

INTERDISCIPLINARY LITERACY

the ability to critique disciplinary cultures and work effectively across disciplines

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Solving sustainability problems requires expertise. Often multiple, different types of knowledge have to be brought to bear to address sustainability problems which typically involve chemical, biological, ecological, sociological, economic, legal and psychological aspects. Yet the expertise that is necessary to address such problems can often get in the way of finding solutions: people working in particular disciplines can often struggle to hear and understand the perspectives of those working in other disciplines. For this reason the skills and knowledge which are necessary to enable different disciplines to effectively work together – *interdisciplinary literacy* – are an integral and necessary part of sustainability literacy. In fact, William Scott and Stephen Gough have argued that one of the ways that educationalists can contribute to sustainability is to help mediate interdisciplinary working (2003: 32).

In this chapter we begin by highlighting the ways in which the different assumptions that are embedded within disciplines (assumptions about how questions are to be asked and what methods are to be used to answer them) can lead to problems with effective communication. We then explore what it means to see disciplines as having ‘cultures’ and ‘histories’ before turning to identify what educational research and practice can tell us about how to mediate interdisciplinary working. We argue that an awareness of a discipline’s own culture and history is the first step to developing a capacity to effectively understand and work with those from other disciplines.

In the land of the blind, the one-eyed man is king

Imagine the following scenario: a government department is looking for ways to tackle the litter problem. They set up a commission to investigate and call in different experts to identify solutions.

The first speaker is an economist. She identifies that ‘litter’ taxes can be used to prevent litter. This would mean making goods which contribute to litter (goods with packaging, sweets, chewing gum etc.) more expensive. The next speaker is a sociologist. She identifies that littering is often associated with a lack of sense of ownership of communal spaces and civic pride. She suggests an engagement with youth and community groups and an advertising campaign aimed at increasing a sense of ownership of public spaces. The next speaker is an engineer. She notes the waste management systems which are currently in place and highlights how those systems could be changed in light of international best practice. Using charts and tables, she also highlights recent innovations which can limit the amount of packaging used. And so it goes on. Each speaker offers the commission a different set of options. Each one comes at the problem with their own set of questions (cost and money for the economist; community, inequality and culture for the sociologist; systems, production and innovation for the engineer). Each one brings their

own analytical tools to bear (charts, tables and design for the engineer, quantification for the economist, and interviews for the sociologist). Each one has something to offer, but none can solve the problem alone.

The commission asks the expert speakers to work together to come up with a coherent set of solutions to litter. But here is where the problem really begins. Soon experts are complaining that others won't take their views on board: the very thing that enabled them to contribute (their expertise) is the thing that is driving them apart. Each one is so deeply immersed in their own ways of asking problems and answering them, that they find it hard to understand other people who are immersed in different ways of asking questions and different ways of answering them.

How did it come to this?

The roots of this problem are laid down in schools and universities, where knowledge tends to be divided up into different subjects. While, in practice, people, their economy, their culture and the natural environment are all interconnected, in educational institutions they are studied as if they are entirely separate. We have seen school students struggle to see the connections between biology and chemistry: what chance is there that this sort of education will prepare them to solve sustainability problems that often fall in the intersection between disciplines as diverse as ecology, engineering, sociology, economics, and law?

One solution which might be suggested is to re-focus the education offered to people in these disciplines to include elements of each others' perspectives. As such, the engineer might get some sociology and some law; the sociologist might get some ecology and so on. Unfortunately, this solution will only take us so far. Educational research and long experience suggests that such an approach will often not cause people to question their own disciplines' assumptions as to what is a valid question and as to how questions should be answered. As such, the 'other' discipline can end up being viewed through those assumptions, something which is quite counterproductive. Furthermore, many education programmes are now so crammed that it would be impossible to ensure that students were exposed to enough 'other' disciplines to be of practical use.

To get at a workable solution to this problem we need to focus not just on a better understanding of other people's disciplines but also on a better understanding of *our own* discipline and its own assumptions as to how questions should be framed and answered. To put this differently, we need to understand the *culture and history* of our own disciplines.

The term 'culture' is a valuable one to use in relation to subject disciplines (Becher and Trowler, 2001). Different disciplines often have their own assumptions as to how questions are to be asked and what methodologies are to be used in answering them. They often have their own technical language or sets of acronyms which makes perfect sense to an 'insider' but which will baffle those from other disciplines. They often have particular ideas or concepts which they use to explain things or to solve problems. They are based upon networks of people who share the same questions, language, concepts and ways of working (for example, in departments, workplaces or at conferences). For 'an outsider' to be placed in such an environment, they may well be as out of place as if they were dropped in a foreign country.

