to capture general trends, demographic characteristics, and the distribution of responses across the Likert scales [16].
- **Correlation Analysis (Spearman's ρ):** Given the ordinal nature of the Likert-scale data and the non-normal distribution of responses, Spearman's rho was utilized to identify the strength and direction of monotonic relationships between variables, such as usage frequency and perceived effectiveness [16,17].
- **Regression Analysis (Multiple Linear Regression):** A regression model was applied to estimate the predictive power of independent variables (frequency of use, perceived effectiveness, and parental collaboration) on the dependent variable of overall satisfaction with electronic communication [18,19].
- **Exploratory Factor Analysis (EFA):** This method was used to evaluate the structural validity of the research instrument. Through the Principal Components method and Varimax rotation, three main factors were identified: Effectiveness, Collaboration, and Privacy/Ethical Issues, explaining over 60% of the total variance [16].
- **Reliability Analysis (Cronbach's α):** The internal consistency of the identified factors and thematic scales was verified using the Cronbach's alpha coefficient. All calculated values exceeded the 0.76 threshold, confirming the high reliability of the measurements [4,18].

## Main Findings

### Frequency of Electronic Communication Usage

The empirical evidence confirms that electronic communication (EC) has been deeply integrated into the daily operational framework of secondary educational units [6]. According to the descriptive analysis, a significant majority of the participants (72.96%) engage with digital communication tools on a daily basis, while 24.49% report usage at least once a week [16].

Statistical differentiation based on professional roles indicates that educational leaders (principals and vice-principals) demonstrate a higher frequency of daily usage (78.13%) compared to teachers (71.95%) [7]. This variance is primarily attributed to the increased administrative requirements and the necessity for continuous coordination with external stakeholders and departmental authorities [2]. Interestingly, geographic analysis shows a uniformity in technology adoption, as daily usage remains high in both urban (73.58%) and rural (78.26%) school units, suggesting that EC serves as a critical bridge over geographic distances [15]. The frequency of use for different digital communication tools is illustrated in Table 3.

**Table 3: Frequency of Electronic Communication Media Use in the School Unit**

| Tool | Total (%) | Leaders (%) | Teachers (%) | Men (%) | Women (%) |
|---|---|---|---|---|---|
| Official Platforms | 90.31 | 100.00 | 88.41 | 89.19 | 88.24 |
| Email | 72.96 | 78.13 | 71.95 | 55.41 | 55.46 |
| Viber/ WhatsApp | 26.02 | 21.88 | 26.83 | 25.68 | 24.37 |
| Social Media | 16.84 | 21.88 | 15.85 | 6.76 | 23.53 |
| MS Teams/ Google | 9.69 | 12.50 | 9.15 | 32.43 | 32.77 |
| Webex/ Zoom | 10.71 | 31.25 | 6.71 | 12.16 | 9.24 |

**Preferred Communication Media and "Hybrid Reality"**

The research highlights a clear hierarchy in media preference, dominated by institutionalized digital environments [2,20]. Official educational platforms (such as myschool, e-class, and edupage) are the most widely used tools, cited by 90.31% of the total sample [4,15]. This is followed by email, which remains a fundamental pillar for formal administrative interaction for 72.96% of respondents [15,21].

However, the data also reveal a "hybrid reality" where official channels coexist with informal ones to balance institutional compliance with functional speed [4]. Instant messaging applications like Viber and WhatsApp are utilized by 26.02% of educators, with notably higher usage in rural and semi-urban areas [1,6]. Social media platforms (Facebook, Instagram) are preferred by 16.84%, primarily for public relations purposes and community engagement [1,12]. The preferences for electronic communication media among educators and administrators across different categories are detailed in Table 4.

