2024 European Quality Assurance Forum

Enhancing education, research and societal engagement through quality assurance

Hosted by University of Twente, Netherlands
14-16 November 2024

ISSN: 1375-3797

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Short bio:

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Paper

Title: Assuring and enhancing the quality of AI-transformed higher education: staying ahead of the curve

Abstract

As higher education sectors worldwide adapt to generative AI, our understanding of what 'high quality' provision in an AI-enabled world is evolving. This paper will explore ways in which learning and teaching is shifting to adapt to the open-access of generative AI tools, and outline implications for quality assurance activity. It will highlight the implications of AI on quality and standards in the higher education sector, identifying historic approaches or assumptions that may need to evolve as time goes on. The paper will explore ways in which both universities and quality agencies can support the transition to an AI-embracing sector, balancing the opportunities with mitigating the risks. From providing assurance on robust academic integrity approaches, to driving enhancement in assessment design, the paper will provoke audiences to reflect on their own practices in order to ensure we are able to identify, assure and enhance high quality provision in an AI-transformed sector.

Introduction

Higher education plays a crucial role in any society, producing skilled graduates for the labour market, but also providing citizens with social, cultural and economic capital. Over the decades, the higher education sector has always adapted to technological shifts. Mathematics courses adapted to the existence of the calculator. Nobody expects students to abstain from using Google when researching course content. Generative artificial intelligence (GenAI) is no different.

When ChatGPT launched as an open access tool in November 2022, higher education sectors across the globe quickly became concerned about its impact on academic standards and quality in learning and teaching. Two years on, ChatGPT is one of millions of GenAI tools that are available on the

internet: text generators, picture generators, video generators, code generators, powerpoint slide deck generators, some pay-walled, some free.

This technology is already rapidly changing the world of work. It is clear that graduates will need to know how to use these tools critically and effectively in the workplace. Indeed, graduates who have advanced critical AI literacy[1] are likely to be more competitive than graduates who don't. The higher education sector therefore has a role to play in supporting the development of graduates who have critical AI literacy.

Just as important, is the need for the higher education sector to protect academic standards and maintain quality in the face of these technologies. GenAI tools force higher education sectors to think about the way they deliver higher education, and how they might need to adapt in response. In many ways, GenAI tools accelerate the need for the sector to reckon with questions they should have tackled a long time ago: what is the right balance of skills and knowledge in a course? Are we too reliant on the essay as a form of assessment? Are we assessing students in a way that is 'authentic' to life after graduation?

The ubiquity of GenAI necessitates transformation in higher education. It is neither feasible nor desirable to try and "put the genie back in the bottle". Now, higher education sectors across the globe will need to embrace AI, with appropriate safeguards and caveats, in order to future proof provision, support students into the labour market, and realise its potential to facilitate, democratise and deepen learning.

This paper outlines three key themes where GenAI tools are changing the higher education sector: the impact of GenAI on learning and teaching approaches, internal quality assurance approaches, and the external quality assurance landscape.

The Impact of Generative AI on Learning and Teaching

Elevating importance of academic integrity approaches

One of the chief concerns associated with GenAI tools in higher education is the issue of academic integrity; whether or not a students' work can be trusted as their own, and therefore an accurate reflection of their learning. To complicate things, AI detection tools are not a reliable solution.[2]

Research is showing that AI detection tools are more likely to wrongfully flag the work of neurodivergent students[3] and non-native English speakers[4] as AI generated, posing significant equity issues when using these tools. Moreover, students with the financial means to access more sophisticated tools are more likely to be able to evade either manual or technological detection.[5]

Perhaps most importantly, approaches to academic integrity that rely solely on detection do not account for the possibility of reasonable co-creation between a student and GenAI tools.[6] Given students will need to have critical AI literacy skills in the labour market, reasonable co-creation is likely to be an important way to develop that throughout a students' degree.

