

INVESTIGATING THE AWARENESS, USAGE, AND TRAINING NEEDS OF ADMINISTRATIVE STAFF FOR AI WRITING TOOLS IN PUBLIC COLLEGES

Attiya Habib^{*1}

Dr. Tanzeela Anbreem ^{*2, 3}

¹ *Minhaj University Lahore*

² *Associate Professor, Minhaj University Lahore*

³ *Head, FMP, faculty lecturer, University of Bedfordshire, UK*

attiyahabib82@gmail.com

Abstract

This research article examines the awareness, use, and training needs regarding AI-assisted writing tools among administrative staff in public sector colleges in Pakistan. Due to the significance of written communication among administrative staff, the use of English writing skills has become imperative, as is obvious from the rise in the use of Grammarly, Chat-GPT, and Google Translate. The methodology used in this paper is survey research among administrative staff in public colleges of Punjab, Pakistan. The findings showed that, although administrative staff are familiar with AI technology, they are not using it to its fullest capacity due to training concerns and a lack of digital literacy skills in institutions. There is an immense desire among administrative staff to use AI-assisted tools once they are fully trained in their use.

Keywords: Artificial intelligence, office writing, public colleges, English for Occupational Purposes, digital literacy

1. Introduction

In the present-day world, which is predominantly digital, written communication still stands as a foundation of effective functioning in the workplace, especially in educational institutions. The administrative personnel of public colleges are the ones who mainly handle the official communications in different formats, the filing of records, and the preparation of reports, all of which require writing in English to be clear, precise, and professional. Since English is the most widely used language for official communication in most of the public education sector's documentation in Pakistan (Rahman, 2020), the written English proficiency of the administrative staff becomes a decisive factor that ensures the smooth running of academic and institutional affairs. However, it is a common scenario that many of the college administrative employees are not formally trained in English for occupational purposes (EOP), thereby making it a source of unclear communication in their workplace (Imtiaz & Sarwar, 2014).

In this era of technological advancement, there is a rapid increase in the use of AI tools across various disciplines to serve institutional purposes. The increasing availability of AI-powered writing assistants in recent years has accelerated this digitization trend (Zhao, Sbaffi, & Cox, 2025). The sudden growth of AI-based writing software such as Grammarly, ChatGPT, and QuillBot has revolutionised communication within workplaces across the world, including government offices. However, using these technologies presents many challenges for professionals who lack knowledge of English, the language that is used in the majority of AI applications (Wee & Reimer, 2023). As noted by Schriver (2023) and Romadhoan (2024), AI writing is extremely fast, but it lacks creativity, cultural sensitivity, and ethical reasoning skills. The constant addition of artificial intelligence (AI) tools in the office has opened up a completely new question—whether

these technologies will help or take over the administrative personnel in the area of English writing tasks.

1.1 Problem Statement

At present, the rising number of AI-powered writing tools available shows that the majority of public colleges' office workers may still not understand the tools' capabilities or may not have received proper training. Generally, most administrative workers come from non-technical or non-linguistic backgrounds and are still using conventional ways to carry out their duties. The shortage of digital skills, especially in relation to AI, is the major reason why the advanced technology is not practically used in the daily administrative writing.

Moreover, current studies and training initiatives primarily concentrate on the utilization of AI in the areas of teaching, content creation, or student learning, while the non-teaching administrative staff has not been a major part of the discussions. Consequently, office workers might still struggle with the creation of professional written communication and therefore, they would not benefit from the assistance offered by AI tools. This is indicative of a digital divide and suggests that there are no institutional measures to create awareness and help college administrative staff to acquire skills in this regard.

1.2 Rationale of the Study

This study fills a significant gap in the literature by exploring the interaction of non-technical staff in educational institutions with AI-powered writing tools. Public colleges, in particular, have faced the challenges of having poor documentation procedures as well as a lack of professional development opportunities for administrative personnel. The use of AI tools could help to bring office work up to date, but, at the same time, without the baseline data on present awareness, use, and perceived training needs, institutions would not be able to make knowledgeable decisions about the introduction of these technologies or the design of corresponding training programs.

This study aims to investigate the current situation regarding awareness, usage, and training requirements for AI writing assistants among administrative staff in public colleges.

