

More Than Memes: Recognition, Justification, and the Work of Understanding

Abstract

This short paper emerged from a multidisciplinary collaboration investigating the use of memes in higher education across Biology, Education, Forensic Science, Mathematics, Medieval History, and Russian Studies. As colleagues compared examples from different disciplines, it became clear that the most interesting questions were not about memes themselves. Instead, the project highlighted a broader issue concerning how learners encounter meaning through digital artefacts and how moments of recognition relate to deeper disciplinary understanding. What began as a study of memes ultimately led to a wider exploration of interpretation, justification, and the work of understanding in digitally mediated learning environments.

This short paper explores how digital artefacts - including memes, diagrams, AI-generated summaries, visual explanations, and discussion formats - shape interpretation within higher education. It argues that such artefacts often make ideas recognisable before they are fully justifiable within disciplinary frameworks. Students may identify patterns, coherence, or intended meaning before they are able to explain, critique, or defend those interpretations through disciplinary reasoning.

This distinction has become increasingly significant in the context of generative AI, where fluency and coherence can easily be mistaken for understanding. Drawing on examples from practice and insights from edusemiotics, digital pedagogy, and disciplinary learning, the discussion reframes digital artefacts not as simple engagement tools but as sites of interpretive and intellectual work. The paper concludes with practical reflective questions and open-access resources designed to support colleagues in working more intentionally with digital artefacts in their own teaching.

Keywords: memes, digital artefacts, edusemiotics, interdisciplinary

Students increasingly encounter disciplinary knowledge through digital artefacts (Herrington & Parker, 2013): AI-generated summaries, diagrams, simulations, videos, visual organisers, discussion threads, annotated examples and even memes. These artefacts do more than communicate information. They shape what becomes visible, what feels recognisable, and what kinds of interpretation become possible within digitally mediated learning environments (Gouseti et al., 2020).

Yet higher education still tends to discuss such artefacts instrumentally. Conversations often focus on whether they are engaging, innovative (Kiryakova, 2022), varied or efficient, or on how digital learning can meet the external drivers of policy and employment (Alenezi, 2023). These perspectives are valid but tend to treat digital artefacts as simply delivering content and output in newer packaging. What receives far less attention is how these artefacts shape interpretation itself (Schneider et al., 2021): what they foreground, what they compress, what they leave implicit, and what kinds of disciplinary reasoning they invite or obscure.

This matters because digital artefacts often make ideas recognisable before they are fully justifiable (Kress & Leeuwen, 2001). This distinction became increasingly visible through a multidisciplinary collaboration between colleagues working across the UK and Italy in Biology, Education, Forensic Science, Mathematics, Medieval History, and Russian Studies. Across the project, we explored memes not as gimmicks or motivational devices, but as compressed semiotic artefacts capable of carrying disciplinary knowledge, emotional meaning, cultural reference, and critique (Dancygier & Vandelanotte, 2017).

Same format, very different intellectual work

Using shared meme structures across disciplines proved especially revealing. The same visual template was used to represent escalating immune responses in Biology, chains of evidential reasoning in Forensic Science, logical contradiction in Mathematics, long-term historical consequence in Medieval History, literary motivation and tragedy in Russian Studies, and the cumulative effects of small pedagogical interventions in Education.

The meme remained recognisable across all examples, but the intellectual work shifted dramatically. In some disciplines the artefact compressed causal systems; in others it carried evidential reasoning, interpretive argument, emotional experience, critique, or historical continuity. The same visual grammar could therefore accommodate very different disciplinary ways of knowing while remaining broadly legible across subjects and national contexts.

That cross-disciplinary recognisability mattered because students and staff could often grasp what an artefact was “getting at” before they could fully explain or justify why it worked.

Students recognised that:

- a biological process was amplifying;
- a mathematical contradiction was problematic;
- a historical connection mattered;
- character motivation could shape narrative outcomes;
- or that a teaching intervention had consequences.

However, recognition alone did not secure disciplinary understanding. Students still needed to explain the biology, justify the mathematics, interpret the history, analyse the character and narrative events of the literary text, or account for why a pedagogical intervention might reshape participation, confidence, or judgement over time.

This gap between: “*I get it*” and “*I can explain why*” became one of the most significant insights emerging from the project.

Recognition is doing more work than we think

Edusemiotic perspectives on learning are useful here because they frame meaning-making as interpretive, relational, and inferential rather than simply transmissive (Semetsky, 2017). Learners connect image, text, prior knowledge, humour, cultural reference, disciplinary assumptions, and social context in order to produce meaning (Bini et al., 2022; 2023).

Mememes make this process unusually visible because they compress meaning so tightly, but the broader principle extends across digital learning more generally.

Interpretation often begins with a plausible reading before disciplinary justification is fully secured. Digital artefacts can therefore feel simultaneously illuminating and unstable: they create moments of recognition that may or may not yet be conceptually secure (Meyer & Land, 2003). In practice, this means artefacts can support entry into disciplinary thinking without guaranteeing movement through it.