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[1] M. Bali, What I mean When I Say Critical AI Literacy, (2023) https://blog.mahabali.me/educational-technology-2/what-i-mean-when-i-say-critical-ai-literacy/

[2] V. Sadasivan, A. Kumar, S. Balasubramanian, W. Wang, S. Feizi (2023), Can AI-Generated Text be Reliably Detected? https://arxiv.org/abs/2303.11156

[3] W. Gegg-Harrison, C. Quarterman, AI Detection's High False Positive Rates and the Psychological and Material Impacts on Students (2024). https://www.researchgate.net/publication/378200791

[4] W. Liang, M. Yuksekgonul, Y. Mao, E. Wu, and J. Zou, GPT detectors are biased against non-native English writers (2023). https://www.sciencedirect.com/science/article/pii/S2666389923001307

[5] D. Weber-Wulff et al., Testing of detection tools for AI-generated text (2023). https://edintegrity.biomedcentral.com/articles/10.1007/s40979-023-00146-z

[6] C. G Ardito, Contra generative AI detection (2024) Presentation at AdvanceHE's AI Symposium

Looking to the future, it is likely that human/AI hybrid writing will become the norm, in the same way human/google hybrid or human/spellcheck writing is already. The notion of human/AI hybrid writing is one of six factors that Professor Sarah Eaton describes as a 'post-plagiarism' world.[7] The transformation of higher education needs to take into account this likely future.

With a post-plagiarism world in mind, the most effective approaches to academic integrity are likely to be 'upstream' interventions that focus more on developing a deep understanding among students about what is and isn't good practice, partnering with them in developing their own learning experience and journey to increase engagement, and intentionally designing 'in' GenAI to the curriculum to build critical AI literacy.[8]

Varied and carefully designed assessments

If broad trust in academic integrity declines, so too does the value of a degree where stakeholders cannot trust that a students' achievement was gained honestly and genuinely. Given the challenges to academic integrity, one of the best and most sustainable responses to GenAI tools that higher education providers can implement is a review and refresh of assessment approaches. At all levels, the education system relies heavily on the assumption that an assessment 'output' like an essay, is evidence that a learning process has taken place. GenAI tools mean that outputs can be produced with no learning process having taken place. There is increasing research[9] that suggests AI tools can produce assessment outputs that not only fool academic staff but are often marked higher than student-produced equivalents.

Dr Brenna Clarke Gray queries whether the reason we are concerned 'robots' can write like humans is that we have "trained our learners to write like robots."[10] It is important to reflect on why we assess students, and how we assess them. This might involve thinking through the right balance of formative and summative assessments, the balance of knowledge transfer versus skills acquisition, and whether the output or learning process is the focus of assessment.

Across UK universities, a common approach is emerging, whereby assessments have some kind of 'AI scale' articulated on assessment briefs[11]. Simply put, assessments might completely prohibit any use of GenAI tools, might specify particular ways in which the tools are permitted to be used, or might specify that using GenAI tools is expected in completing the assessment. By using a consistent framework that allows local flexibility within a provider, students are given clear information about what is expected of them in each assessment, and providers are forced to think about what the most appropriate assessment approach for each individual set of learning outcomes is.

Another consideration that is emerging from piloted approaches[12] in UK higher education providers, is the timing of when to introduce the use of GenAI tools to students. Often, higher education providers find higher benefits of integrating GenAI tools into a course after foundational knowledge and skills have been learned. There is a danger that relying too heavily on tools too early on in a course makes students more likely to be reliant on the tools for foundational understanding of concepts, which can include hallucinations. By contrast, introducing GenAI tool use after foundational skills have been

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[7] S. Eaton, Postplagiarism: transdisciplinary ethics and integrity in the age of artificial intelligence and neurotechnology (2023) https://edintegrity.biomedcentral.com/articles/10.1007/s40979-023-00144-1

[8] T. Rasul et al., Enhancing academic integrity among students in GenAI Era: A Holistic Framework https://www.sciencedirect.com/science/article/abs/pii/S1472811724001125