1.3.1 Research Objectives

1. To investigate the extent to which the administrative staff of public sector colleges is aware of AI-driven writing assistants.
2. To identify the purposes and frequency of the use of these tools in office work
3. To identify challenges or barriers that impede the use of AI writing tools

1.3.2 Research Questions

1. How familiar are administrative staff in public sector colleges with AI-driven writing assistants?
2. For what purposes—and how frequently—are these tools presently used in office work?
3. What challenges or barriers impede their use?

2. Review of the Literature

English for Occupational Purposes (EOP) is a branch of English for Specific Purposes (ESP), focusing on developing language skills immediately applicable in a professional context. Unlike traditional English language learning, the emphasis of EOP is placed on task-based communication, genre, and functional language use in the workplace (Basturkmen, 2010). Davies

and Birbili (2000) describe workplace writing as a mentally demanding and complex activity. L2 workers employed in English-dominant contexts generally feel unprepared for the realities of workplace writing across nearly all occupational sectors (Alali, 2019; Apelman, 2010; Bremner, 2012; Hu & Gonzales, 2020; Machili, 2014).

In Pakistan, the use of English is necessary on official forums (Rahman, 2015). However, the administrative staff in offices of public sector institutions are not good at communicating in English as they do not possess high-level academic degrees, such as Master's or M. Phil which could help in developing better language skills to handle their day-to-day communication matters. Moreover, they lack basic training in the English language (Imtiaz & Sarwar, 2014).

In this era of technological advancement, there is a rapid increase in the use of AI tools across various disciplines to serve institutional purposes. The increasing availability of AI-powered writing assistants in recent years has accelerated this digitization trend (Zhao, Sbaffi, & Cox, 2025). The sudden growth of AI-based writing software such as Grammarly, ChatGPT, and QuillBot has revolutionised communication within workplaces across the world, including government offices. The main objective of such AI tools is to address the English language, targeted specifically at written communication (Wee and Reimer, 2023). In addition to grammar verification, ChatGPT and other AI tools also have the capacity to devise ideas, rearrange the information, and adjust it to suit the intended recipients. Despite the capabilities provided by the tools, their application is accompanied by challenges, especially for individuals who lack knowledge about the English language, which is applied predominantly in most AI tools (Wee and Reimer, 2023).

There has been an increasing amount of empirical evidence that suggests that AI-enabled tools can offer additional support to writing tasks, particularly for individuals writing in their second language. The research study by Bozkurt (2023), shows that the integration of AI tools in professional writing can increase the quality as well as relevance of Open Educational Practices (OEP) content developed by enabling the automation of content development. The research by Al-Zaghier et al. (2023) has examined the role of AI tools like ChatGPT in the generation of academic and professional writings. It was found that while these tools are able to generate linguistically correct and properly organized genres of writing like letters, memos, and reports, they are not very effective when it comes to research skills, which involve data gathering and interpretation. It has been seen that while AI tools can assist in the surface level of professional and occupational writings, they are not very effective when it comes to more advanced forms of academic and professional abilities, hence warranting a reformulation of assessment in writing courses.

Artificial intelligence and its impact on email communication in the corporate world have emerged as the focus of contemporary studies. According to Randive, with the help of artificial intelligence-powered software, such as ChatGPT and self-response software, corporate communication becomes easier and more effective since most routine tasks have become automated, thereby reducing linguistic errors and personalizing content on a larger scale. At the same time, however, it states that composing corporate emails using AI raises serious concerns related to privacy, bias, and transparency, and should thus be used responsibly and sensibly.

Digital literacy, on the other hand, extends beyond the basic use of technology; rather, its elements encompass the ability to analyze, adapt to, and apply technology in the workplace (Belshaw, 2011). In this regard, having an appropriate digital literacy level among the office-based workforce becomes a decisive factor in the smooth integration of English for Occupational Purposes

