

Variation and relevance structures for university teachers' learning: Bringing about change in ways of experiencing teaching



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***Abstract:** One aim of academic development is to help university teachers become aware of and capable of using student-focused ways of experiencing teaching. Phenomenographic approaches which focus on variation and relevance structures for learning offer one possibility for affording changes in teachers' awareness. This paper proposed a refined phenomenographic approach, based on both recent developments in phenomenography and the findings of an empirical study of variation in ways of experiencing change in teaching. The study showed how teachers focused on different dimensions of variation when they described changes in teaching and perceived different relevance structures for change. Teachers who focused on variation in ways of experiencing teaching and sought to understand teaching and learning were more likely to be or become aware of student-focused ways of experiencing teaching. Those who focused on variation in content or teaching strategies and sought to improve their own interest or comfort or their students' behaviour did not perceive variation between teacher and student-focused ways of experiencing teaching and remained teacher-focused. The paper proposes an approach which may help teachers to discern and focus on the critical aspects of variation between student-focused and teacher-focused ways of experiencing teaching, by focusing on variation in ways of experiencing the same teaching strategies.*

***Keywords:** variation, phenomenography, ways of experiencing teaching, academic development*

Studies of university teachers' conceptions of teaching have found a range of variation from teacher-focused to student-focused (Dall'Alba 1991; Martin & Balla, 1991; Prosser, Trigwell & Taylor, 1994; Samuelowicz & Bain, 1992, 2001). Teacher-focused conceptions, such as presenting or transmitting information, are more limited. They are associated with teacher-focused approaches to teaching (Prosser and Trigwell, 1999) which encourage students to take surface approaches to learning and discourage deep approaches (Kember & Gow, 1994; Trigwell, Prosser and Waterhouse, 1999). This is the opposite of what most university teachers desire, and yet teacher-focused conceptions are common. On the other hand, student-focused conceptions, such as supporting student learning or facilitating conceptual change, are more complex. They afford student-focused approaches to teaching which encourage students to take deep approaches to learning (Trigwell, Prosser and Waterhouse, 1999). As deep approaches to learning are associated with higher quality learning outcomes,

one aim of academic development is to help university teachers become aware of and capable of using student-focused ways of experiencing teaching (Trigwell, 1995).

While there are many different approaches to helping university teachers to learn about teaching (Gilbert and Gibbs, 1998; Wright, 1995), relatively few focus primarily on changing ways of experiencing teaching. Some exceptions are activities underpinned by phenomenographic approaches (Prosser and Trigwell, 1997; Bowden, 1988), and a specific conceptual change program designed by Ho (1998). Phenomenographic approaches are based on the idea that learners need to experience variation in ways of experiencing in order to discern a new way of experiencing. They help participants to become aware of variation by encouraging them to compare research findings on conceptions of teaching or learning with their own ways of experiencing and those of their peers. One of the stages of Ho's (1998) program was similar, exposing teachers to alternative conceptions. Six of the nine teachers who commenced this program with more teacher-focused conceptions changed their conceptions and practices in the desired direction, with three of this six making changes which were substantial enough to influence students' approaches to learning. This suggests that it is possible, but difficult, to encourage significant change in ways of experiencing teaching.

This paper proposes an approach which seeks to improve the success of academic development programs which seek to change teachers' ways of experiencing teaching. The approach is based on recent developments in phenomenography which focus on two key ideas: specific relations between variation and learning, and the importance of the relevance structure of the learning situation (Marton, 1999; Marton and Trigwell, 2000; Pong, 1999; Marton and Booth, 1997). The paper first describes what these ideas about variation and relevance structures might mean in relation to helping university teachers to learn to experience teaching in new ways. It then describes the results of a study of university teachers' accounts of change in their teaching, identifying qualitative differences in the dimensions of variation on which teachers focus and relevance structures for change that they perceive. These findings are then used to propose an academic development approach which may focus teachers' discernment towards the critical dimensions of variation.

