

Postgraduate Supervision in a ChatGPT World: What's Next?

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Abstract

This study explores the considerable challenges for research supervisors of postgraduate students in Higher Education. For experienced academics, the responsibility of assessing theses and dissertations has never been more critical. With the advent of ample search engine opportunities, Generative Artificial Intelligence (GenAI) technology, and adhering to proper academic integrity processes, how can supervisors navigate these complexities, unsupported by solid procedures, due to the rapidly changing nature of AI? If a supervisor is concerned as to the integrity of the presented work during the supervisory process, what options are available to the supervisor to address concerns with the student in an informed and protected way? This work draws from theoretical perspectives, discussions with research supervisors, including early career supervisors, collegial deliberations, and considerations.

This paper will explore what research supervision is and the challenges associated therein. Recommendations for best practice will be presented for discussion during the proceedings.

Keywords: *Research Supervision; Artificial Intelligence (AI); ChatGPT; Higher Education Supervisory Challenges.*

1. Introduction

Acting as a research supervisor in Higher Education (HE) is challenging and complex. Many academics and lecturers avoid it entirely mainly due to the fear of the nature of this type of student engagement. Discussions with colleagues reveal a preference for traditional educational delivery; general lecturer/ student interaction in a lecture hall setting. Many reasons exist for this; first, it is a much more formal process; second; the learning process is mostly at a distance, is pre-prepared; third; personal interaction is limited, fourth, many are comfortable with tried and tested delivery methods. Adding in nouveau complexities of contract cheating, Artificial Intelligence (AI) using ChatGPT; a game changer and disruptor in HE, academic weariness is heightened as many Universities try to better understand AI and ChatGPT. The vastness and

implications of these AI tools are not clarified for most staff, with few policies or clear strategies in place to work with it, against it, embrace or ban it. Overall, lecturers believe that they are more protected and less exposed in the traditional approaches of delivery. If, however, academics continued only with traditional modes of education, avoiding all forms of research supervision, valuable academic output, or the encouragement of future expert supervisors will not be fostered. Academic outcomes and higher research levels are essential where new contributions are the foundation of progress in each discipline to improve practice and knowledge (Wright, 2020). What guidance/best practices are available for supervisors, however? Government publications in Ireland outline “research excellence is fundamental” to the quality of research activity and “involves an evolving range of research practices that research performers need to embed” (Gov.ie). The HEA’s *Principles of Good Practice in Research in Irish Higher Education Institutions* (2019) provide “a clear and consistent framework for HE institutions” (Gov.ie), however, can this keep pace with technology and AI? University recommendations are to create assessments that cannot use AI, however, the very nature of a dissertation is detailed extended text, and the issue with GenAI is it struggles to generate accurate reliable citations, for now. This machine learning tool will learn and evolve, however. Researching for this paper, reading Cotton *et al.* (2023) was interesting. Most of their paper was written using GenAI. It was eye opening, yet hopeful, as there are evident issues with ChatGPT. The paper here presents an overview of the situation faced by research supervisors by examining the practical contributions using the literature review as a method (Snyder, 2019).

2. Approach: Aim, Objectives, Method

The main aim here is to examine the supervisory dynamic for educators in tertiary education. Specific objectives include reviewing and outlining the challenges faced by research supervisors, identifying pertinent issues and best practices, finding opportunities for improvement, development, and training; identifying ways to support lecturers to supervise; reflection on AI but not expecting to find any immediate solutions. To garner a deep appreciation of the concepts and challenges in relation to research supervision, first an extensive review of the relevant literature was undertaken through searches in Science Direct, Scopus, EBSCOHOST, and University Websites, Government and HE websites such as, QQI (Quality & Qualifications Ireland) and the HEA (Higher Education Authority), the Department of Further and Higher Education, and the National Academic Integrity Network (NAIN) to understand the current and situational context for Tertiary education and the impacts on research supervision. Informal discussions with colleagues took place across various disciplines and geographies to understand challenges. From this, current and future research approaches are identified to try to establish the existing fears in this educational context and with a view to identifying the next steps in the process. The aim of the approach is to establish a base line and from here, look for support to produce additional tool kits and training opportunities. Documentation and policies

exist, but they do not include direction for AI specifically. Next steps will include interviewing relevant HE supervisors and identifying future lecturers interested in supervision to gather further information to inform tool kit development. This tool kit will be developed with the support of n-TUTORR¹ which was established for the transformation of learning in the Technological Universities in Ireland. This work is pertinent, relevant, applicable, and transferrable across transnational international HE Institutions.