and an AI-assisted writing tool in an office environment. Based on the literature, the use of AI technology in the field of office-based writing is challenged by a range of technological and human limitations. On the technological side, the issue of data privacy and security stands out, given the sensitive information available in administrative writing, thus organizations exercise great caution when it comes to the use of AI-based solutions (Kiriş & Gürül, 2025; Ndlovu, 2025). Moreover, the available technological infrastructure, especially in those organizations that may not be able to afford the necessary technological capabilities for the application of high-order AI solutions, further limits the use of AI in writing (Tiika et al., 2025; Ndlovu, 2025). Another significant issue in the use of AI in writing that raises a range of technological, ethical, and functional concerns is the issue of bias in algorithms, especially if the output of the biased algorithms negatively impacts the fairness, accuracy, and validity of administrative writing (Tiika et al., 2025; Parycek et al., 2023). On the side of human constraints, resistance to change in organizations and cultures may limit the use of AI-based writing solutions (Tiika et al., 2025; Ndlovu, 2025). Meanwhile, limited technical expertise among the administrative staff restricts meaningful engagement with the AI systems and requires structured training through formal capacity-building programs. Such challenges are heightened by unresolved ethical issues, whereby a well-defined governance and ethics framework contributes to users' apprehension in accepting AI in writing contexts within the longer term.

Although there is an increasing trend in research studies investigating the use of AI tools such as ChatGPT and Grammarly in academic and business writing, existing studies are mostly conducted on students, academics, and professionals in private settings, with less focus on administrative staff in public educational institutions. Further, although existing studies indicate the efficiency factor, language accuracy, and concerns in using AI tools in writing tasks, they often less contextualize these in relation to Occupational EOP tasks involving AI-based writing tools in English language scenarios, as in EOP-based frameworks at present. There has been a lack of empirical research in targeted aspects specifically defining administrative staff in public colleges in relation to their writing tasks in English in making use of AI-based writing tools in EOP-based frameworks at present.

3. Research Methodology

This study adopts a quantitative survey research design to examine administrative staff's awareness, use, and training needs related to AI tools in English writing within public colleges. Survey research is well-suited to capturing trends across institutional settings, particularly in studies focusing on technology use and professional practices (Creswell & Creswell, 2018). The target population is administrative staff, responsible for writing official documents in the college office. Data was collected using a structured questionnaire, aimed at collecting information regarding the participants' demographic information, the use of English in administrative contexts, familiarity and usage of the concept of writing using AI, and the training required.

The survey was conducted through multiple-choice questions and Likert scales, but with minimal opportunities for open responses. This was done through a combination of paper and electronic surveying to suit levels of electronic access. The quantitative data were analyzed through descriptive statistical analysis to show trends of the use of tools and training needs, while thematic analysis was conducted with open responses to complement the quantitative data. This is

reflective of best practices of existing research on digital literacy and AI implementation in work and EOP environments (Ng, 2012; Redecker, 2017).

Digital literacy is considered an understanding or a level of expertise that administrative personnel possess about AI-assisted English Writing. Based on this holistic construct of digital literacy, Ng (2012) designates that digital literacy is composed of technical skills needed in using digital technology, cognitive skills needed in critically analyzing or improving AI-created texts, in addition to augmented socio-emotional skills encompassing concepts of confidentiality institutionally intact. In administrative affairs that involve written communication on daily routines, insufficient digital literacy could impede administrative personnel from really using AI Writing Tools. Therefore, with this theoretical framework, this study establishes a relationship with administrative personnel digital literacy that affects AI tool utilisation skills.

4. Results

4.1. Demographics

Sixty administrative staff members from public colleges in Punjab, Pakistan, were given the questionnaire. In terms of age, 28% (n = 17) of the participants were between the ages of 25 and 35, 46% (n = 28) were between the ages of 36 and 45, and 26% (n = 15) were over 45. Of the participants, 38% (n = 23) were female, and 62% (n = 37) were male.

In terms of education, 72% (n = 43) of them have a bachelor's degree, 18% (n = 11) have an intermediate degree, and 10% (n = 6) have a post-graduation degree. 54% (n = 32) of them had worked for six to fifteen years, 30% (n = 18) for less than five years, and 16% (n = 10) for more than fifteen years. In terms of computer literacy, 36% (n = 21) had basic skills, 43% (n = 26) had moderate skills, and 21% (n = 13) had advanced skills.

4.2. Use of English at the Workplace

An overwhelming percentage of participants (87%, n = 52) used English "often" and "sometimes" in official documentation, but a smaller percentage (13%, n = 8) of participants reported using English rarely. Reading and writing skills were predominantly used in the form of letters, memos, job applications, and official notifications. However, only a small percentage (34%, n = 20) of the participants were confident of writing in English, whereas a higher percentage (66%, n = 40) found it difficult regarding grammar, sentence construction, and formal writing, though English had been predominantly used in official correspondence.