Variation and relevance structures for learning about teaching

In order to learn to experience something in a new way, learners need to become aware not just of variation but of the particular dimensions of variation which correspond to the critical aspects of the new way of experiencing. Teacher-focused ways of experiencing teaching differ from student-focused ways of experiencing on a number of different dimensions. Samuelowicz and Bain (2001) describe nine dimensions of teachers' beliefs, including: the nature of knowledge as given by teachers or personally created by students; teacher-student interaction as one-way from the teacher to the student, two-way to maintain students' attention, two-way to check understanding or two-way to negotiate meaning; the meaning of learning as a retention of information knowledge or changed ways of thinking. Learning to experience teaching in a student-focused way involves discerning and focusing on the critical aspects of this way of experiencing.

Some aspects may be more difficult to discern than others. For example, discerning and separating one-way transmission from two-way interaction may be relatively easy. It was one of the dimensions identified in Samuelowicz and Bain's first study (1992), and the

distinction is evident in many books and resources, particularly those aimed at encouraging active student learning in lectures (eg Gibbs and Jenkins, 1992). Discerning and separating the aspect of teacher-student interaction to maintain attention (more teacher-focused) from teacher-student interaction to negotiate meaning (student-focused) may be more difficult, yet it is a critical distinction reported in Samuelowicz and Bain's later study (2001). Lack of awareness of this kind of distinction may be one reason why some teachers are unsuccessful when attempting to make lectures more "interactive". They attempt to use strategies like questioning or buzz groups, but use them in teacher-focused ways, missing the student-focused intention to negotiate meaning.

In order to help teachers discern and focus on the critical dimensions of variation, two conditions seem necessary. The first is that the learning context needs to create a space of variation (Runesson, 1999) which contains the critical dimensions. The second is that the teachers' discernment needs to be focused towards the critical aspects, and not towards other aspects which may be present in the context. This offers a second challenge for academic developers, as university teachers may come to a learning context with a variety of different needs and intentions. While academic developers may attempt to design learning contexts to evoke awareness of critical aspects, university teachers may experience these contexts in different ways and discern different aspects from those which are intended.

The focus which is evoked when a teacher enters a learning situation relates to the relevance structure that is perceived in the situation (Marton and Booth, 1997). When a university teacher encounters a situation which affords learning about teaching – whether it is a formal learning situation or one of informal learning in the workplace – they will experience that situation as having a particular relevance structure for their learning. Difference in what they focus on in that situation will relate to differences in what they are capable of learning. The next section of this paper describes some of the findings from a study which shows differences in what teachers focus on and what they intend when they seek to learn about and change their teaching.

University teachers' accounts of change in teaching: qualitative differences in dimensions of variation and perceived relevance structures

The findings described in this section come from an interview-based longitudinal study of how university teachers experience changes in their teaching. Twenty seven university teachers were interviewed, with 22 interviewed three times over two years and five interviewed twice over one year. All participants were from one university. Some were enrolled in a graduate course in university teaching and learning, some in a course in university learning and technology and some were teachers who were new to the university. Interviews were semi structured and lasted from 45 minutes to two hours. Questions focused on teachers' ways of experiencing teaching in relation to particular subjects that they taught, the changes that they had made in their teaching in these or similar subjects, changes in their thinking about teaching and the factors which they perceived as influencing or related to these changes.

The teachers' accounts of change in teaching were analysed phenomenographically from two intertwined perspectives, corresponding to the two faces of variation (Marton and Pang, 1999): the collective variation between qualitatively different ways of experiencing change in teaching and the dimensions of variation focused on in individual teachers' accounts. The

perceived relevance structures for changing teaching were ascertained by examining the intentions which the teachers sought to realise in making the change.

Five categories of description were constituted through the collective analysis. Change in teaching was experienced as:

A: Change in teaching as changing the content which is taught

A1 changing the selection of content included or excluded

A2 changing the way the content is organised for teaching

B: Change in teaching as changing teaching strategies

C: Change in teaching as relating teaching more effectively to learning

D: Change in teaching as experiencing the meaning of teaching differently

The outcome space showing the relations between these categories is illustrated in Table 1. As indicated by the shading, category D is more complex and includes aspects of categories A to C, and category C includes aspects of A1, A2 and B.

Structural → Referential ↓	Teaching focus	Student learning focus – teaching in the background	Teacher understanding and student learning focus
Content selection organisation	A1 A2		
Strategies	B		
Relating teaching to learning		C	
Experiencing the meaning of teaching differently			D

Table 1: Outcome space for ways of experiencing change in teaching (McKenzie, 2001)

Individual teachers focused on variation in several different dimensions of teaching when they described changes in teaching. Teachers' different intentions for learning and change indicated different perceived relevance structures for learning. Table 2 shows these differences.

