A Framework for Facilitating Meta-Learning as Part of Subject Teaching

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Abstract

Meta-learning is a concept that describes the process of becoming aware of oneself as a learner and applying this knowledge toward becoming a more effective learner. In recent pedagogical research work I have developed and tested a system for facilitating meta-learning in art and design education that offers an alternative to existing approaches [1]. The method involves providing a set of reference points for thinking about learning drawn from the specific nature of the subject matter itself, and from the principles and practices of teaching and learning in that subject, rather than beginning at the point of a student's personal account of their own learning (common in existing approaches to meta-learning).

Reflective thinking about learning or meta-learning can assist in developing a student's conception of a subject and consequently their approach to learning in that subject. Leading educational researchers including Ference Marton (Sweden), Noel Entwistle (Scotland) and Paul Ramsden (Australia) have stressed the importance of an awareness of learning context on the approach a student takes to their learning. My system for meta-learning stresses the subject of learning and the pedagogical practices it employs as critical components of this context and is built on the idea that thinking about the nature of a subject and how learning is organised in that subject provides a useful framework for locating and understanding oneself as a learner.

In this paper I provide an overview of my strategy for meta-learning, including its conceptual basis and the results of its use with student groups. The second half of the paper provides an outline for teachers on how to develop their own 'Inquiry Map' for use in classroom meta-learning activity. The Inquiry map is the central resource in this system, used for guiding meta-learning teaching sessions and self-directed reflective thinking by students. The paper concludes with some final notes for teachers on integrating meta-learning into subject teaching.

1. Introduction

The term meta-learning is synonyms with thinking about learning. Norman Jackson, working for the Higher Education Academy Network Centre (UK), has presented one of the more complete explorations of the term as related to teaching, learning and research. In his concluding notes Jackson observes that "people who are familiar with the concept [meta-learning] reason that it means how I think about how I learn, or learning about learning" [2].

Meta-learning is closely associated with the concepts of meta-cognition and self-regulation [2]. In a report on the science of learning in the context of early learning, the authors of 'How People Learn: Brain, Mind, Experience, and School' map five themes that have changed conceptions of learning in the last 30 years. The fourth of these is identified as meta-cognitive processes and self-regulatory capabilities. The authors note: "the integration of meta-cognitive instruction within discipline-based learning can enhance student achievement and develop in students the ability to learn independently. It should be consciously incorporated into curricula across disciplines and age levels" [3]. Research has shown that teaching meta-cognitive strategies in a subject context has improved understanding for students of physics [4] and written composition [5].

With no existing pedagogic research related specifically to facilitating meta-cognitive learning in my own subject context, the aim of my recent work has been to contribute to the theory and practice of facilitating meta-learning in art and design. I was curious about how meta-cognitive activity could support my students to improve how they learnt and to develop improved capacities for independent learning - essential to the largely self-directed learning environment in art and design.

2. A system for facilitating meta-learning in art & design

2.1 Background and conceptual basis to the system

The most comprehensive existing approach to facilitating meta-learning (at the time of the research) was the 'Reflections on Learning Inventory' (or RoLI™) system developed by Jan Meyer in 2004 [6]. The RoLI system is designed to assist with meta-learning by "making students aware of their learning via the process of representing responses to the RoLI as a graphic personal learning profile" [6]. Under the RoLI system students respond to a discipline-specific question inventory. This inventory typically starts with the learning subject, that is, the student themselves and their personal experience of learning. For instance, in the subject of accounting students are asked to respond to the statement: 'I feel anxious that I may have a mental block when it comes to learning accounting' [7].

In contrast to this approach my method begins with the subject of study and how it is taught as the initial object of reflection. Drawing connections back to a personal perception of 'how I learn' comes later in the process. Reflective thinking is contextualised around three topics:

- the unique nature and characteristics of the subject
- pedagogical theory and practice as related to that subject
- common ways in which learning is organised by educators in that subject

To put this theory into practice an 'Inquiry map' was designed for use in teaching activities as a self-help resource for students. This was a map of information and ideas on the topics above, summarised and presented in note form as a table-style document.

2.2 Testing the system

In 2010 a study with first year Bachelor of Fine Arts students was conducted to test the effectiveness of the system [1]. Results showed that students regarded the design of the inquiry map and the premise on which it was based to be highly effective in helping them to become aware of their learning (91% agreement). Students also found that thinking reflectively about how teaching and learning is organised in this subject had the potential to be helpful to their development as a learner (86% agreement).