4.3. Awareness of AI Writing Tools

The familiarity with the AI software also varied. 68% (n = 41) admitted to being aware of the Grammarly software available, 41% (n = 25) knew the Google Translate software, 28% (n = 17) knew the ChatGPT software, and only 15% (n = 9) of the participants knew the software that included Microsoft Copilot and QuillBot. Interestingly, 24% (n = 14) of the respondents claimed to know nothing about the AI writing software available. There definitely existed a digital divide here.

4.4. Usage Patterns of AI Tools

The levels of usage remained lower than the levels of awareness. The most used tool was Grammarly, with 52% (n = 31) using it regularly, mainly for grammar and spell checks. The usage of Google Translate stood at 36% (n = 22), mainly for the translation of official documents. The usage of ChatGPT remained low at 12% (n = 7), mainly among the young or more technically knowledgeable members of staff. The levels of usage also showed that 20% (n = 12) used the tools

daily, 38% (n = 23) weekly, and 42% (n = 25) either rarely or not at all. There remained very little involvement with the advanced usages of the tools.

4.5. Challenges in Using AI Tools

Barriers which prevented the effective use of the AI tool, in order of rank, include a lack of formal training on how to use the tool (74%, n = 44), limited access to the use of the internet in the workplace (39%, n = 23), and difficulty following instructions based on the English language programming of the tool (33%, n = 20). Fear of making errors or a potential lack of understanding of the generated output from the tool, based on interpretations, was endorsed by 22% (n = 13).

4.6. Training Needs and Preferences

One of the most prominent training needs emerging out of the data was the requirement for AI-assisted training in the field of writing. A sum of 81% (n = 49) of participants expressed interest in the AI-assisted training in the field of writing. The training would have to include hands-on training in the form of demonstrations and would have to use bilingual (Urdu-English) manuals. Some of the training needs include grammar corrections, translation facilities, rephrasing of sentences, and the use of AI.

4.2 Thematic Analysis of Open-Ended Responses

Respondents were asked to offer brief, open-ended remarks regarding their experiences, knowledge, and training requirements regarding AI writing tools in order to supplement the quantitative findings. The limited English writing skills of the participants were evident in the numerous short, incomplete, or simple English responses, as well as the Roman Urdu expressions found in a number of them. Despite these linguistic limitations, the answers offered insightful information about the perspectives and difficulties faced by administrative staff. Five main themes emerged from the analysis of the data using Braun and Clarke's (2006) thematic analysis framework.

4.2.1. Perceived Benefits of AI Tools in Office Writing

Many respondents had favorable opinions of AI tools, especially for translation and grammar correction, despite their limited language skills. Statements like "Translate help me English letter" and "Grammarly correct mistake fast" show how respondents primarily valued AI tools as support mechanisms for basic writing accuracy. Some responses combined Roman Urdu and English, such as "English weak hai, Grammarly help karta hai," implying that AI tools helped make up for language barriers in everyday office tasks.

4.2.2. Obstacles in Efficient Utilization of AI-enabled Tools

One dominant theme that emerged is that it is difficult to work with AI applications when there is no guidance. The responses were often fragmented, for example, 'No training provided', 'System allow nahi', or others like 'English instructions hard'. The fragmented responses borrow from the digital divide that the administrative workers experience, as well as from the linguistic divide, which is evident in the involvement of English interfaces.

4.2.3. Need for Context-Based Training

Training was considerably emphasized in the responses, but these responses were typically given in simple terms. These included "Training hona chahiye", "Office letter Sikha dein", "Urdu main samjha dein", and so on. These responses suggest that practical training centered on using AI tools for applications, memos, and letters would be more appropriate, while training on advanced features is less desirable.

4.2.4. Fear, Hesitation, and Low Digital Confidence

Some responses showed an emotional inability to cope while working with AI tools. The responses were often in the form of an incomplete sentence, "Mistake ka dar", "Samajh nahi aata", or "colleagues kya sochain ge". These responses indicate the existence of a psychosocial barrier. It means that the fear of being judged and the embarrassment factor prevent the administrative staff from trying new digital tools. This is very much connected to their inability to speak English effectively.