**Table 4: Preference For Electronic Communication Media Among Educators and Administrators**

| Category/Role | Daily (%) | Weekly (%) | Monthly (%) | Rarely (%) | Never (%) | Total (N) |
|---|---|---|---|---|---|---|
| Educational Leader | 78.13 | 21.88 | 0.00 | 0.00 | 0.00 | 32 |
| Teacher | 71.95 | 25.00 | 2.44 | 0.61 | 0.00 | 164 |
| Total Sample | 72.96 | 24.49 | 2.04 | 0.51 | 0.00 | 196 |
| Gender: Men | 78.38 | 16.22 | 4.10 | 1.35 | 0.00 | 74 |
| Gender: Women | 68.97 | 30.17 | 0.90 | 0.00 | 0.00 | 116 |
| Urban Area | 73.58 | 22.64 | 2.83 | 0.94 | 0.00 | 106 |
| Semi-Urban Area | 70.15 | 28.36 | 1.52 | 0.00 | 0.00 | 67 |
| Rural Area | 78.26 | 21.74 | 0.00 | 0.00 | 0.00 | 23 |

- **Role-Based Differentiation:** Educational leaders (principals and vice-principals) show a 100% adoption rate of official educational platforms, while their use of email (78.13%) is higher than that of teachers (71.95%) [2,15]. Teachers, however, exhibit a higher tendency to use instant messaging applications (Viber/WhatsApp) at 26.83%, suggesting a need for greater functional flexibility in their daily interactions [6,21].
- **Gender Variations:** While both genders rely heavily on official platforms, a notable difference is observed in the use of social media. Women (23.53%) utilize social networks for professional communication significantly more than men (6.76%) [1,11]. Additionally, both genders show comparable preference for collaborative environments like Microsoft Teams and Google Workspace, with women (32.77%) and men (32.43%) reporting similar usage rates [9,14]. The specific preferences for electronic communication media based on professional role and geographic area are summarized in Table 5.
- **Geographic Divide:** In rural areas, there is a higher reliance on Viber and WhatsApp (34.78%) compared to urban areas (20.75%), highlighting a hybrid reality where informal tools bridge the gap caused by potential infrastructure limitations [22,23]. Conversely, urban schools record the highest usage of official platforms at 92.45% [16].

**Table 5: Preference For Electronic Communication Media by Role and Geographic Area.**

| Communication Tool | Total (%) | Urban (%) | Semi-Urban (%) | Rural (%) |
|---|---|---|---|---|
| Official Educational Platforms (e-class, myschool, edupage) | 90.31 | 92.45 | 89.55 | 82.61 |
| Email | 72.96 | 59.43 | 52.24 | 60.87 |
| Viber/WhatsApp | 26.02 | 20.75 | 31.34 | 34.78 |
| Social Networks (Facebook, Instagram) | 16.84 | 19.81 | 13.43 | 13.04 |
| MS Teams/Google Workspace | 9.69 | 12.26 | 7.46 | 4.35 |
| Webex/Zoom | 10.71 | 9.43 | 13.43 | 8.70 |

**Regression Analysis of Overall Satisfaction**

To identify the factors that predict the overall satisfaction of educators and leaders with electronic communication (EC) capabilities, a Multiple Linear Regression analysis was performed [4,6]. The satisfaction level (Dependent Variable) was modeled against four independent variables: frequency of use, perceived effectiveness, cooperation with parents, and years of professional experience [2].

The regression model proved to be statistically significant ($F(4, 191) = 55.72$, $p < 0.001$) and explained 53.8% of the variance in satisfaction ($R2 = 0.538$), indicating a strong fit for the data [4,6]. The detailed results of the multiple linear regression analysis are presented in Table 6.

**Table 6: Multiple Linear Regression Results for Predicting Overall Satisfaction**

| Variable | B (Coefficient) | t | Sig. (p-Value) |
|---|---|---|---|
| Constant | 1.212 | 4.85 | < 0.001 |
| Frequency of use (Q7) | 0.223 | 2.91 | 0.004 |
| Perceived effectiveness (Q9) | 0.367 | 5.04 | < 0.001 |
| Cooperation with parents (Q10) | 0.189 | 2.44 | 0.016 |
| Years of experience (Q4) | –0.073 | –1.12 | 0.263 |
| Model Statistics | | F(4, 191) = 55.72 | p < 0.001 |

The results identified perceived effectiveness ($b = 0.36$, $p < 0.001$) as the strongest predictor of satisfaction, followed by frequency of use ($b = 0.22$, $p = 0.004$) and cooperation with parents ($b = 0.18$, $p = 0.016$) [4,6]. These findings suggest that when digital tools are perceived as useful and are used systematically to bridge the gap between school and family, user satisfaction increases significantly [2,16].

