Article

Is temperament a key to the success of teaching innovation?

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Abstract

Introduction. A section of the undergraduate curriculum was revised due to consistently poor student evaluation. The chosen didactic method for achieving this change was reciprocal peer teaching. This innovation may have required academic members of staff to adapt to a new teaching style.

Method. Staff members determined their Keirsey temperament and were given a report on its interpretation. They participated in training on student-focused teaching techniques and completed the Approaches to Teaching Inventory (ATI) of their preferred approach to teaching. Their subsequent sessions with students were videotaped and analysed for features of student-focused, as opposed to teacher-focused, teaching.

Results. There was a link between temperament type and apparent delivery of student-focused teaching. Staff members' perceptions of their approach to teaching did not correspond to their actual teaching behaviour.

Discussion. Staff development strategies could take into account individual temperaments in order to direct their professional development for the full spectrum of flexible teaching skills. Alternatively, teaching teams should be created in a way that takes account of different temperament types.

Conclusion. Temperament does play a key role in adaptation to innovation.

Introduction

Within the revised, integrated, problem-orientated, 6-year undergraduate medical curriculum that was implemented in the School of Medicine at the University of Pretoria in 1997, there have been attempts to change not only content, but also teaching methods. However, much of the teaching has continued to use a lecture-based information transfer method, which Trigwell called a teacher-focused method.[1]

Since 2001, the Department of Family Medicine had been responsible for a 5-week afternoon-only block which was presented to all fifth-year medical students (a class of approximately 210 students).The objective of the block is to enable students to integrate and apply their previously acquired knowledge to primary care clinical situations, as preparation for their student intern complex rotations in Family Medicine.

During the period of 2001 - 2006 the students persistently evaluated this block as one of the two worst blocks in the curriculum. This was despite minor annual adjustments to the objectives, teaching methods or assessment. As a result of there being no evidence of a beneficial effect of these minor changes, the Department of Family Medicine made a decision to do a major curriculum revision of this block for 2007. One of the innovations was to shift the teaching from the previous didactic method to the more student-focused method of reciprocal peer teaching, referred to by the epithet – to teach is to learn twice.[2] This approach encourages a constructivist approach for the student to explore the course content in a way that leads to better understanding and more effective learning. It is also aligned with strategies of the South African Council on Higher Education for student academic development.[3] Such an approach requires the academic staff to make an equally radical change from merely transferring information to facilitating the grasping of new concepts.

All academic members of the Department of Family Medicine had previously had their Keirsey temperament type determined and we had knowledge of the needs of various temperament types during times of change. This article reports on whether an academic staff member's temperament might influence their adaptation to a new teaching style that encourages student involvement and changes their role to that of facilitator.

Method

The class was divided into eight student groups and each group became an 'expert' on one of eight themes, which they in turn taught to the rest of the class. Each of these eight themes was facilitated by a different member of academic staff, who ranged from newly appointed senior lecturers to senior professors, with a range in the length of their teaching experience. They all had previous clinical and didactic teaching experience and were chosen as a theme facilitator because of their expertise in the content area of that theme. All the members of staff were part of all the discussions around the change in teaching strategy.

Although all involved academic staff attended the university's obligatory education induction course,[4] we did not think that this would be sufficient in supporting them to make the changes necessary to be able to implement this new strategy. A staff development plan was therefore created. This included offering staff an opportunity to learn more about student-focused methods of facilitating learning, such as the concept and logistics of reciprocal peer teaching and encouraging the use of facilitation (rather than teaching) skills.