[9] P. Scarfe, K. Watcham, A. Clarke, E. Roesch, (2024) https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0305354

[10] B. Clarke Gray, Breaking What Was Already Broken: AI and Writing Assessments (2023) https://digitaldetox.trubox.ca/breaking-what-was-already-broken-ai-and-writing-assignments/

[11] University of Bath, Academic Integrity in the Generative Artificial Intelligence (GenAI) Context (2024) https://www.bath.ac.uk/announcements/academic-integrity-in-the-generative-artificial-intelligence-genai-context/

[12] D. Sallai, J. C. Silva, M. Baretto Approach Generative AI Tools Proactively or Risk Bypassing the Learning Process in Higher Education, (2024) https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4886015

learned and assessed made it more likely that students used the tools in a way that was overall conducing to their learning.

Equity, ethics and privacy

It should be noted that even a fully transformed higher education experience that embraces AI in learning and teaching can present challenges. Students from more affluent backgrounds are likely to have greater access to personal devices, high-speed internet, and superior GenAI software, allowing them to leverage tools more effectively, giving them an advantage.

This digital divide within providers can exacerbate existing inequalities, as students from wealthier backgrounds may have greater opportunities to explore AI-powered learning experiences and develop the skills needed to succeed in the digital age. As these tools become more sophisticated, it will be important for higher education providers to consider how they might help to 'level' the playing field for students to mitigate risks around inequality.

There is still potential for GenAI tools to collect and analyse student data without their consent. This can raise privacy concerns and create opportunities for misuse of personal information. To protect student privacy, universities must implement robust data protection measures and ensure that students are informed about how their data is being used.

In addition to developing guidelines and policies, universities should also foster a culture of ethical AI use. This can be achieved through open dialogue, education, and research on the ethical implications of AI in higher education. This includes educating students on the biases of tools that tend to exacerbate existing systemic prejudice against particular groups.[13]

The impact of Generative AI on internal quality assurance approaches

Maintaining academic standards

Over time, even if students use GenAI tools critically and ethically, and in line with their providers' expectations, it is still possible that students might be more capable when assisted by AI. This could see the proportion of upper-class degrees increase, and potentially undermine public trust in the value of a degree. In a world where academic standards are under pressure, externality becomes increasingly important. Reviewing and improving approaches to externality, such as peer-review of teaching and external examiners will become increasingly important in order to maintain public trust in academic standards.

For external quality assurance agencies, there will be a live question over the coming years as to whether the advent of GenAI and its integration into learning and teaching necessitates a review of academic standards. If a human/AI hybrid world becomes the norm, and students are capable of more when assisted by AI, there might be an argument to 'recalibrate' academic standards to take into account the increased expectations of student achievement.

Staying agile

GenAI tools are developing rapidly. It is therefore inevitable that institutional approaches to GenAI in learning and teaching will need to evolve over time. For example, some higher education providers have allowed students to use GenAI tools in an assessment, but require students to declare which tools they used, and how they used them[14]. As we move to a world where human/AI hybrid writing is the norm, and GenAI tools aren't a separate tool where you 'go' to use it, but are integrated into Microsoft Word and Google Docs, asking students to declare their use is likely to become increasingly

[13] UNESCO, Challenging systematic prejudices: an investigation into bias against women and girls in large language models, (2024) https://unesdoc.unesco.org/ark:/48223/pf0000388971

[14] University of Cambridge, Template declaration of the use of generative artificial intelligence https://www.cshss.cam.ac.uk/education/generative-artificial-intelligence-ai-and-scholarship/template-declaration-use-generative

difficult and futile. Higher education providers must therefore keep their approaches under regular review. This might involve changing the frequency and focus of internal quality committees to allow for effective evaluation of approaches.[15]

The impact of Generative AI on external quality assurance approaches

Spotting high quality provision in an AI world

Clearly, as the sector transforms to the existence of GenAI tools, our definition or perception of what high quality is might also differ. For example, since the pandemic, there is significantly more digital learning provision across sectors, much of which is high quality and increasingly trusted by students, quality agencies and the public. External quality assurance now views digital learning as just as legitimate a delivery model as traditional provision. In the same way, teaching with AI-integrated assessment, and building critical AI literacy are likely to be hallmarks of high quality provision. External quality assurance needs to be able to recognise it and commend it where it is done well.