3. Understanding Research Supervision

Quality high level research supervision is expected in HE where robust quality assurance underpins all supervision especially at doctoral level (HEA.ie). For doctoral education, the core element is the advancement of knowledge, original research, and critical thinking. For supervisors, this is underpinned by academic freedom and innovative thinking (HEA.ie). Considered a nurturer and the most advanced level (Zhao, 2001), research supervision is the highest level of delivery. It requires multitasking with intricate skills, expert field work and knowledge, stakeholder management, navigating funding bodies and sensitive relationship management. Relationship management/dynamics between the parties (student/lecturer) are often complex, however, in many cases little advice is available, particularly, to early career supervisors. Many are fearful of showing weakness in fear of impacting careers (Wright, 2020). In many ways it's a marriage, both parties start out with the best intentions, hopes and aspirations, however, unforeseen circumstances and differing outcomes/outlooks can drastically change the dynamic. Research students start this marriage looking for optimal supervision (Zhao, 2001); supervisors are often looking for outputs, publications, grant writing and reduced timetabling. So, like all marriages it is a shared process. In Ireland, the National Framework for Doctoral Education proposes excellence in all forms of doctoral education while providing a set of principles. It is consistent with European and international standards including the Salzburg principles, the Salzburg II recommendations, and Principles for Innovative Doctoral training (HEA.ie). In the UK, *The Good Supervisory Practice Framework* (Taylor, 2019), acknowledges the highly complex and demanding roles in modern research supervision, however, issues of GenAI are too recent and were unforeseen to be included. When it comes to supervisory approaches, many exist. (Gatfield, 2005; Lee, 2007); and (Lee, 2007; Lucey *et al.*, 2021) advocate mentoring. In contrast, Zhao (2001) uses rigorous research plans with no 'ad hoc' methods. In the new landscape, previous concerns of managing dynamics, quality outputs, gender balance, fade as nothing could have prepared supervisors for ChatGPT.

¹ Transform student experience/ developing staff capabilities (mtu.ie(a)). EU Funded; NextGenerationEU, The Department of Further & HE, Research, Innovation & Science (accountable Department), The Higher Education Authority (accountable agency) for NRRP funded n-TUTORR project. n-TUTORR: co-ordinated through THEA (Technological Higher Education Association) (transforminglearning.ie).

3.1. The Use of Artificial Intelligence (AI) ChatGPT

The use of AI by students is becoming a major concern for Universities, especially with long written assessments. Many tools exist that can be used to generate content, and ChatGPT is most used due to its “user friendly” application (Li *et al.*, 2023). It is an AI chatbot that can understand context, nuance, humour, built on OpenAI's foundational large language models (LLMs) like GPT-4 and its predecessors proving that machines can ‘learn’ the complexities of human language and interaction (Marr, 2023). OpenAI released an early demo of ChatGPT (November 30, 2022) and this chatbot went viral on social media as users shared its capabilities. GPT-4, the latest most advanced can write and answer anything (Marr, 2023). This rapidly advancing tool has profound impacts on how academics examine, particularly postgraduate work. ChatGPT changes dynamics, roles and trust (Dai *et al.*, 2023) when writing a dissertation/thesis². Currently, HE institutions are challenged to provide guidelines/best practice for supervisors because of advancement in speed of machine learning. By the time a document is written and released to staff, AI has galloped on leaving academics in its wake. To better understand AI, Li *et al.* (2023) examined agreed use of ChatGPT with three of their Ph.D. students’ interaction with ChatGPT. Findings uncover benefits like quick reference and effective self-teaching. Li *et al.*, (2023) note some Universities agree to its use with faculty knowledge; but where does plagiarism fit in this debacle?

3.1.1. Plagiarism

Concerns such as the grave issue of plagiarism and resulting disciplinary procedures with ChatGPT exist. Plagiarism, defined as “the action of taking someone else's work, idea and passing it off as one's own; theft [oed.com; mtu.ie(c)]; from the Latin *plagiarius*, ‘kidnapping’ (Oxfordreference.com). The University of Oxford goes further providing clarity on AI; “all published and unpublished material, whether in manuscript, printed or electronic form, . . .and material generated wholly or in part through AI (except AI pre-authorized)” (ox.ac.uk). When discussing ChatGPT with colleagues, the first concerns are ‘where does this sit with current regulations on plagiarism? Consulting new guidelines (Mtu.ie(b)) finds use of AI “should be viewed as explicit instances of plagiarism”. Without any policy of intervention, ChatGPT is here to stay, and employers will want graduates to use these tools. So, how students can take advantage of ChatGPT while embracing integrity is what educators need to consider.

3.2. Discussion

Creative and imaginative ways to use AI to engage students and personalise learning experiences exist (Cotton *et al.*, 2023), still, plagiarism concerns remain within the overall

² *Dissertation* and *thesis* often used interchangeably; in Ireland, a dissertation is more commonly used at undergraduate/taught Masters (*minor thesis* is also used), whereas *thesis* is generally associated with PhD's (UCD.ie).