The Approaches to Teaching Inventory (ATI) was developed by Trigwell *et al*.[1] to measure teachers' approaches to teaching. It has two scales,

Table I . Tabulation of findings for eight members of academic staff

	A Keirsey Temperament Sorter				B Approaches to Teaching Inventory		C Observed teaching behaviour	
	Observant (S) or Introspective (N)			First level of type	Information transfer (IT)	Conceptual change (CC)	TEACHER-FOCUSED	STUDENT-FOCUSED
KTS type	max = 20				max=55	max=55		
NT		N	20	abstract	26	52		x
NF		N	17	abstract	26	46		x
NF		N	15	abstract	36	32		x
NF		N	12	abstract	35	49		x
SJ	S	15		concrete	26	49	x	
SJ	S	14		concrete	31	51	x	
SJ	S	12		concrete	39	37	x	
SJ	S	12		concrete	31	46	x	

namely the Information Transfer/Teacher-focused scale (referred to here as teacher-focused) and the Conceptual Change/Student-focused scale (referred to here as student-focused). Each scale consists of 11 items with the maximum score for each scale being 55. There are no norms for the scales as responses to the inventory are relational and are specific to the context in which they are collected. Teachers who adopt one approach in one context can adopt another approach in a different context. All academic staff members completed an ATI based on their general approach to teaching, rather than by reflecting on one particular teaching episode. This was administered by the faculty's education adviser, who had also been a member of the team that presented the university's education induction course, at which these concepts had been discussed.

An additional staff development strategy was to ensure that all members of staff had completed the Keirsey Temperament Sorter (KTS-II) accessed from http://www.keirsey.com/sorter/instruments2.aspx?partid=0. This is a free, self-completed personality questionnaire designed to help people better understand their behaviour. It was envisaged that providing this information would improve academic staff's understanding of themselves, their roles in teaching and learning and their own management style. These questionnaires were interpreted by a member of staff trained in Keirsey interpretation, who gave each member of staff their results with a brief report.

Each of the academic staff members had an orientation session with the whole class in the first week of the block, when they introduced their theme to the class. During the subsequent two weeks each academic staff member had two obligatory facilitation sessions with his or her theme group. The goal of these sessions was to facilitate the group in becoming both experts and teachers of the objectives of their theme.

Each academic staff member's theme orientation session, as well as the two obligatory facilitation sessions, were taped and observed by a peer who had undergone the same training and an adviser from the Faculty of Education, who was blinded as to the staff member's KTS type. The theme facilitators had been asked to use the orientation session to model some of the student-centred methods of facilitating learning, as well as to focus the session on outlining the basic concepts related to their theme. The two facilitation sessions were to be used only to facilitate the students' learning and preparation for their peer teaching sessions, not for teaching by the academic staff member. Criteria used to decide whether the facilitator was student-centred or teacher-centred were:

- the position of the facilitator in the group/venue
- body posture and body language of the facilitator
- guidance to students regarding both content and process
- feedback given to students on the process of their lesson plans in terms of the chosen teaching method, the appropriateness thereof and the quality of their application of that method
- his/her role in the group process.

Results

For each of the eight academic staff members, their Keirsey temperament, their ATI and their teaching behaviour observed on the video were recorded.

Table I column A gives the first-level KTS results of the eight academic staff members who were involved in the teaching of the undergraduate block. The number next to each staff member's temperament indicates the strength of their score in that aspect.

Table I column B gives the ATI results of the eight academic staff members who were involved in the teaching of the undergraduate block. The maximum score in both approaches is 55. Six of the eight members of staff scored as teaching more to a student-focused concept-changing purpose. It can be seen that there is no relationship between the ATI responses and either KTS type or observed teaching behaviour.

Table I column C gives the assessment of the observer as to whether teacher-focused or student-focused methods had been used during the orientation and facilitation session(s). In contrast to their ATI responses, three of the facilitators who claimed to favour a concept-changing style actually focused on information transfer in their facilitation sessions. One of the facilitators, whose score for the ATI was slightly higher on the scale of information transfer, was found to use a concept-changing style.

Keirsey's first level of description of temperament types is the difference between whether a person more easily uses an abstract, introspective 'N' or a concrete, observant 'S' process. From their KTS scores, four of the facilitators are mainly introspective and four are observant. For the purpose of this paper none of the other levels are analysed.

Discussion

It appears that in observed teaching performance there is a clear match between those facilitators who are predominantly introspective, abstract thinkers (N temperament) and a concept-changing student-focused approach to teaching. There seems to be an equally clear match between the observant, concrete thinkers (S temperament) and the use of an information transfer teacher-focused style of teaching.