There were qualitative difference in what teachers focused on, and what they sought to achieve in changing teaching. The same teacher could focus on different dimensions in relation to different subjects or parts of the same subject. What was also evident was that the same acts of learning about teaching, such as reflection, participating in academic development workshops, talking with colleagues or participating in a graduate certificate in higher education, could be focused towards different intended objects.

The findings also showed that different teachers could also come to “the same” learning context with different intentions and experience different relevance structures. For example, 10 of the 27 teachers in the study participated in the same formal course in university teaching in the same year. The course was designed to afford awareness of variation in ways of experiencing teaching (category D), but after one year in the course only six of the participants

Change experienced as:	Variation described in:	Focus of intention and perceived relevance structure
Content selection	The teacher's selection of and level of interest in the content	Teaching-focused intention to maintain teachers' interest and avoid boredom
Content organisation and representation	The teacher's understanding of the content and representation of this understanding in teaching	Teaching-focused intention to organise and represent the content in the best way for teaching
Strategies	The teacher's teaching strategies and students' reactions to them	Teaching-focused intention to improve teaching activities eg to gain control in teaching environment or improve students' reactions, behaviour or motivation
Relating teaching to learning	Students' understandings and/or engagement in learning, in relation to content and/or teaching and learning strategies	Student-learning focused intention to improve students' learning
Experiencing teaching differently	Ways of experiencing teaching – as more or less teacher-focused or student-focused	Student and teacher-learning focused intention to understand teaching and learning

Table 2: Variation and relevance structures described in relation to different categories of description

described an awareness of this variation. Three described aspects of variation in ways of relating teaching to learning, but one focused only on variation in the teaching strategies learned in the course and their effects on the teacher's ability to control students' behaviour.

These differences in the variation that teachers focused on were also related to differences in whether the 27 teachers continued or began to describe student-focused ways of experiencing teaching in relation to their own teaching (McKenzie, 1999). Three teachers who only described variation in content or teaching strategies across all their interviews described teacher-focused ways of experiencing teaching across these interviews. They did not appear to become aware of student-focused ways of experiencing. Teachers who described change in ways that related to categories C and D also described an ongoing or growing awareness of one or more dimensions of student-focused ways of experiencing teaching.

Affording change in teachers' ways of experiencing teaching

The findings from the above study suggested that university teachers can use the same acts of learning, such as reflection, in the same situations of learning, but yet perceive different relevance structures and experience different dimensions of variation. So how can academic developers help more teachers to experience variation in ways of experiencing teaching?

One possibility is raised by Pong's (2000) study of variation and change in economics students' conceptions of price. Pong found that in a learning situation which opened a space of several dimensions of variation, some students focused their attention towards dimensions and aspects which afforded limiting conceptions rather than focusing on the critical aspects as

intended by the teacher. Removing the “limiting” dimensions from the examples provided in the learning situation improved students’ learning of the desired (economist’s) conception of price. There are several reasons why Pong’s approach is unlikely to be viable in academic development programs. Firstly, a way of experiencing teaching is not a theoretical or abstract idea (like a conception of price in economics) but is something which teachers need to enact in their everyday working lives. As teachers become aware of student-focused ways of experiencing teaching, they need to be able to enact them through teaching and learning strategies. The same could be said of ways of organising or representing content. Conversations about variation in ways of experiencing teaching need to include variation in both these dimensions, but not be limited to them. A second reason why it is not desirable to exclude strategies and content is that we need to acknowledge university teachers’ learning intentions and perceived learning needs. New lecturers frequently express a desire to learn teaching strategies (Isaacs and Parker, 1996) or are particularly concerned about the best ways to organise and present the content of their subjects. Lecturers are unlikely to engage in a learning situation which does not acknowledge and address these learning needs, and as academic developers we are unlikely to be welcomed if we ignore lecturers’ perceived needs.

An alternative approach is to design learning experiences in ways which afford a focus on the critical dimensions of variation between student-focused and teacher-focused ways of experiencing, while also affording learning about strategies or ways of thinking about content organisation which are consistent with student-focused ways of experiencing. The principle of achieving this is to create a situation where teachers can experience variation in different ways of experiencing the same new strategy or form of content organisation.

