‘I hear and I forget, I see and I remember, I do and I understand’

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Introduction

Learning is a natural human process and numerous models have been put forward to explain this process, or the ways that people acquire skills. These models can be categorised into two main schools of thought, behaviourists and cognitive (Race and Brown, 1998). The behaviourist school believes that learning happens through stimulus, response and reward. The stimulus is an input and the learned behaviours as outputs (Race and Brown, 1998). Behaviourists also consider repeated practice and the use of rewards to help appropriate responses to be important (Skinner, 1954). The cognitive school of thought focuses on perception, memory, concept formation and the ability of people to demonstrate their understanding of what they have learned by solving problems (Race and Brown, 1998). This school has made use of clinical, experimental and survey type research to develop many theories such as the learning cycle (Kolb, 1983).

The two schools of thought referred to above formed the basis of the ‘wanting, needing, doing, feedback and digesting’ model of learning (Race and Brown, 1998). The aim of this study is apply this model to evaluate some of my own teaching experiences. I will use one example from a new first year undergraduate module, *Geographical Knowledge,* which is taught at Department of Geography, University of Durham, to illustrate the five basic elements in this model and present evidence to show how problems associated with the learning experience may be improved.

Learning cycles

Race and Brown (1998) devised four questions to study how learning actually happens. From the analysis of thousands answers Race and Brown (1998) identified five principal factors underpinning successful learning:

i. *Wanting to learn*: requires motivations, interest and enthusiasm. It can be catered for by a variety of resources. For example, effective face-to-face lecturing which generates enthusiasm, carefully worded learning objectives in flexible learning packages or by the stimulation provided by attractive colours and graphics in computer–based learning packages;
ii. *Needing to learn*: a substitute for motivation. This requires circumstances such as necessity, survival or saving face;
iii. *Doing*: learning is by doing through practice, trial and error. It is the basis of all good education courses;
iv. *Digestion*: making sense of what has been learned, gaining ownership;
v. *Feedback*: is provided by a variety of means such as feedback from tutors and trainers, or by responses to exercises.

Race and Brown (1998) used these five factors to develop their model of learning (Figure 1). This simple model (‘Ripples on a pond’) can be thought of as a series of nested learning factors. At the core is *wanting/needing*, which in turn leads to *doing*. Surrounding these factors is *digesting* whereby learners make sense of their learning experience. This is aided by *feedback* on the whole experience and on what has

been achieved. The main benefit of this model is that it removes the need to think about learning as a unidirectional sequence as the stages may be explored in any order, for example, feedback on something may create a wanting (Race and Brown, 1998).

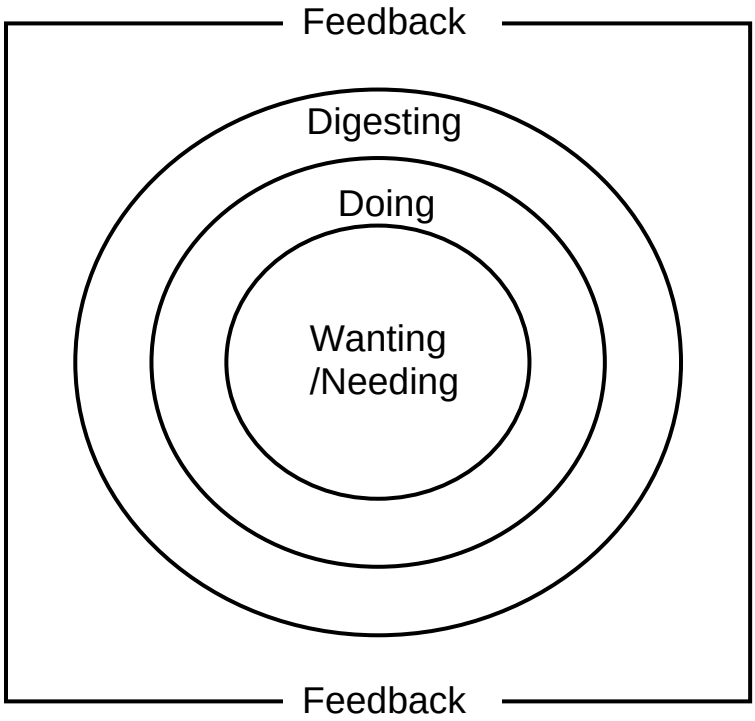

Figure 1. Ripples on a pond (Race and Brown 1998).