4.2.5. Awareness of AI Limitations

However, though less common, some participants expressed an understanding that AI technology sometimes does not give reliable results. While still very simple language, the answers did express some developing critical thinking, like 'Sometimes wrong suggestion' or 'English too high level.' These answers indicate that the administrative personnel understand the need to check and process AI results, thus emphasizing the need to train the personnel to develop an evaluation rather than dependence on AI technology.

5. Discussion

The results of the study indicate an informative scenario of the awareness and utilization of AI writing tool software among the administrative staff of public colleges. Although there is partial awareness about the use of digital writing software like Grammarly, Google Translate, and ChatGPT, the usage is still very low due to a lack of digital literacy skills and infrastructure. Both of these have been identified as significant in hindering the non-academic staff from leveraging the skills and knowledge of evolving technologies in the educational space (Warschauer, 2004; Ng, 2012).

The ignorance about the use of ChatGPT and Grammarly, which are extremely popular worldwide, may be analyzed in the context of the digital divide, which is driven by not just hardware accessibility but also knowledge and intention to use them in van Dijk's (2006) framework. Even though the administrative staff were somewhat familiar with the names of these aids, they were ignorant about how to implement them. This is in line with the model proposed by Ng (2012), which demonstrates that digital literacy consists of technology, cognition, as well as sociocultural components, of which the latter two are weak in the sample population. This low usage could also be attributed to the scarcity of digital training courses specifically tailored for office tasks, and are normally not part of technology training schedules within public institutions (Eshet-Alkalai, 2004). In this case, despite having the tools on their technology gadgets, people are finding it difficult to work with interfaces with a basic level of English and technology fluency.

One of the major findings of the present research is the complementary nature of English language proficiency and proficiency in the use of the digital tool. The administrative staff frequently found it difficult to follow the suggestions from the AI tool, and this was evident when the explanation of the suggestion was in English or when the explanation targeted complex grammar concepts. There is a major gap in EOP (English for Occupational Purposes) materials, which should, in fact, focus on enhancing writing skills and using practical digital platforms.

The need to link language learning to digital skills, specifically in the study of workplace education, has garnered increasing focus in research in recent years. As a case in point, Leu et al. in Leu et al. (2013) assert the notion that basic literacies are insufficient in the context of the modern workplace in the 21st century and need to be accompanied by newer literacies, which specifically relate to the interaction between digital media.

One of the most apparent challenges arising out of the data presented is the fact that the institutional infrastructure and support necessary for the adoption of AI tools do not exist. While this includes the absence of training sessions on the AI tool, it encompasses a broader range of challenges, including the unavailability of internet, the absence of available installed software, outdated systems, and the institutional work environment that does not encourage the exploration of such tools, nor does it encourage administrative staff to ask for help when needed. These challenges reflect those of the work of Erstad and Sefton-Green (2013), where they strongly emphasized the need for informal and institutional environments to work in tandem for the promotion of digital literacies. Furthermore, the adoption of AI tools appears to be a personal responsibility, a notion that supports the training processes of technological equipment, including its psychological aspects (Selwyn, 2010). The administrative staff's reluctance to adopt AI-based tools out of fear of being judged is a psychological factor that is never considered in technology training sessions (Selwyn, 2010). This is another reason to provide comprehensive training for normalizing practice by trial and error for those who are not teaching professionals.

However, despite the challenges, the findings showed some positive attitudes towards the use of AI tools, particularly from those individuals who had limited but significant exposure to the likes of Grammarly and Google Translate. The use of the tools had significantly reduced time as well as boosted confidence while writing, which supported the findings by Godwin-Jones (2022), an aspect that emphasized the future of writing assistants and self-paced language learning.

6. Recommendations for EOP Material Development and Policy

The findings from this study support the design of an ESP course based on the framework identified by Dudley-Evans & St John (1998), which takes account of Target Situation, Current Situation Analysis, and Learning Needs Analysis. The EOP materials must include the following:

- Realistic writing assignments (memo, circular, leave application)
- use of Grammarly tools and practice with ChatGPT
- Explanations with bilingual support (English with Urdu)
- Formats supporting diverse learning abilities (videos, manual guides, demos)

Moreover, it is important to ensure institutional policy encompasses digital training among the non-teaching staff in the institution, and ensure the infrastructure, motivation, and support are incorporated in the implementation process. According to UNESCO, in the year 2021, digital literacy in learning institutions should not be considered an isolated responsibility but rather a whole institution affair.