That tension becomes particularly important in the context of generative AI. AI-generated explanations, diagrams, summaries, and responses frequently produce immediate coherence and fluency. Outputs often feel persuasive, complete, and recognisable long before students are able to evaluate or justify them within disciplinary frameworks (Bender et al, 2021).

The issue here is not simply factual accuracy. It is that fluency itself can be mistaken for understanding. A student may recognise the shape of an argument, the rhythm of academic language, or the appearance of explanation while still lacking the disciplinary grounding needed to evaluate, critique, or defend it (Anson & Straume, 2022). Generative AI therefore intensifies a dynamic already present across digital artefacts and higher education more broadly: the possibility that recognition outpaces justification (Bartholomae, 1985).

Recognition is important, though. It provides access points into difficult ideas, supports confidence, reduces intimidation, and helps students begin engaging with concepts that might otherwise feel inaccessible. Shared artefacts can also support social and relational learning by making interpretation discussable. Students compare readings, negotiate meaning, reveal uncertainty, and test assumptions collectively (Mercer et al, 2019). This emotional and relational dimension of learning is often overlooked in discussions of digital pedagogy, despite the role of emotion in shaping attention, confidence, meaning-making, and participation within higher education learning environments (Irving-Walton et al., 2023).

However, recognition cannot be mistaken for completion. The pedagogic challenge is not simply whether students recognise an artefact, but how teaching works with that recognition once it appears. In practice, this often means slowing the moment down: creating opportunities for students to move beyond immediate reaction, association, or familiarity and towards explanation, justification, and disciplinary reasoning.

Working with recognition

Across disciplines, working with digital artefacts often returns to a small set of deceptively simple questions. Rather than treating interpretation as self-evident, these questions help make the underlying intellectual work visible.

Before introducing an artefact:

- What kinds of thinking does this artefact invite?
- What knowledge has been compressed or assumed?
- What might students recognise immediately, and what will remain opaque?
- Who is likely to find this culturally or disciplinarily legible — and who may not?

During teaching:

- What counts as justification within this discipline?
- What prompts require explanation rather than reaction?
- Where are students relying on “it feels right”?
- How is interpretation being challenged, refined, or defended?
- Where is the real intellectual work in this activity?

When evaluating learning:

- Can students explain why, not simply what?
- Can they move between intuitive recognition and explicit disciplinary reasoning?
- What evidence shows understanding becoming more accountable, defensible, or transferable?

These questions move digital artefacts from being treated as engaging additions towards becoming sites of interpretive and disciplinary work.

Student-created artefacts prove especially revealing here. Creating a meme, AI prompt, diagram, or visual explanation requires students to decide what matters in a concept, what can remain implicit, and how meaning might be interpreted by others. These tasks frequently surface misunderstanding, but they also reveal humour, anxiety, frustration, confidence, and disciplinary identity (Immordino-Yang, 2016; Tidy et al., 2024) in ways more conventional academic tasks often conceal. The creative process of producing such artefacts demands genuine conceptual engagement - students must compress, select, and represent disciplinary knowledge in forms legible to an imagined audience (Bini et al., 2022; Bini et al., 2023; Dancygier & Vandelanotte, 2017). As Rodriguez-Guillen et al. (2024) point towards in their review of memes in educational contexts, the educational value of memes often lies not simply in motivation or engagement, but in how they externalise thinking and interpretation.

Small artefacts, bigger questions

Digital artefacts remain partial and unstable. They rely on shared cultural references that may not be equally accessible. They can oversimplify complexity or reinforce problematic assumptions if left uninterrogated; their meanings shift across contexts, audiences, and platforms while Generative AI further complicates questions of authorship, interpretation, originality, and trust.

For these reasons, digital artefacts are perhaps most pedagogically valuable not when they simplify learning, but when they expose the work required to secure understanding. They make visible the gap between recognition and justification; between encountering meaning and being able to account for it. That gap may be where some of the most important learning actually begins.

In this sense, our project moved beyond memes. It became about the conditions under which recognition develops into understanding, and understanding into something that can be justified, challenged, and defended.

In practice

For colleagues interested in exploring these approaches further, a number of practical open-access resources are available via Zenodo, including:

- *Digital Artefacts in HE Learning: From Recognition to Justification* (Irving-Walton, 2026a)
- *AI Modes of Engagement in Higher Education* (Irving-Walton, 2026b)
- *A Practical Guide to Creating and Using Memes in Higher Education Classrooms* (Tidy, 2026)

References

- Alenezi, M. (2023). Digital learning and digital institution in higher education. *Education Sciences*, 13(1),88. <https://doi.org/10.3390/educsci13010088>
- Anson, C. M., & Straume, I. (2022). Amazement and trepidation: Implications of AI-based natural language production for the teaching of writing. *Journal of Academic Writing*, 13(1). <http://dx.doi.org/10.18552/joaw.v12i1.820>
- Bartholomae, D. (1985). Inventing the university. In M. Rose (Ed.), *When a writer can't write: Studies in writer's block and other composing-process problems* (pp. 134–165). Guilford Press.
- Bender, E. M., Gebru, T., McMillan-Major, A., & Shmitchell, S. (2021). On the dangers of stochastic parrots: Can language models be too big? In *Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency (FACCT '21)* (pp. 610–623). ACM. <https://doi.org/10.1145/3442188.3445922>
- Kress, G., & van Leeuwen, T. (2001). *Multimodal discourse: The modes and media of contemporary communication*. Arnold.

