

## **Classifications in our interactive learning environments need careful critical scrutiny.**

Pericles 'asher' Rospigliosi

A recent incident in which I was supporting a colleague as they trained to become a user of a system for assigning and managing reviews highlighted the complex limitations of classifications in the kinds of information systems, that we use extensively in interactive learning environments. This user was keen to participate in a process where work was allocated to reviewers and they needed to be able to read a submission, yet the system denied them access. It transpired they had recently changed their name due to marriage and had two different identities on the underlying identity management systems. This identity management tool is Microsoft Lightweight Directory Access Protocol (LDAP), widely used in enterprise, and increasingly adopted by higher education institutions as a solution to the problem of having many logins required for the numerous online tools, we all use. Eventually the colleague and I determined the cause of this identity confusion, but not before both of us had been frustrated over prolonged exchanges of emails with links that seemed valid to the sender but could not be opened by the recipient. The incident I am describing occurred between two professionals on an equal basis of power and in comparable roles. But it highlighted the difficulties of using the information systems we depend on in so much of our work and wider life processes when systemic classifications do not match. Star and Bowker (1999) have highlighted that information systems are at a very fundamental level governed and determined by classifications; for example the security afforded by online banks to ensure only the legitimate account owner can authorise transactions or the read/write access granted for each individual user to their own resources stored on shared filing systems like OneDrive or Google Drive. More complex are the privileges underlying the difference between how a student will view their grade, where it cannot be edited, and an instructor who may have power to change a grade. Classifications are important as they are powerful, and they can be dangerous when not acknowledged and recognised as imposed by the way the system is designed and operationalised.

The interactive learning environments which enable aspects of our learning, teaching and research are based on information systems, as are our many systems that facilitate our capacity to participate in society highlighting the importance of critically reviewing the role of

classifications. Some systems we use are built on legacy software and may be beyond our capacity to influence, such as national arrangements for paying taxation, or accessing health services while other systems we may choose from among a range of options, such as our banking provider or which social media we access. In the field of teaching and learning we may still be able to make choices, and this journal publishes much research that reflects attempts to try new ways of using existing tools, as well as research proposing and trialling new tools. As more complex systems emerge, comprising links and interdependencies between systems of systems, such the LDAP that allows users to have a single login and password, our reliance on classifications increases. Innovations that embed artificial intelligence within immersive environments such as the metaverse will increase their interdependence and make the impact of classifications less transparent and more pervasive. The use of digital twins, which mirror the metaverse with objects and processes in the physical world, through the use of the Internet of Things, (IOT), technologies makes the relationships in systems tangible and may lead to the impact of classifications felt as we move about the built environment.

Returning to Bowker and Star's careful analysis of classifications, they highlight how this complex interlinking of the ways information systems sort data with the actions that arise, generate what they call infrastructural inversions (1999). These are the where the choices we make and the actions we can take are determined by the underlying data model and the way the systems classify inputs and outputs, rather than the choices of users, policymakers, or society. Implicit in Bowker and Star's choice of the term inversion is that this may result in the reverse of what we want and lead to the archetypical frustration of an answer to a request being "sorry, but the system says no". This is already a familiar frustration in a range of contexts, but becomes a deeper problem when we cease to notice it. The concept of infrastructural inversion not only implies an upside-down model of governance, but also such deeply embedded reliance on systems: infrastructure is often effectively invisible to users, as it is so taken for granted.

Bowker and Star's analysis offers four themes for thinking about how deep and invisible systems can become due to their ubiquity, the indeterminacy of their past, their material and symbolic nature and how political they are (Bowker and Star, 1999, pp. 37–48). These themes seem to me to offer a guiding set of dimensions to consider when thinking about adopting and critically reviewing interactive learning environments. The political dimension gives rise to questions such as: who gains and who loses because of the adoption? Who is the powerful interest? The material and symbolic dimensions prompt consideration of how it will feel to be users or subjects of this system. The dimension highlighting the indeterminacy of the past

reminds us to ask about what systems (and classifications) this system is built on. What legacy lies behind the choices and outputs? Finally, their flagging of ubiquity the incremental and deeply embedded nature of the systems we use, that “classification schemes and standards literally saturate our environment” (Bowker and Star, 1999, p. 37).

This editorial seeks to highlight how much the design choices and classifications in the systems we use become deeply embedded in the way we teach, learn and research and would benefit from critical scrutiny.

### **Refence**

Bowker, G.C. and Star, S.L. (1999) *Sorting things out: classification and its consequences*. Cambridge, Mass: MIT Press (Inside technology).