The results of this study seem to indicate that differences in temperament do have an effect on the ability to adopt new teaching styles. Data have been published that seem to show personality type (MBTI terminology) affects choice of medical specialty,[5,6] learning style [7] and an ability to be innovative.[8]

Unlike the Myers-Briggs interpretations, Keirsey[9] sees temperament like the rings of a tree. At the inner ring a person's behaviour is either introspective (N) or observant (S). The second ring determines whether or not an individual's temperament is co-operative or pragmatic. The third ring indicates whether an individual's communication is directive or informative. And the fourth ring indicates whether an individual is expressive or attentive in their interaction with their environment. He believes that someone cannot observe and introspect at the same time and that the extent to which people are being observant or are being introspective has a direct effect on their behaviour. When people perceive the world through their senses they are being observant (S). These people are more 'down to earth', more concrete in their worldview, and tend to focus on practical matters such as food, shelter and their immediate relationships. They talk primarily about the external, concrete world of everyday reality: facts and figures, work and play, home and family, news, sports and weather – all the who-what-when-where-and how much of life. Observant teachers keep instruction focused on a narrow range of choices, and usually concentrate on factual and concrete questions. When people reflect, introspect and pay attention to what is going on inside their heads they are being introspective (N). These individuals, in contrast, tend to focus on abstract concepts and like to see the big picture before they examine the smaller details. While they may appear to have their heads in the clouds, they are able to imagine what might be and can thus adapt fairly easily to change. Introspective teachers are likely to have a wide range of choice of learning opportunities. They also tend to focus on questions of conjecture, such as 'What if ... ?' At times, of course, everyone addresses both concrete and abstract topics, but in their daily lives, and for the most part, concrete people talk about *reality*, while abstract people talk about *ideas*.

One of the better known models of learning is Kolb's experiential learning model.[10] This is composed of four elements which form a spiral of learning:

- concrete experience
- observation of and reflection on that experience
- formation of abstract concepts based upon the reflection
- testing the new concepts
- (repeat).

Kolb's resultant Learning-Style Inventory (LSI) divides learning preferences along two continuums: active experimentation-reflective observation and abstract conceptualisation-concrete experience. The result is four types of learners: converger (active experimentation-abstract conceptualisation), accommodator (active experimentation-concrete experience), assimilator (reflective observation-abstract conceptualisation), and diverger (reflective observation-concrete experience). It can be seen in Table II that the concrete experience-abstract conceptualisation axis fits neatly with the 'concrete S' and 'abstract N' continuum in the Keirsey temperaments, again emphasising the opposite nature of these two poles.

It may be that one's learning style closely determines one's most comfortable teaching style. Therefore it may be possible that particular medical disciplines with higher proportions of certain temperament types will have higher proportions of certain learning styles and thus teaching styles. In terms of innovation of teaching within these disciplines, these proportions need to be taken into account.

In adopting a teacher-focused approach, teachers focus on what they do as teachers, or on the detail – individual concepts in the syllabus or textbook, or the teacher's own knowledge structure – without acknowledgement of what students may bring to the situation or experience in the situation. They see their role as mainly transmitting information based upon that knowledge to their students. In adopting this approach to teaching, forward planning, good management skills, use of an armoury of teaching competencies, and the ability to use information transfer are seen as important.

Table II. Kolb's learning styles and Keirsey temperaments*

		Kolb's learning styles	
Keirsey temperaments		Doing (active experimentation)	Watching (reflective observation)
S Sensing Observant	Feeling (concrete experience)	Accommodating	Diverging
N Intuiting Introspective	Thinking (abstract conceptualisation)	Converging	Assimilating

*Modified from http://www.businessballs.com/kolblearningstyles.htm

In adopting a student-focused approach, teachers have a student-focused strategy with the aim of changing students' ways of thinking and learning about the subject matter. They focus their attention on the students and monitor their perceptions, activities and understanding. Transmission is seen to be necessary, but rarely sufficient. They assume students construct their own knowledge, so the task of the facilitator is also to challenge current ideas through questions, problems, discussion and presentation. This approach includes a mastery of teaching techniques, including those associated with transmission. Transmission elements of the teacher-focused approach are included in the student-focused approach, but the student-focused element is not a part of the teacher-focused approach. Because it includes both transmission and

concept change, a student-focused approach is considered to be a more sophisticated or complete approach than the more limiting teacher-focused approach.[1]