Bini, G., Bikner-Ahsbahs, A. & Robutti, O. (2023). "How to meme it": reverse engineering the creative process of mathematical Internet memes. *Educational Studies in Mathematics* 112(1), 141–174. <https://doi.org/10.1007/s10649-022-10173-1>

Bini, G., Robutti, O., & Bikner-Ahsbahs, A. (2022) Maths in the time of social media: conceptualizing the Internet phenomenon of mathematical memes. *International Journal of Mathematical Education in Science and Technology*, 53(6), 1257–1296. <https://doi.org/10.1080/0020739X.2020.1807069>

Dancygier, B., & Vandelanotte, L. (2017). Internet memes as multimodal constructions. *Cognitive linguistics*, 28(3), 565-598. <https://doi.org/10.1515/cog-2017-0074>

Dancygier, B., & Vandelanotte, L. (2025). *The language of memes: Patterns of meaning across image and text*. Cambridge University Press. <https://doi.org/10.1017/9781108950855>

Gouseti, A., Abbott, D., Burden, K., & Jeffrey, S. (2020). Adopting the use of a legacy digital artefact in formal educational settings: opportunities and challenges. *Technology, Pedagogy and Education*, 29(5), 613-629.

Herrington, J., & Parker, J. (2013). Emerging technologies as cognitive tools for authentic learning. *British Journal of Educational Technology*, 44(4), 607-615. <http://doi.org/doi:https://doi.org/10.1111/bjet.12048>

Immordino-Yang, M. H. (2016). *Emotions, learning, and the brain: Exploring the educational implications of affective neuroscience*. W. W. Norton & Company.

Irving-Walton, J., Newton, D. P., & Newton, L. D. (2023). Emotions matter in learning: The development of a training package for teachers in higher education. *International Journal for Talent Development and Creativity*, 11(1–2), 179–191. <https://doi.org/10.7202/1115427ar>

Irving-Walton, J. (2026a) *Digital Artefacts in HE Learning: From Recognition to Justification*. Zenodo. <https://doi.org/10.5281/zenodo.19697634>

Irving-Walton, J. (2026b) *AI Modes of Engagement in Higher Education*. Zenodo.

<https://doi.org/10.5281/zenodo.19712767>

Kiryakova, G. (2022). Engaging learning content for digital learners. *Tem Journal*, 11(4), 1958-1964. <https://doi.org/10.18421/TEM114-65>

Mercer, N., Hennessy, S., & Warwick, P. (2019). Dialogue, thinking together and digital technology in the classroom: Some educational implications of a continuing line of inquiry. *International Journal of Educational Research*, 97, 187–199.

<https://doi.org/10.1016/j.ijer.2017.08.007>

Meyer, J. H. F., & Land, R. (2003). Threshold concepts and troublesome knowledge: Linkages to ways of thinking and practising. In C. Rust (Ed.), *Improving student learning: Theory and practice ten years on* (pp. 412–424). Oxford Centre for Staff and Learning Development.

Schneider, S., Beege, M., Nebel, S., Schnaubert, L., & Rey, G. D. (2021). The cognitive-affective-social theory of learning in digital environments (CASTLE). *Educational psychology review*, 34(1), 1-38. <https://doi.org/10.1007/s10648-021-09626-5>

Rodriguez-Guillen, M. P., Zavala-Parrales, A. C., & Valerio-Ureña, G. (2024). Integrating memes: Enhancing education with pop culture. A systematic literature review. In *2024 International Conference on Emerging eLearning Technologies and Applications (ICETA)* (pp. 538–545). IEEE. <https://doi.org/10.1109/ICETA63795.2024.10850789>

Semetsky, I. (Ed.). (2017). *Edusemiotics-A handbook*. Singapore: Springer Singapore.

Tidy, H. (2026) *Memes in Higher Education: Creation, Sharing & Considerations*. Zenodo. doi: [10.5281/zenodo.20326373](https://doi.org/10.5281/zenodo.20326373).

Tidy, H., Bolton-King, R. S., Croxton, R., Mullen, C., Nichols-Drew, L., Carlysle-Davies, F., Moran, K. S., & Irving-Walton, J. (2024). Enhancing the student learning experience through memes. *Science and Justice*, 64(3), 280–288. <https://doi.org/10.1016/j.scijus.2024.03.004>