Notably, professional experience (years of service) was not a statistically significant factor ($p = 0.263$) [4]. This is a crucial finding as it suggests that technology acceptance in secondary education is driven by the utility, training, and accessibility of tools rather than by the age or tenure of the staff [18]. This contradicts traditional stereotypes of technology resistance among more experienced educators, highlighting that institutional support and tool efficiency are the primary catalysts for digital transformation [5,15].

**Structural Validity and Reliability Analysis**

To ensure the structural validity of the research instrument, an Exploratory Factor Analysis (EFA) was performed using the Principal Components method with Varimax rotation [14]. Preliminary tests confirmed the suitability of the data for factor extraction, yielding a Kaiser-Meyer-Olkin (KMO) index of 0.84 (well above the 0.70 threshold) and a statistically significant Bartlett's Test of Sphericity ($x2 (190) = 2150$, $p<0.001$) [2,17].

The analysis identified three primary factors that collectively explain 62% of the total variance, providing a robust framework for interpreting the dimensions of electronic communication (EC) in schools [24]:

- **Factor 1:** Perceived Effectiveness (F1). This factor accounts for 31% of the variance and includes items related to the efficiency of EC in daily administrative and pedagogical operations (loadings: 0.68–0.82) [19].
- **Factor 2:** Collaboration with Stakeholders (F2). Explaining 19% of the variance, this dimension focuses on digital interaction with parents and students (loadings: 0.64–0.79).
- **Factor 3:** Privacy and Ethical Issues (F3). This factor accounts for 12% of the variance, addressing concerns regarding data security, transparency, and algorithmic bias (loadings: 0.61–0.77).

The internal consistency of these thematic scales was evaluated using the Cronbach's alpha coefficient [15]. All scales demonstrated high reliability, with values exceeding the acceptable threshold of 0.70. Specifically, the values ranged from 0.768 to 0.821, confirming that the questionnaire provides stable and consistent measurements [15, 16]. The internal consistency and reliability levels for each thematic scale are displayed in Table 7.

**Table 7: Internal Consistency Results for the Research Instrument (Cronbach's α)**

| Thematic Scale/ Factor | Number of Items | Cronbach's α | Reliability Level |
|---|---|---|---|
| Effectiveness & Satisfaction (F1) | 3 | 0.821 | Very Good |
| Collaboration (F2) | 3 | 0.794 | Good |
| Privacy & Ethics (F3) | 2 | 0.768 | Acceptable |

**Crisis Management and Institutional Preparedness**

The research identifies a significant institutional gap regarding the readiness of Greek school units during emergencies [10,11]. Empirical data reveal that 59.69% of the total sample reports the complete absence of an official electronic communication (EC) protocol for managing crises, such as natural disasters or public health emergencies [25]. Perceptions of educators and administrators regarding the existence of a Crisis EC Protocol are detailed in Table 8.

**Table 8: Perceptions of educators and administrators regarding the existence of a Crisis EC Protocol**

| Category | Yes (%) | No (%) | I Don't Know (%) | Total (N) |
|---|---|---|---|---|
| Educational Leader (P + VP) | 3.13 | 75.00 | 21.88 | 32 |
| Teacher | 10.98 | 56.71 | 32.32 | 164 |
| Total Sample | 9.69 | 59.69 | 30.61 | 196 |
| Urban Area | 11.32 | 61.32 | 27.36 | 106 |
| Semi-Urban Area | 8.96 | 58.21 | 32.84 | 67 |
| Rural Area | 4.35 | 56.52 | 39.13 | 23 |

**Statistical Insight**

The findings highlight a clear divergence in organizational awareness. Educational leaders demonstrate a more accurate understanding of the institutional reality, with 75.00% explicitly stating the lack of a protocol, whereas teachers exhibit higher uncertainty, with 32.32% reporting they "don't know" [12,19]. This uncertainty peaks in rural regions at 39.13%, suggesting that remote schools are less integrated into centralized administrative guidelines [6,16]. The reliance on informal channels (e.g., Viber/WhatsApp at 68.37%) during crises, in the absence of formal structures, poses risks to institutional reliability [14,26].