More recently I have also used this system with second and third year Fine Arts students. Repeatedly, I have found that reflecting on learning through engaging with fundamental ideas of the subject and how it is taught has assisted students to develop their conceptions of learning. For example, responding to the idea that 'no single methodological approach to art and design exists' has led students to conclude that the take away from their educational experiences in this subject is *process*. Reflecting on the question 'what are we learning?' the students commented:

"the nature of knowledge, to me, seemed to be in learning by process. Process was the most rewarding element for me, i.e. developing multiple processes and thinking about them"

"learning is finding out about your own process"

"you are learning about yourself and your practice"

As a result of these discoveries by students the potential exists for them to re-orient their approaches to learning, taking the emphasis off final outcomes (often over-emphasised by students) and making process a central concern of learning (desired by teachers). A focus on process encourages students to become aware of the artistic methodologies used in getting to the final outcome and is the underlying purpose of most project-based learning experiences in art and design. This example aligns with approaches to learning theory where, taking a surface approach, a students' focus of learning is on the task at hand in contrast to a deep approach where focus is on the underlying purpose and meaning of that task [8].

3. Building a resource for meta-learning: A teachers' guide

The 'Inquiry map' is the central resource in this system. This document is used by staff as a guide for group meta-learning sessions and by students for self-directed work. It is essentially a summary of ideas generated by thinking about the subject of learning, how it is taught, and what pedagogical theories apply to it. First, a set of inquiry questions is generated. Content is produced in response to these. This material is then transferred in note form to a simple table-style document. An example of a completed Inquiry Map by the author can be found in issue twenty, 2011, of 'The International Journal of Art & Design Education', see reference [1].

3.1 To make an Inquiry Map:

1. Generate content

Make lists, or visually map out ideas under the following three headings with regard to teaching and learning in your subject:

- *The nature of the subject*

  This category captures ideas about the subject matter itself; drawing out what is specific about it and how it differs from other subjects. Respond to the following inquiry questions:
  What does the subject consist of?
  What is the nature of knowledge in this subject?
  How is the subject defined?
  How is research conducted in the subject?
  What methodologies are used to generate knowledge in the subject?
  Think of your subject as a mode of thinking. What concepts define and structure it? What is its thinking process? How does one think through this subject in order to solve problems?

- *Principles and practices of teaching and learning*

  This category makes connections between the subject of teaching and wider pedagogical theory and practice. This may involve some initial work familiarising yourself with current pedagogical research in your subject area. Respond to the following inquiry questions:
  What existing theories or models of pedagogical practice are relevant to teaching and learning in this subject? How are they applied in this subject?
  For example, considering 'approaches to learning theory' one could ask: What does a deep approach to learning look like this subject? Or, if the subject involves learning-by-doing, we could ask: How do theories of experiential learning relate specifically to learning in this subject?

- *The learning cycle*

  This category identifies the common features of learning in this subject - how it is usually taught and what learning structure a student experiences. For example, in studio-based art and design courses a student experiences a learning cycle that usually consists of some combination of: a concept generation phase in response to a set brief; a research phase; a production phase; an evaluation and critique phase. Respond to the following inquiry questions:
  How is learning structured in this subject?
  What are the main features of the learning cycle?
  What learning events or activities would a student normally experience as part of their learning in this subject?

2. Format content:

- Make a table with three columns and as many horizontal rows as needed (see Figure 1 below).
- Use the headings from (1) above at the top of each column.
- Organise the content you have generated by transferring the most significant ideas into the three columns of the inquiry map.
- Use the inquiry questions you asked to group material within each column. These questions will be used to guide meta-learning discussion sessions and personal reflective thinking by students.

Nature of subject	**Principles & practices of teaching and learning**	**The learning cycle**
What is the nature of knowledge in art & design?		
No pre-scribed body of knowledge. Inherently unstable & uncertain.	Objects of learning: materials & techniques; working processes; meaning effects	Personal response to existing art/design practices and their contexts

Fig.1. Table-style Inquiry Map

4. Integrating meta-learning into subject teaching using the Inquiry Map

As reflective thinking refers to the process of analysing and making judgments about what has already happened, I have found it productive to conduct meta-learning class sessions toward or at the end of teaching units. The inquiry map can also be made available for use in personal reflective thinking. Sometimes I have required students to include documentation of their self-reflective work as part of their studio submission, usually at higher studio levels.

The various inquiry questions are used to direct class meta-learning sessions. Using the format of a group discussion, I first present students with an inquiry question to begin conversation. For example, I have utilised the question "what is the nature of knowledge in our subject?" to prompt students to reflect on what it is they think they are learning, what knowledge consists in, and how this might effect their approach to learning. Of course, there are no single answers to these questions, each is complex and leads to extended discussion. This is their value. I also include ideas and information from professional art practitioners and theorists on these questions, as well as sharing relevant pedagogic research with students.

The particular way in which meta-learning is best integrated into subject learning will obviously vary according to practical factors such as time and class size, and whether reflective thinking is made a course requirement or not. If little time is available and the group is large, students might participate in a single class meta-learning session and follow up with self-directed activity. If meta-learning is integrated as a course requirement, more time may be spent in class group sessions and students may be asked to document their reflective thinking and submit this as part of coursework. In any case, the above is provided as an outline for building a resource that can be used for meta-learning activity in a way considered appropriate by the teacher and the constraints of their particular teaching and learning context.

References

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