Discussion and reflection on the evidence

Geographical Knowledge is a first year Geography module taught by various members of staff from the Department of Geography, University of Durham to approximately 130 first year undergraduate students. The aim of the module is to enable students to learn and practice basic skills of observation, manipulation, application and presentation of geographical information, through group, field and laboratory work. These are interwoven through the module, which draws on methods learned in other modules and deals with data relevant to the Human & Physical Geography modules.

The module runs for a full year and has a variety of teaching methods. There are nine lectures are attended by the whole year. The year is then split into three sub-plenaries. They each have a seminar series and an end of module conference (where project results are presented) associated with a one-week residential fieldtrip in northwest Lancashire. The final teaching method is a self-paced learning package.

I have a variety of roles within this module including: a key lecturer in the seminar series and associated residential fieldtrip; assessment and feedback of self-paced learning packages, fieldwork reports and seminar presentations from the end of module conference; and the subsequent revision of the module following evaluation from fellow members of staff and students.

Results of the module evaluation show that it was moderately rated overall. However, analysis of the module evaluation for the sub-plenary, in which I was a key member

of staff (Table 1; Sub-plenary 2), shows that it was rated higher than the other 2 sub-plenaries for all questions. Indeed the fieldtrip itself received a very satisfactory return (Table 1; Question 13: 1.20) with many students stating that it was the best feature of the module. The success of this can be interpreted in terms of five learning elements:

i. *Wanting to learn*: Although the module was only moderately received by students (see later for further discussion) the seminar series and associated residential fieldtrip were delivered with interest and enthusiasm.

I delivered (with two other members of staff) the seminar series with interest and enthusiasm. The overall aim was to make the students realise that the learning experience starts from the first seminar. We tried to make the students *want to learn* by emphasising what a great opportunity they had and this infected the students and prompted many interesting open discussions and debates regarding their forthcoming fieldtrip. The students, whilst working in their tutorial groups, had to develop their own physical and human geography projects under our guidance and, therefore, the students took immediate ownership of the projects. To aid the students we provided a resource centre, which included relevant literature, maps, data archives etc. The students gave presentations on the projects with students and staff peer assessing. The associated fieldtrip to northwest Lancashire provided a major incentive for the module. Students collected their own primary data during the fieldtrip and this provided continued motivation for the subsequent analysis and write-up;

ii. *Needing to learn*: This module had a wide range of subject areas, teaching methods and assessment techniques. Therefore, we realised that there were some aspects where it would be difficult to generate in students a strong *want to learn*. To compensate, during the seminar series we tried to explain to the students why they really do *need to learn*. In addition, during first year tutorial classes we consistently gave them strong positive encouragement and stressed the importance of this module for developing their skills and enabling them to be successful at the University and beyond;

iii. *Doing*: This module had a major project element (50% of summative assessment). The combination of a block of lectures (providing the background and theoretical basis) followed by seminars and associated residential fieldtrip enabled students to explore ideas and concepts directly in a practical context. This learning by doing continued throughout the second term as students continued to work on their projects. By the end of term two each group had to write a research proposal and fill in a risk assessment form for their human and physical geography projects. The proposals included a summary of research, location for fieldwork, methodology for data collection, equipment requirements and comments on proposed analysis. We had to approve the proposal forms and sign the risk assessments before the students could undertake their fieldwork.

The project work culminated in an end of module conference where students presented group reports to the seminar class and fieldtrip leaders. The latter assessed the group reports and seminar presentations. Further learning by doing was provided by a series of assessment projects, which were set during the module. These were based upon lecture material and supported by tutorial classes;

iv. *Digestion*: The bulk of the background and conceptual material of this module was delivered in term one. Therefore the students had ample time to reflect and digest whilst attending the seminars and ‘token supervision meetings’ (see below) in term two and during the week long fieldtrip. Construction of the

research proposals and group reports forced students to digest material and present it to others;

v. *Feedback*: Feedback was a very important part of *Geographical Knowledge* particularly during the seminar series and fieldtrip. The seminar series enabled students to have immediate and available feedback on design and implementation of fieldwork.