Those who live within a particular culture often come to see their culture as perfectly normal: it is for them not ‘a way of doing things’ but ‘*the* way of doing things’. This often leads them to see other ways of doing things as wrong or, at best, strange and exotic. This is where ‘history’ becomes valuable, because it is often through an understanding of a discipline’s history that people become able to see that the way things are currently done is not inevitable or normal at all (Foucault, 1980). For example, much of the theoretical base of sociology, psychology and economics developed in the eighteenth and nineteenth centuries, at a time when the ‘social’ and the ‘natural’ were assumed to be separate domains and when it was assumed that humans could gain significant knowledge of the world that would allow them to control their social and natural worlds. These separations and assumptions underpin much contemporary theory in these disciplines. By digging into the history of the discipline and seeing how and when certain ideas became taken for granted, we can be freed from seeing them normal, and allowed to see them as one possible way of doing things.

Valuing diversity of disciplinary cultures

If subject disciplines can be understood as being akin to different cultures, then interdisciplinary education can be understood as being akin to intercultural education (or ‘critical multicultural education’ as it tends to be called in the UK). The twin goals of intercultural education are often summarised as *Celebrating difference* and *Promoting equality*. We suggest these two approaches can equally be used to address the problem of disciplinary-bounded thinking.

Celebrating different worldviews

The first element of an interdisciplinary approach is to be open to valuing what other disciplines/cultures have to offer – their ways of seeing the world, of asking questions and of answering them. The first step in this process is to see one’s own discipline as being ‘a culture’, rather than the right or ‘normal’ way of doing things. This means that in addition to lecturers and teachers teaching the content of their disciplines, they also need to engage in a cultural analysis of their discipline while teaching it. Viewing disciplines as a culture directs attention towards the norms, values and beliefs which underpin the discipline and leads to questioning the familiar and typical practices. Learners could, for example, be encouraged to critically investigate aspects such as the following:

- disciplinary ways of thinking (e.g., logical and analytical approaches)
- the way questions are framed (e.g., as hypotheses to be empirically tested)
- locations of work (e.g., libraries, laboratories, in the field)
- what counts as an explanation in the discipline
- the language and discipline jargon in use (e.g., whether the pronoun ‘I’ is used in writing or whether the language indicates a disinterested observer).
- the visual symbols of the discipline including the types of diagram used and ways of dressing (e.g., lab coats, suits or jeans)
- the links to corporate and industrial interests and how they shape research and the curriculum

By drawing attention to these things as elements of a culture (and consequently as one way of being in the world) educators and lecturers can develop an awareness of their own discipline

culture, language, assumptions and practices and consequently create an openness to dialogue with others.

Promoting equality

A further stage moves beyond recognising that each discipline brings part of the solution, to promoting disciplinary equality. This will involve recognition of current hierarchies of status between disciplines (e.g. natural v. social sciences; higher professions v. lower professions and technical training), and a recognition that these should not be perpetuated given that sustainability problems are so multifaceted. Certain skills and competences for interdisciplinary literacy are also necessary. Relevant teamwork and group work skills that learners will need include the following:

- being sensitive in their use of disciplinary-bounded language;
- being accepting of alternative disciplinary practices and cultures; additionally being confident to ask and seek answers when they do not understand other disciplines
- being able to listen actively to others
- taking account of how their behaviour affects others, and being sensitive to how others experience their own discipline's culture and approach.

Personal and professional skills include:

- respect for disciplinary diversity; ensuring that working arrangements do not reflect only one disciplinary approach;
- developing capacity for dialogue and interdisciplinary conversation;
- acknowledging knowledge reproduction as a contextual and ambiguous process.

Evidence from intercultural research suggests that group work in educational settings that involves those from a range of cultures/disciplines would contribute to the learning of such skills. However, these skills will not simply develop by putting people together; they must be taught. This process can raise many professional challenges: participants will have to question their own power and status in higher education and society, as well as questioning the control of knowledge within the discipline through debates on the validity of content.

Conclusion

Solving sustainability problems requires expertise, including the knowledge and skills to effectively collaborate across disciplinary boundaries. As such, interdisciplinary literacy is a key element of sustainability literacy. Arguably it is among the most important contributions that educationalists can make to sustainability. Without interdisciplinary literacy, sustainability problems face us like a jigsaw puzzle with pieces held by people who speak different languages. If learners can gain interdisciplinary literacy, then they can start to put the jigsaw together.

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- Scott, W. and S. Gough (2003) *Sustainable Development and Learning: Framing the issues*. London: Routledge Falmer
- Ubuntu Network. www.ubuntu.ie [contains updates on our work on disciplines and interdisciplinarity]