**Ethical Risks and Privacy Awareness**

The transition to pervasive EC has raised significant security concerns within the secondary education community [6,11]. Data breaches and personal data leakage represent the primary ethical risk for 82.65% of the total sample, a concern that is significantly higher among educational leaders (90.63%) compared to teachers (81.10%) [8,12]. Perceptions of ethical risks associated with the use of communication technologies are presented in Table 9.

**Table 9: Perceptions of Ethical Risks Associated with the Use of Communication Technologies**

| Risk Factor | Total (%) | Leaders (%) | Teachers (%) | Urban (%) | Rural (%) |
|---|---|---|---|---|---|
| Data Breach/ Leakage | 82.65 | 90.63 | 81.10 | 83.96 | 78.26 |
| Lack of Transparency | 50.00 | 53.13 | 49.39 | 52.83 | 52.17 |
| Algorithmic Bias | 7.14 | 12.50 | 6.10 | 9.43 | 0.00 |
| Other (Privacy, Commercial, etc.) | 43.88 | 81.25 | 36.59 | 36.79 | 43.48 |

Despite these fears, a notable "awareness gap" exists regarding advanced technological risks, as only 7.14% of educators recognize algorithmic bias as a potential threat [8]. This gap is absolute in rural areas (0.00%), highlighting an urgent need for AI literacy [15,26]. Consequently, an overwhelming majority (83.67%) views specialized staff training in digital security and ethics as an absolute necessity for modern school administration [12,8].

**Measures for Privacy and Data Protection**

The protection of personal data in digital communication is a fundamental requirement for the educational process, particularly as information technologies have become an inseparable part of school life [6,11]. In the Greek context, although fully institutionalized procedures for data protection in communication between students, teachers, and parents have not yet been uniformly developed, participants provided critical insights into necessary safety measures [4,10]. The perceptions of educators and administrators regarding the necessity of ensuring privacy and personal data protection in digital communication are summarized in Table 10.

**Table 10: Perceptions of Educators and Administrators Regarding the Necessity of Ensuring Privacy and Personal Data Protection in Digital Communication**

| Measures/Strategies | Leaders (%) | Teachers (%) | Total (%) | Urban (%) | Semi-Urban (%) | Rural (%) |
|---|---|---|---|---|---|---|
| Staff Training on Privacy | 81.25 | 84.15 | 83.67 | 83.96 | 83.58 | 82.61 |
| Clear Data Protection Policy | 59.38 | 54.27 | 55.10 | 52.83 | 59.70 | 52.17 |
| Encryption/Limited Access | 50.00 | 25.61 | 29.59 | 33.96 | 26.87 | 17.39 |
| No specific measures exist | 3.13 | 6.71 | 6.12 | 7.55 | 4.48 | 4.35 |

**Discussion**

The empirical findings of this study confirm that electronic communication (EC) has become foundational to the organizational and pedagogical interaction within secondary school units [6,2]. The near-universal adoption of digital tools is reflected in the high frequency of daily usage (72.96%) and the overwhelmingly positive evaluation of their effectiveness (75.51%), results that align with contemporary international literature on the digital transformation of educational governance [3,4].

A significant finding is the dominance of official educational platforms (90.31%) and email (72.96%), which underscores the reliance on institutionalized media to ensure administrative transparency and formal compliance [15,20]. However, the data simultaneously reveal a "hybrid reality" where these official channels coexist with informal tools such as Viber and WhatsApp (26.02%) [15,26]. This trend is particularly pronounced in rural areas, where Viber usage reaches 34.78%, suggesting that educators in remote regions utilize instant messaging to overcome infrastructure gaps and ensure operational speed [12,15].

One of the most critical institutional vulnerabilities identified is the absence of formal crisis communication protocols [15,19]. With 59.69% of participants reporting a lack of official digital procedures for emergencies—such as pandemics or natural disasters—a significant gap in organizational readiness is evident [10,19]. This uncertainty peaks in rural schools (39.13%), highlighting a digital preparedness divide that forces staff to rely on improvised solutions, potentially compromising institutional reliability during high-stakes events [15,25].