Conclusion

In conclusion, this research contributes to the growing literature on the role of digital support for written communication in the workplace by highlighting the neglected administrators in public colleges. The need for their accessible and functional AI technologies, allied to EOP instruction in context, points to the serious issue that the educational policymakers must take remedial steps by investing in the necessary intersection of language education and education about the digital world. With a proper foundation, the uses of AI technology are endless for filling the divide that could ensure effective, confident, and proficient communication in the educational workplace.

References

Alali, S. (2019). Business communication in global contexts: Studying the experiences of native English speaking (NES) and non-native English speaking (NNES) professionals in multilingual, multicultural organizations (Doctoral dissertation, Miami University). OhioLINK Electronic Theses and Dissertations Center.
http://rave.ohiolink.edu/etdc/view?acc_num=miami1556203981889352

Al-Zaghier, Z., Alnaqbi, N. M., Matroud, A. A., & Abdalgader, K. (2023). Exploring opportunities and challenges of using ChatGPT in professional writing instruction. In *Proceedings of IEEE TALE 2023* (pp. 1–6).
<https://doi.org/10.1109/TALE56641.2023.10398234>

Apelman, V. (2010). English at work: The communicative situation of engineers (Licentiate thesis, University of Gothenburg). Gothenburg University Publications Electronic Archive.

Basturkmen, H. (2010). *Developing courses in English for specific purposes*. Basingstoke: Palgrave Macmillan.

Belshaw, D. (2011). What is 'digital literacy'? A Pragmatic investigation., Durham theses, Durham University. Available at Durham E-Theses Online:
<http://etheses.dur.ac.uk/3446/>

Bozkurt, A. (2023). Generative AI, Synthetic Contents, Open Educational Resources (OER), and Open Educational Practices (OEP): A New Front in the Openness Landscape. *Open Praxis*, 15(3), pp. 178–184.
DOI: <https://doi.org/10.55982/openpraxis.15.3.579>

Bremner, S. (2012). Socialization and the acquisition of professional discourse: A case study in the PR industry. *Written Communication*, 29(1), 7-32.
<https://doi.org/10.1177/0741088311424866>

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.

Davies, C., & Birbili, M. (2000). What do people need to know about writing in order to write in their jobs? *British Journal of Educational Studies*, 48(4), 429-445.

Dudley-Evans, T., & St. John, M. J. (1998). *Developments in English for specific purposes: A multi-disciplinary approach*. Cambridge: Cambridge University Press.

Erstad, O., & Sefton-Green, J. (2013). *Identity, community, and learning lives in the digital age*. Cambridge University Press.

Eshet-Alkalai, Y. (2004). Digital literacy: A conceptual framework for survival skills in the digital era. *Journal of Educational Multimedia and Hypermedia*, 13(1), 93–106.

Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, 5(1), 1–4.
<https://doi.org/10.11648/j.ajtas.20160501.11>

Godwin-Jones, R. (2022). Partnering with AI: Intelligent writing assistance and instructed language learning. *Emerging Technologies*, 26(2), 5–24.

Hu, J., & Gonzales, L. (2020). English-as-an-additional-language employees' perspectives on writing in the workplace. *BC TEAL Journal*, 5(1), 91-108.

Imtiaz, S., & Sarwar, M. (2014). Needs analysis and a course design of English for Specific Purposes for the administrative staff (clerks) of Govt. Islamia College, Lahore. *Research Journal of English Language and Literature (RJELAL)*, 2(3).

Kiriş, S. B., & Gürül, B. (2025). Drivers and barriers to adoption and diffusion of AI applications in public administration. In *Advances in public policy and administration (APPA) book series* (pp. 1-38). IGI Global. <https://doi.org/10.4018/979-8-3373-2272-8.ch001>

Leu, D. J., Kinzer, C. K., Coiro, J., Castek, J., & Henry, L. A. (2013). New literacies: A dual-level theory of the changing nature of literacy, instruction, and assessment. In D. E. Alvermann, N. J. Unrau, & R. B. Ruddell (Eds.), *Theoretical models and processes of reading* (6th ed., pp. 1150–1181). International Reading Association.

Machili, I. (2014). Writing in the workplace: Variation in the writing practices and formality of eight multinational companies in Greece (Doctoral thesis, University of the West of England). UWE Bristol Research Repository.