Example: Variation in ways of experiencing the same teaching strategy

The following pair of quotes provides an example of two qualitatively different ways of experiencing the same specific strategy - giving students problems to do in a lecture. The first teacher, Andy, describes the strategy in a way which suggests a teacher-focused way of experiencing teaching. The second, Sam, describes the same strategy in relation to a student-focused way of experiencing teaching. In an academic development situation, teachers are given the quotes to read and asked to compare and discuss what these two teachers are doing and what they seem to be focusing on when doing it.

Andy In the 2 1/2 hours or whatever that I was lecturing I probably had 5 problems handed out on a worksheet, and then we would stop and do all those problems as I did, met something. That's extra that I got from [the academic development unit]. That's quite a good idea. Some of them like didn't have any idea of about how to do the problem but I didn't think that was important ... just so long as they were thinking about it at the time.

I. So why did you first decide to do it that way - with the lectures and the problems?

Andy That I heard from [the academic development unit]. That is just an idea I had from there. I thought I would try that. It is just something that I could try. Just something I could try

Sam Well this, actually was different, was this time actually I read some paper on structured lectures, so I set out a group of problems that I would give after a lecture for a short period of time. So I'd discuss the problem, how to solve it, then for about fifteen minutes I'd give it to them. and they could spend say ten minutes actually doing it. Because it's difficult to come up with problems that only take two or three minutes to solve ... but it was, anything I gave them was always quite difficult for a lot number of people in the subject. And maybe this is the effort associated with actually thinking in the class. ...

I. So what were your intentions in giving them those problems?

Sam To get them to do something so they wouldn't just, to do something so if I lectured on something then they could understand it by trying to do the problem,

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| <p>I. And you kept it going?</p> <p>Andy I liked it. It was quite good. It gave me a break and it gave them a break as well.</p> <p>I. Were there any indicators that you had about how it was working?</p> <p>Andy Like I said, I mean, not really, no no I don't know. I just got an idea that it's the way to go. It is just from what you people tell me. This is, it reinforces as you go along. Plus it gives them a break and that must be good. You know. (Andy3)</p> | <p>because it's a different thing between thinking you're understanding it and actually understanding it.</p> <p>...</p> <p>I. So when you said you were hoping that they would understand it as opposed to just thinking they understood, what sort of understanding were you looking for?</p> <p>Sam Incorporating it into their view of the subject. Not necessarily the wider world but, I mean, the more you look at a subject as a whole, you know, you then form links between all the different aspects of it, so that's what I was looking for. ... cause as it is people just go in and don't form many links at all.</p> <p>.....</p> <p>I. How do you know whether it's working or not?</p> <p>Sam I know if it's working or not, quite usually from students' feedback. ... when they're doing the problems, they can call me over, ask me questions about it. And I find myself, every time a question is asked I usually sit there and think about it for about ten seconds because I've learnt, I've realised that the question they're asking, the question which is phrased is not necessarily the question being asked. So trying to differentiate between the two is actually the most difficult thing because quite often the way the question is phrased suggests that they're actually ignorant of something else. ... And that's what I am actually getting out of that structure there. This feedback, particular during the problems, because then they call me over. (Sam3)</p> |
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The aim of having teachers compare the two quotes is to help teachers who are focused towards learning teaching strategies (category B) to learn a new strategy – engaging students in solving problems as part of a lecture - but also become aware of some dimensions of variation in ways of experiencing teaching through holding the strategy constant while varying the apparent ways of thinking of the two teachers using the strategy.

Conclusion

For teachers to become aware of student-focused way of experiencing teaching, they need to experience the critical aspects of variation between student-focused and teacher-focused ways of experiencing. The approach suggested in this paper is a refinement of previous phenomenographic approaches, based on differences in the dimensions of variation on which teachers focus when they change their teaching. As noted above, teachers who described variation only in strategies or content and who perceived teaching-focused relevance structures for learning did not learn to experience teaching in student-focused ways. But acknowledging the perceived needs of these teachers means that conversations about strategies need to be part of the academic development context. Showing how the same strategies can be used in either student-focused or teacher-focused ways may help these teachers to discern and focus on the critical aspects of variation between student-focused and teacher-focused ways of experiencing teaching. The approach suggested in this paper implies that teachers do not need

to first change their ways of experiencing and then adopt strategies for implementation and nor do they need adopt new strategies which lead to new ways of experiencing. Rather, this approach hopes to enable teachers to simultaneously discern and focus on aspects of student-focused ways of experiencing teaching and using related teaching strategies. In this approach, a “quality conversation” would be one in which teachers compared, discussed and debated the critical aspects which vary between student-focused and teacher-focused ways of experiencing in relation to their own teaching.