Regarding ethics and security, while concerns over data breaches (82.65%) are high, there remains a substantial "awareness gap" concerning advanced technological risks [9,20]. Only 7.14% of educators recognize algorithmic bias as a potential threat, indicating that while basic privacy concerns are well-understood, the implications of Artificial Intelligence (AI) in school administration are not yet part of the mainstream professional discourse [15]. This underscores the urgent need for specialized staff training in digital ethics and AI literacy [15,21].

Finally, the Multiple Linear Regression analysis (R2=0.538) provides a pivotal theoretical insight: professional experience

(years of service) does not significantly influence satisfaction (p= 0.263) [4,6]. This challenges the traditional stereotype that veteran educators resist technological change. Instead, technology acceptance is driven by perceived utility, systematic usage, and institutional support, suggesting that even the most experienced staff are willing to integrate digital tools if they perceive clear functional benefits [18].

**Conclusions and Recommendations**

This quantitative study concludes that electronic communication (EC) and public relations (PR) play a transformative role in the modern secondary education landscape by enhancing transparency, organizational trust, and community collaboration [2,4]. The high rates of daily usage (72.96%) and the positive evaluation of digital tools (75.51%) demonstrate that EC is no longer a supplementary feature but a core operational component of school units [4,5].

However, the research highlights that the full optimization of school operations is currently hindered by significant institutional and structural vulnerabilities [9,19]. To address these gaps and ensure a resilient, safe, and effective digital environment, the following strategic recommendations are proposed:

- **Institutionalization of Protocols:** The Ministry of Education and local authorities should prioritize the establishment of a unified School Digital Communication Protocol [9,19]. This is essential to eliminate the high levels of uncertainty (30.61%) and the institutional gap regarding emergency procedures during crises.
- **Targeted Capacity Building:** Schools must implement mandatory annual staff training programs [15,21]. These sessions should focus on GDPR compliance, data encryption, and digital ethics to mitigate the heightened concerns regarding data breaches (82.65%) and bridge the critical AI awareness gap (only 7.14%) [15,17].
- **Infrastructure Equity:** Policy initiatives should provide priority investments for rural and semi-urban schools [12,15]. Addressing the digital divide is necessary to ensure that educators in remote areas have equal access to the benefits of EC without relying solely on informal, non-secure messaging tools [15,26].

**Future Research**

While this study provides a comprehensive overview of the current state of EC in Greek secondary schools, it opens several avenues for further scholarly inquiry [15]:

- **Crisis Framework Evaluation:** Future research should focus on the development and longitudinal evaluation of specific crisis communication frameworks across diverse educational contexts [10,19].
- **AI and Algorithmic Literacy:** There is an urgent need to investigate the ethical implications and literacy gaps regarding Artificial Intelligence (AI) and algorithmic bias in educational leadership [9,15,27].
- **Qualitative Exploration:** Complementary qualitative studies could provide a deeper understanding of the nuanced professional experiences and subjective perceptions of educators regarding digital transformation [4,5].
- **Impact Assessment:** Further quantitative research is recommended to assess the long-term impact of specialized digital training programs on administrative effectiveness and overall community satisfaction [6,21].