In addition, feedback was provided during "token supervision" meetings. Each project group was allowed two 20-minute meetings with a member of staff. This meant staff time was safeguarded and students reflected and digested their results before approaching staff. The aim of the seminar series and the 'token supervision' meeting was to promote deep, active and reflective learning, and provide constructive feedback regarding the research design of their human and physical geography projects, the end of which was the submission of a research proposal. Students worked on their physical and human geography projects during the week long fieldtrip and staff mainly acted as advisors although they were readily available to give constructive feedback. Finally, fellow students, lecturing staff and external 'guests' provided feedback at the end of module conference.

Summary

The *Geographical Knowledge* module, especially the seminar series and associated residential fieldtrip and end of module conference, paid attention to all stages in the learning cycle. However, the lecture series, formative assessment, and the summative self-paced report had serious problems and this affected the *wanting* side of the module. Students commented on the coherence of progression, clarity of teaching, library support, poor communication between staff and students, excessive time demands of the assignments and the poor feedback from formative coursework. These influences are reflected in the summaries of module questionnaires (Table 1). To address these problems during the academic year meetings were held between teaching staff and students. An immediate outcome was the development of an email list of all staff and students, which was sent out every Monday during term time. These emails include information on all aspects of the module including, lecture schedule, fieldwork and assessments.

At the end of the academic year teaching staff from the module held a meeting to digest feedback from students and fellow members of staff. Topics discussed included summary of module content, tutors reports, student comments, feedback from demonstrators, formative assessment (amount and feedback) and summative assessment. We subsequently revised the module by returning to the 'wanting, needing, doing, feedback and digesting' model of learning. To improve the module structure and sense of progression there will in future be a clearer separation of terms one and two, with more lectures in term one but more time for the summative projects and the computer test, both now due in term two. There will also an introduction lecture and one less seminar. The formative projects will be shortened and feedback will be timelier with the emphasis on enhanced learning.

References

Kolb, D. A., 1984. Experimental Learning: Experience as a source of learning and development. Prentice Hall.

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Skinner, B. F., 1954. The science of learning and the art of teaching. Harvard Educational Review.

Table 1. Geographical Knowledge Module Evaluation Questionnaire 1999-2000

	Question	Sub plenary			Overall
		1	2	3	
	Response rate (Class size ~ 130 students)	89	95	95	
Q1	I had sufficient background to take this module	2.59	2.00	2.36	2.49
Q2	The content of this module was interesting	3.00	2.32	2.73	2.88
Q3	This module was challenging and stimulating	3.05	2.18	2.70	2.91
Q4	I worked hard at this module	2.48	1.83	2.21	2.35
Q5	The teaching on this module was clear and easy to follow	3.55	2.50	3.14	3.26
Q6	The teachers on this module spoke audibly	2.58	1.76	2.16	2.19
Q7	The speed of delivery of the material was good	2.88	2.15	2.49	2.47
Q8	The amount of material covered was good	2.83	2.20	2.56	2.67
Q9	Overheads, slides and other teaching aids were used well	2.98	2.08	2.51	2.48
Q10	Reading lists and other handouts were helpful	3.24	2.72	2.84	2.67
Q11	Library support for this module was good	3.49	3.13	3.26	3.38
Q12	Laboratory and technical support for this module was good	3.34	2.18	2.75	2.72
Q13	The fieldwork associated with this module was valuable	2.70	1.20	1.90	1.72
Q14	The tutorials associated with this module was valuable	3.42	2.00	2.68	2.96
Q15	The assignments associated with this module was valuable	3.25	2.32	2.94	3.33
Q16	There was good opportunity for student participation	2.25	1.44	1.96	2.23
Q17	The teaching staff on this module were helpful	2.98	1.59	2.30	2.33
Q18	The module showed coherent progression	3.33	2.34	3.02	3.44
Q19	The module helped me develop skills for the future	2.70	1.63	2.20	2.28
Q20	In general, this was a good module for me	3.35	2.00	2.77	3.02
Q21	With hindsight, I would choose this module again	3.58	2.15	3.06	3.26

1: Strongly agree; 2: Agree; 3: Neutral; 4: Disagree; 5: Strongly disagree