References

- Bowden, J.A. (1988) Achieving change in teaching practices. In P. Ramsden (Ed.) *Improving learning: New perspectives*. London: Kogan Page.
- Dall'Alba, G. (1991) Foreshadowing conceptions of teaching. *Research and Development in Higher Education*, 13, 293-297.
- Gilbert, A. and Gibbs, G. (1998) A proposal for a collaborative international research programme to identify the impact of initial training on university teaching. Paper presented at the annual conference of the Higher Education Research and Development Society of Australasia, Auckland NZ. Accessed online: <http://www2.auckland.ac.nz/cpd/HERDSA/HTML/StaffDev/gilbert.htm>
- Ho, A.S.P. (1998) A conceptual change staff development program: Effects as perceived by participants. *The International Journal for Academic Development*, 3 (1), 24-38.
- Martin, E. and Balla, M. (1991) Conceptions of teaching and implications for learning. *Research and Development in Higher Education*, 13, 298-304.
- Marton, F. (1999) Variatio est mater studiorum. Keynote address presented at the 8th European conference for Learning and Instruction. Goteborg, Sweden. August 24-28.
- Marton, F. and Booth, S. (1997) *Learning and awareness*. Mahway, NJ: Lawrence Erlbaum Associates.
- Marton, F. and Pang, M.F. (1999) Two faces of variation. Paper presented at the 8th European conference for Learning and Instruction. Goteborg, Sweden. August 24-28.
- Marton, F. and Trigwell, K. (2000) Variatio est mater studiorum. *Higher Education Research and Development*, 19 (3), 381-395.
- McKenzie, J. (1999) Changing teachers' ways of experiencing teaching and ways of experiencing teaching change: how do they relate and what are the implications? Paper presented at the annual conference of the Higher Education Research and Development Society of Australasia, Melbourne, Australia. Accessed online: <http://www.herdsa.org.au/vic/cornerstones/pdf/McKenzie.PDF>
- McKenzie, J. (2001) Variation in university teachers' accounts of change in teaching. Paper presented at the 9th conference of the European Association for Research on Learning and Instruction, Fribourg, Switzerland.
- Pong, W.Y. (1999) The dynamics of awareness. Paper presented at the 8th European conference for Learning and Instruction. Goteborg, Sweden. August 24-28.
- Pong, W. Y. (2000) The space of variation. Presentation at the workshop on Updating Phenomenography. Hong Kong SAR China, May 18-20.
- Prosser, M. and Trigwell, K. (1997) Using phenomenography in the design of programs for teachers in Higher Education. *Higher Education Research and Development*, 16, 41-54.
- Prosser, M. and Trigwell, K. (1999) *Understanding Teaching and Learning: The experience in Higher Education*. Buckingham: Open University Press
- Prosser, M., Trigwell, K. and Taylor, P. (1994) A phenomenographic study of academics' conceptions of science learning and teaching. *Learning and Instruction*, 4, 217-231.
- Runesson, U. (1999) Teaching as constituting a space of variation. Paper presented at the 8th European conference for Learning and Instruction. Goteborg, Sweden. August 24-28.
- Samuelowicz, K. and Bain, J.D. (1992) Conceptions of teaching held by academic teachers. *Higher Education*, 24, 93-112.
- Samuelowicz, K. and Bain, J.D. (2001) Revisiting academics' beliefs about teaching and learning. *Higher Education*, 41, 299-325.
- Trigwell, K. (1995) Increasing faculty understanding of teaching. In: W. Alan Wright and Associates, *Teaching Improvement Practices* Bolton, MA: Anker Publishing Company, pp. 76-100.
- Trigwell, K., Prosser, M. and Taylor, P. (1994). Qualitative differences in approaches to teaching first year university science. *Higher Education*, 27, 75-84.
- Wright, W.A. and Associates (1995) *Teaching Improvement Practices* Bolton, MA: Anker Publishing.

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