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**References**

1. Noui Z, Talbi M, Fernex A, Lima L, Hadji C, et al. The Role of Public Relations in the Development and Promotion of Public Structures: University Hassan II Mohammedia-Casablanca as a Case in Point. Procedia - Soc. Behav. Sci. 2012. 46: 114-119.
2. Bowman H, Giles M, Orange A, Decman J, Willis JM. Social media practices of school administrators: The time is now. Sch. Leadersh. Rev. 2022. 17: 4.
3. Lopez S, Combs J. Communication Directors and Public Relations Professionals in Public School Districts. J. Sch. Adm. Res. Dev. 2024. 9: 25-30.
4. Strauss C, Harr MD, Pieper TM. Analyzing digital communication: a comprehensive literature review. Manag. Rev. Q. 2024. 75: 3119-3157.
5. Alajmi M. Improving school mindfulness: analysing the impact of principals' effective communication and teachers' trust on schools' organisational mindfulness in Kuwait. Qual. Assur. Educ. 2024. 33: 1-16.
6. Masloch J, Masloch P, Wojtaszek H, Jagodzinski W, Miciula I, et al. Analysis of Communication in the Educational Process by Means of E-Learning. Eur. Res. Stud. J. 2020. 23: 277-294.
7. Gebremariam HT, Dea P, Gonta M. Digital socialization: Insights into interpersonal communication motives for socialization in social networks among undergraduate students. Heliyon. 2024. 10: e39507.
8. Duckett J, Westrick NM. Exploring the use, adoption, and ethics of generative artificial intelligence in the public relations and communication professions. Commun. Teach. 2025. 39: 33-41.
9. Ma X, Ma L, Liu BF. Should relationships be at the heart of public relations? A meta-analysis of the antecedents and consequences of organization-public relationships. Public Relations Rev. 2023. 49.
10. Bond M. Schools and emergency remote education during the COVID-19 pandemic: A living rapid systematic review

Review of Education. 2021. 9: e3258.
11. Xu Z. Public Relations in Crisis Management: A Review and Analysis of Communicative Strategies During Early Stages of Covid-19. Lect. Notes Educ. Psychol. Public Media. 2024. 54: 240-246.
12. Wilson T, Provaznik W, Cook W. Using framing to introduce the responsible use of text-based generative artificial intelligence (TGENAI) in business communication. Commun. Teach. 2024. 38: 242-252.
13. Jong W. Public leadership in times of crisis: Lessons to learn from a crisis communication point of view. Commun. Teach. 2021. 35: 86-92.
14. Brock C. School Superintendents' Use of Electronic Communication Technology and its Impact on Their Efficacy as a School District Leader. Doctoral dissertation, St. John's University, New York, NY, USA. 2017.
15. Dancey CP, Reidy J. Statistics Without Maths for Psychology, 7th ed.; Pearson Education: London, UK. 2017.
16. Fabrigar LR, Wegener DT, MacCallum RC, Strahan EJ. Evaluating the use of exploratory factor analysis in psychological research. Psychol. Methods. 1999. 4: 272-299.
17. Terblanché E. Deciding to teach online: Communication, opportunities and challenges for educators in distance education. Communication. 2015. 41: 543-563.
18. Field AP. Discovering statistics using IBM SPSS Statistics, 5th ed.; SAGE Publications: London, UK. 2018.
19. Hobbs R, Moen M, Tang R, Steager P. Measuring the implementation of media literacy instructional practices in schools: community stakeholder perspectives. Learn. Media Technol. 2022. 48: 337-353.
20. Lim S, Schmälzle R. Exploring the mechanisms of AI message generation: A chatbot development activity for students. Commun. Teach. 2024. 38: 21-27.
21. Mihaylova R. Technology as an actor in communication between teachers and parents: The case of electronic diaries. BCES Conf. Books. 2022. 20: 159-165.
22. Brown AM. Experiences of New Jersey Public School Communication Directors: A Phenomenological Study. Doctoral dissertation, Drexel University, Philadelphia, PA, USA. 2023.
23. Nicolaou C, Matsiola M, Kalliris G. Technology-Enhanced Learning and Teaching Methodologies through Audiovisual Media. Educ. Sci. 2019. 9: 196.
24. Karakose T, Polat H, Papadakis S. Examining Teachers' Perspectives on School Principals' Digital Leadership Roles and Technology Capabilities during the COVID-19 Pandemic, Sustainability. 2021. 13: 13448.
25. Kumar K, Kumar R. Pedagogy Towards Outcome-Based Education; CRC Press: Boca Raton, FL, USA. 2022.
26. Brinia V, Selimi P, Dimos A, Kondea A. The Impact of Communication on the Effectiveness of Educational Organizations. Educ. Sci. 2022. 12: 170.
27. Luttrell R, Wallace A, McCollough C, Lee J. The Digital Divide: Addressing Artificial Intelligence in Communication Education. Journal. Mass Commun. Educ. 2020. 75: 470-482.

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