If one takes into account actual behaviour of the eight members of staff in this study, it is clear that it is at variance with their responses to the ATI. One explanation of this could be that the staff are 'test-savvy' – they have memorised the theory of what they were taught in various education sessions that they have attended (they know what the 'right' answer is). Another explanation may be that they could be responding to the overt expectation of the head of department that they should attempt to incorporate facilitation of learning into their educational practice. However, their actions seem to prove that their behaviour has more consistently remained with their temperament type than been changed by staff development interventions. In a situation where they were being observed doing something new, they may have had difficulty actually shifting away from 'what they do with ease' (the way they, as established teachers, have always taught before).

Many staff development courses are based on attendance, with little or no evidence of behaviour change. On the basis of the findings of this research, it could be suggested that different temperament types may adopt different andragogical methods more easily than others. This has implications both for those who are concrete thinkers as well as those who are abstract thinkers. Teachers who have a preference for observant and concrete thinking are often referred to as being the stabilisers, traditionalists or guardians and are an important factor in keeping the status quo. For the most part, they prefer keeping to the tried and trusted ways of doing things, enjoying the well-planned activities that have been proven to work over time. Although willing to learn new approaches to teaching, they prefer to keep things the same unless they perceive an important need to change, in which case they require a logical step-by-step explanation and guidance on how to change and ample time to make the change. As stated, they are reluctant to jump into any new educational reform movement. Those who have a preference toward introspective and abstract thinking are considered to be the idealists or advocates who take pride in their own unique identity and are committed to seeing their students express themselves as authentic. They often have an orientation to the outer world of possibilities, whereas their intuition often draws them to new ways of doing things as they grasp new concepts readily.

Conclusion

Innovation . . . is generally understood as the successful introduction of a new thing or method . . . Innovation is the embodiment, combination, or synthesis of knowledge in original, relevant, valued new products, processes, or services.[8]

Keirsey was trying to understand what people '**do**' (his theory is based on observed behaviour) under varying circumstances. This is not to say that people are 'stuck' in these behaviours, just that it requires them to perceive a change of circumstances requiring a different behaviour, or to make a conscious choice to use a different behaviour. Looking at the results of this study, it was clear that the facilitators with the introspective temperament used the student-focused concept-change method of facilitating learning that had been tried in this case.

In order to respond to all the learning styles described by Kolb, academic members of staff would need to be flexible in their approach to teaching and move into behaviours where they are less comfortable. That is, for the concrete observer to incorporate more abstract, student-focused concept-changing approaches and for the abstract introspective to incorporate more concrete, information-transfer approaches.

Within the context of team teaching, another strategy could be simply to develop the inherent skills of each individual according to their temperament type. This would require a focused design for flexibility within the team.

The challenge is to complement generic faculty development initiatives with individual follow-up, taking each person's temperament type into consideration. In future an understanding of each member's temperament might be used to predict who will adapt more easily to different ways of teaching. By understanding his or her KTS, an individual could be more supported and his/her preferences taken into account when implementing educational development for academic staff. This would allow more focused interventions when attempting to optimise staff teaching behaviour. Ultimately, there needs to be assessment of academic staff's responses to educational development initiatives with feedback on observed behaviour.

A strategy for a member of academic staff to broaden their teaching styles should probably take the following into account:

- Recognise your own style and how it influences the way you teach.
- Teach from your strength, but broaden your skills.
- If you prefer to lecture, allow some time for discussion, and vice versa.
- If you prefer to teach facts and details, also discuss theories and concepts, and vice versa.

Without striving for developmental support of the broadest possible flexibility in teaching styles, either within each individual or within the teaching team, innovation will continue to be more difficult to achieve. From this study, it is recommended that further research be done on a larger sample size. If our findings are confirmed, it could be recommended that determination of the temperament type of all those involved in teaching become a routine part of staff development. Determining, acknowledging and using academic staff members' temperament types seem to be key to the success of innovation in teaching.

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