Mujtahidin, M., Zulkifli, Z., & Hudaeri, H. (2025). Hubungan antara penguasaan literasi digital dan pemanfaatan AI dengan kinerja karyawan di industri ekonomi. *PJMR*, 1(1), 6–10. <https://doi.org/10.70716/pjmr.v1i1.92>

Niam, A., Insani, M. R., Sukmawati, S., & Hike, F. (2025). The role of artificial intelligence and digital literacy in enhancing employee effectiveness and efficiency in the economic sector. *Journal of Economics and Management*, 3(1), 15–20. <https://doi.org/10.70716/ecom.v3i1.134>

Ndlovu, S. (2025). AI-driven tools for sustainable public administration. In *Advances in public policy and administration (APPA) book series* (pp. 81–112). IGI Global. <https://doi.org/10.4018/979-8-3693-8372-8.ch004>

Ng, W. (2012). Can we teach digital natives digital literacy? *Computers & Education*, 59(3), 1065–1078. <https://doi.org/10.1016/j.compedu.2012.04.016>

Parycek, P., Schmid, V., & Novak, A.-S. (2023). Artificial intelligence (AI) and automation in administrative procedures: Potentials, limitations, and framework conditions. *Journal of the Knowledge Economy*. <https://doi.org/10.1007/s13132-023-01433-3>

Parra-Valencia, J.-A., & Massey, M.-L. (2023). Leveraging AI tools for enhanced digital literacy, access to information, and personalized learning. In *Artificial intelligence and education* (pp. 213–234). Springer Nature. https://doi.org/10.1007/978-3-031-40635-5_9

Randive, S., & Nalkar, J. (2024). The transformative use of artificial intelligence in augmenting email writing skills in the corporate workplace. *International Journal for Multidisciplinary Research*, 6(5). <https://doi.org/10.36948/ijfmr.2024.v06i05.27843>

Rahman, T. (2020). *English in Pakistan: Past, Present and Future* (pp. 127–148). Springer, Cham. https://doi.org/10.1007/978-3-030-52225-4_9

Rahman, T. (2015). *Pakistani English*. Islamabad: Quaid-i-Azam University.

Redecker, C. (2017). *European framework for the digital competence of educators*:

DigCompEdu. Publications Office of the European Union. <https://doi.org/10.2760/159770>

Romadhoan, M. G. E. (2024). Has AI cracked the code on English proficiency assessments? A look at how AI is revolutionizing writing evaluations. *Journal of Qualitative Research in Language Education*, 1(1), 15–28.

Schrivener, K. A. (2023). Is artificial intelligence coming for information designers' jobs? *Information Design Journal*, 28(1), 1–6.

Selwyn, N. (2010). Degrees of digital division: Reconsidering digital inequalities and contemporary higher education. In *Rethinking learning for a digital age* (pp. 35–45).

Tiika, B. J., Lotsu, S. A., & Buame, J. A. (2025). The role of AI in shaping the discharge of duties of university administrators: A systematic review. *Pan-African Journal of Education and Social Sciences*, 6(2), 13–31. <https://doi.org/10.56893/pajes2025v06i02.02>

UNESCO. (2021). *Reimagining our futures together: A new social contract for education*. UNESCO Publishing.

Vinh, V. M., & Hùng, N. X. (2025). AI-driven success: Exploring the role of technology readiness and artificial intelligence integration on digital business performance. *Journal of Economics, Finance and Management Studies*, 8(9). <https://doi.org/10.47191/jefms/v8-i9-44>

Van Dijk, J. (2006). Digital divide research, achievements and shortcomings. *Poetics*, 34(4–5), 221–235. <https://doi.org/10.1016/j.poetic.2006.05.004>

Warschauer, M. (2004). *Technology and social inclusion: Rethinking the digital divide*. MIT Press.

Wee, H. B., & Reimer, J. D. (2023). Non-English academics face inequality via AI-generated essays and countermeasure tools. *BioScience*, 73(7), 476–478.

Zhao, X., Sbaffi, L., & Cox, A. (2025). The digitisation of writing in higher education: Exploring the use of Wordtune as an AI writing assistant. *Electronics*, 14(6), 1194. <https://doi.org/10.3390/electronics14061194>