purpose of HE. This gray area could devalue degrees but will depend on each HE Institution's procedures developed and aligned with HE policy. Interestingly, Cotton *et al.* (2023) tested ChatGPT with colleagues and wrote an academic paper on ChatGPT and students using ChatGPT. They found ChatGPT provided cohesive relevant writing, however, the content was repetitive and did not have critique, or analytical capacity. Reading their artificial paper, the researcher finds cohesive very logical writing, lacking creativity, new insights, or learnings. The main findings are that AI tools at this moment generate very similar writings on any one topic; if generated for multiple students, then patterns will arise leading to detection with the correct University tools. Titchener and Greene, (2023) advise that integrity concerns will arise throughout a candidature and resolve these promptly to avoid inappropriate practices that can become deep rooted and carry forward within the future culture of the student when they are supervisors. Dai *et al.*, (2023) explore the impact of ChatGPT on five dimensions of research supervision approaches such as functional, enculturation, critical thinking, emancipation and relationship development through perspectives of 20 postgraduate research students with 4 month's experience of approved use of ChatGPT. They find that ChatGPT "accelerated research progress, enhanced research quality, improved scholarly development and professional skills, enhanced critical thinking, increased student confidence and autonomy and a deeper supervisory relationship" (Dai *et al.*, 2023). Certainly, Dai *et al.*, (2023) provide a different perspective and suggest a change in roles and duties of supervisors and postgraduates; supervisors outline high-level guidance, students move from novices to self-directed researchers using ChatGPT. Cotton *et al.*, (2023) conclude that while the use of AI presents opportunities and challenges, Universities can effectively address concerns by taking a proactive and ethical approach to the use of these tools, while Dai *et al.*, (2023) conclude there will be an evolving model of postgraduate supervision where technology serves as 'epistemological tools' enhancing supervision. Kelly (2023) says we must engage in AI literacy and consider how we assess. From the student perspective, Dai *et al.*, (2023) found that where postgraduates used ChatGPT (with permission), they understood more of the capacities of it, and progressed to tailor it to their needs. However, of concern are issues of authenticity and accuracy in AI outputs (Sikstrom, 2023). Obviously for a dissertation, this is unnerving, so, Dai *et al.* (2023) note students stopped using it and cross-validated sources. This demonstrates students learned from using the tool, and gained an in depth understanding of it, changing their approach when using ChatGPT.

4. Recommendations: Supervisory Responsibilities and Best Practice

Academic supervisors are in pivotal positions to guide practice and must not shy away from challenges (Wright, 2020). Supervisors hold key positions to mentor and ensure students have appropriate robust grounding in conduct (Lucey *et al.*, 2021; Titchener and Greene, 2023). Supervisors must stay current, undertaking professional development, improving practice where possible, (Taylor, 2019) especially now with AI. Many supervisors are not afforded specific

supervision training (Wright, 2020) and for most Tertiary Institutions, no compulsory modules, or training exist. However, all HE institutions must be placed to support supervisors and provide training. Now is the time to further collaborate (Wright, 2020) to see what processes are in place through proven evaluated programmes in an international capacity. Postgraduate students struggle in terms of what is required of them, therefore more formal class work with support will be beneficial (Wright, 2020) with clear roadmaps (Gatfield, 2005). Opportunities are there to empower learners and staff capabilities. Supervisors must abandon ‘ad hoc’ approaches (Wright, 2020) for postgraduate supervision to more formalized structured approaches with scaffolds. Government funded projects exist to transform HE such as n-TUTORR in Ireland, for HE to progress towards sustainable educational; now is the time to act and embed correct approaches. Universities endeavor to engage in creating AI literacy curricula and protocols for staff and students for responsible use of generative AI tools (Dai *et al.*, 2023). Awdry (2023) believes there is a place for AI once students are supported to work with integrity that deters them from cheating. In an Irish context, QQI established The National Academic Integrity Network (NAIN)³. NAIN is framed by the challenges of contract cheating, established under new legislation tackling providers of contract cheating (Kelly, 2023). NAIN draws from national and international guidance to engage with challenges of academic misconduct; embed a culture of academic integrity and develop tools for providers.

4.1. Recommendations & Conclusions

Change will only be affected if emerging good practices are embedded across research disciplines (Gov.ie). The introduction of new HEA legislation⁴ for AI clarifies and enhances oversight, governance, and relationships for HE. The Irish Government are committed to ensure Principles of Good Practice are implemented by HE institutions (Gov.ie) and supervisors must be guided here. Future investments, resources and training will be substantial for Governments as they move positively ahead. Future assessment strategies must reflect what is happening with AI (Kelly, 2023) and postgraduate programmes can leverage generative AI tools for AI-enhanced research supervision models (Dai *et al.*, 2023). Start immediately with discussions with colleagues, don’t be afraid to outline fears, join communities of practice, look for training, tools, and support. Encourage students to ‘own’ their work, use robust practices, and be proud of what they produce with no risk of future challenges. What are the differences now in terms of plagiarism? There are none. Concepts are the same, if you copy any content, ideas that are not your own, either human or AI generated, this is plagiarism. It is reminiscent of the initial

³ NAIN Members = public HE institutions/universities/IOT’s independent providers/students/student representatives (qqi.ie).

⁴ New legislation for this for the first time in fifty years

debate of Wikipedia use, students were told, if you want to 'google' and consult Wikipedia, do, however, it is not an academic source, not legitimate, cannot be authenticated and therefore cannot be used in HE. Supervisors and postgraduate students, Theses and dissertations need the "construction of nuanced arguments" [MTU.ie (b)], the development of empirical, critical, creative thinking; ChatGPT hasn't 'Learned That Yet'!

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