Leveraging GenAI tools for data analysis and insight

Responding to AI-transformed learning and teaching is not the only thing quality agencies have to grapple with as GenAI tools become ubiquitous. GenAI tools also pose a new potential frontier of conducting external quality assurance.

First, GenAI tools could help to alleviate the burden on higher education providers and quality agencies in collecting and analysing data and evidence for quality assurance. Recent trends in quality assurance highlight an increased emphasis on data-led approaches, combining a traditionally qualitative approach to review with data-led areas of focus[16]. With fast processing power and intelligent algorithms, AI could quickly and accurately identify trends and flag potential areas of concern for more detailed review.

With better data and evidence, and faster, less burdensome ways of analysing it, AI could support predictive modelling, helping to identify potential risks to the student learning experience or student outcomes before they materialise. This would combat the current issues with time-lagged outcome data and save time and resource in the long term by catching problems before they begin to impact the student experience.

The data capability posed by AI also has applications for quality enhancement. In a UK context, using data sets like the National Student Survey, Teaching Excellence Framework submissions, course-level feedback, and cyclical review reports, extensive thematic analysis can be more easily undertaken by AI to identify common areas for enhancement, around which an independent body like QAA can then design a sector-wide programme of enhancement work to encourage collaboration above a minimum assured baseline.

Balancing human oversight and public trust

The value of any quality assurance exercise depends heavily on the level of stakeholder and public trust in its judgement. Should external quality assurance become AI-augmented, stakeholders will need transparency over how and why AI tools have been used throughout the process.

That said, there are still 'uniquely human' capabilities that we will likely need to safeguard over the next decade to instil public trust in quality assurance outcomes. If technology enhanced quality

[15] QAA, Maintaining quality and standards in the ChatGPT era, (2023) https://www.qaa.ac.uk/docs/qaa/members/maintaining-quality-and-standards-in-the-chatgpt-era.pdf?sfvrsn=2408aa81_10

[16] R.Mishra, Usage of Data Analytics and Artificial Intelligence in Ensuring Quality Assurance at Higher Education Institutions, (2019) https://ieeexplore.ieee.org/document/8701392

assurance approaches move faster than the sector and its stakeholders, it could undermine confidence in judgements.

Academic expertise and peer review are two core tenets of quality assurance approaches that centre the expertise of humans. AI might be able to speed up, and make more robust, the quantitative analysis of data that might form the basis of quality assurance information. But it is likely that more qualitative activities involved in review, such as contextualising data to a providers' context, understanding the way a provider operates on the ground, and engaging with staff and students, are better suited to human oversight. The combination of AI-augmented external quality assurance with defined areas of human oversight should provide richer and more robust assessments of quality that support providers to know their areas for development and how best to improve.

External quality assurance will have to adapt alongside learning and teaching practices as AI transforms the higher education sector over the next decade. But it will be important to understand the extent of public trust in AI-augmented aspects of quality assurance, so as not to undermine confidence in judgements. If used well, AI could support the development and analysis of a richer data landscape through which to understand quality and outcomes. Balancing that with human expertise will maximise robust, impactful external quality assurance that delivers high quality learning experiences for students.

Conclusion

As generative AI continues to revolutionise the educational landscape, higher education institutions must adapt their practices to harness its potential while mitigating its challenges. This necessitates a multifaceted approach that includes redefining academic integrity, revamping assessment methods, addressing the digital divide, developing AI literacy, prioritising ethical AI, and adapting quality assurance practices. By proactively addressing these issues, higher education institutions can position themselves at the forefront of the AI-driven future, ensuring that students receive a high-quality education that prepares them for the challenges and opportunities of the 21st century.