Using the red-blue exercise to facilitate learning transfer: theory and practice

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Presents findings from the use of the red-blue exercise over time which demonstrate the existence of discrepant reasoning in the application of learning. Claims this observation raises issues about the learning process and barriers to learning, and leads to the need for trainers to understand these issues in order to devise strategies to ensure that intended learning outcomes are met as effectively as possible. Uses the theoretical work of Argyris and Schon related to theories of action, distancing and disconnectedness, to explain the outcomes observed. Aims to allow trainers and educators to understand better the broader contextual and cultural aspects which affect the learning outcomes they are seeking to achieve. Discusses the implications for the design and delivery of certain types of training or educational events, and the realization of their learning outcomes.

Introduction

Red-blue is an exercise that we have used for a number of years on negotiation and conflict management courses, as well as in relation to legal process programmes of study. The exercise is designed to illustrate the value of co-operative approaches to potentially conflictual relationships. However, in almost all cases of using this exercise as a means for course participants to explore the use of behaviour which could lead to a win-win situation and therefore to the development of co-operative relations, we have observed that participants revert to a competitive approach aimed at short-term gain in spite of the preceding content of the course. This observation clearly raises issues about the learning process and barriers to learning. This leads to the need for trainers to understand these issues in order to devise strategies to ensure that intended learning outcomes are met as effectively as is possible.

We believe that the outcomes which we have observed can be explained through the use of theory. The value in this explanation will be to allow trainers and educators to understand the broader contextual and cultural aspects which affect the learning outcomes they are seeking to achieve. The first part of this article will describe the red-blue exercise. The second part will describe in more detail the outcomes which we have observed. The third part will then discuss these outcomes with reference to relevant theories which help to explain them.

Description of the exercise

The exercise is a version of the Prisoner's Dilemma game invented by Flood and Dresher in the early 1950s[1, p. 216, fn 2]. Axelrod[1] used the game to carry out detailed research into the strategies involved in developing co-operation. The red-blue exercise is an iterated version of the Prisoner's Dilemma exercise. That is to say, the exercise is carried out over several rounds in order to observe any changes in strategy that may occur.

Participants are put into pairs of small groups. Each pair of groups carry out the exercise without reference to any other pairings. The game goes on for ten rounds. At each round, each team has to decide whether to "play" red or blue. What they decide depends on their assessment of what the group they are paired with will do. When both groups have selected their play for that round, they give their decision to an intermediary. The intermediary will find out what the other group has decided before informing each group of what the other has played. When the groups have this information they are in a position to calculate their relative scores. Table I shows how the scores are calculated.

The objective of the game is for each group to end up with the highest positive score it can achieve. The need for the final score to be positive is emphasized in the exercise brief.

Built into the exercise are two points where the groups can meet to review and modify their strategies. These take place after rounds four and eight. For a meeting to take place, both groups have to agree. The exercise therefore affords the opportunity on two occasions for groups to redeem any negative spiral they may be in. Rounds nine and ten score double, which makes it possible for all but the most extreme negative scores to be redeemed at the end of the exercise.

Our findings from using the exercise

Our findings over many enactments of the exercise echo those of Axelrod[1, parts I and II] in terms of the features of the strategies employed in the exercise. One feature has emerged, however, which we take to be of

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Table I
Scoring for the red-blue exercise

Play		Score	
Team 1 plays	Team 2 plays	Team 1 scores	Team 2 scores
Red	Red	+3	+3
Blue	Red	+6	-6
Red	Blue	-6	+6
Blue	Blue	-3	-3

importance in promoting individual learning transfer.

This was that the results of the exercise were always similar, no matter where in the programme the exercise was used. This is surprising, because, from a trainer's or tutor's point of view, the timing of the exercise should have made a difference. It would not have surprised us to find the "logic of defection"[2] underpinning the decision making early in a programme or workshop. However, after participants have been exposed to a variety of alternative strategies, in which the value of strategies for mutual gain have been emphasized, and after carrying out role-play exercises in which they examine and reflect on negotiating behaviour, we would have expected a greater variety of strategies to emerge in the red-blue exercise.

This was never the case. Although a small minority of groups managed to achieve positive scores, this was usually after a "negative-defensive" start to the exercise. The rare occasions when one team was persuaded to begin by playing red were inevitably met by the other team playing blue. This led to the first team going on to the defensive and playing blue in the next round. The negative spiral then continued. Where teams met to negotiate to try to redeem a negative score, this occasionally resulted in one or both achieving a positive outcome. Even in these cases, however, the trust between teams was frequently stretched to breaking point, and one team would often wait until the last round to try to "ambush" their opposite numbers and obtain a higher positive score. More often than not, even groups which had negotiated an agreement would renege on that agreement immediately. Where a group decided not to renege on an agreement to play for mutual advantage, this nearly always followed a discussion within the group where one or more members attempted to promote a strategy of deception.

The overriding strategy adopted by groups, no matter where on the programme the exercise was used, can be described as "negative-defensive". That is, teams opted to adopt a strategy which gave them the highest possible positive score or the lowest possible negative score. This means playing blue. If the other team plays blue, then both groups end up with –3 for that round. If the other team plays red, then the team playing blue gets +6 and the team playing red gets –6. The choice then, in the view of the teams, is between a strategy (playing blue) which maximizes any positive score and minimizes a negative, or a strategy (playing red) which offers a minimum positive score if the other team do likewise, or a punitive negative score if they do not.

On the other hand, it does not take long to realize that without co-operation between both teams, there is no realistic possibility of either ending up with a positive score. Why then does the strategy of defection continue throughout the exercise, in spite of any agreements to co-operate that might have been reached at the negotiation points? Why do teams persist with a lose-lose strategy, when they have previously discussed and reflected on the value of mutual co-operation? Moreover, why does it persist when it is clearly consistent with the team's self-interest to co-operate?

Exploring our findings through theory

To attempt to answer these questions we need to examine theories of how participants process their experiences to develop new learning. Kolb[3] has provided a valuable and now familiar model of how this takes place. He has described the cycle of experience, reflection, conceptualization and planning which enables us to develop and modify our theories of what constitutes appropriate behaviour in given contexts.

Yet the history of using the red-blue exercise seems to challenge this cyclical approach. Despite several experiences of negotiation, despite clear, unambiguous statements from participants of appropriate strategies of negotiation, and despite a capacity to evaluate the behaviour of others using these conceptualizations as the benchmark, our participants still opt for defection rather than co-operation.

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The rules of behaviour in negotiating or other conflictual situations which our participants have articulated seem not to be applied in the context of the red-blue exercise. This even happens when, immediately before introducing red-blue, we have asked participants to itemize on flip charts or overhead transparencies "principles of good negotiation".

Argyris and Schön[4] provide some insight into this apparent discrepancy of reasoning. They have described people's conceptualizations of experience as "theories of action". These are the countless normative theories which we use to produce effective behaviour in various contexts. However, what we say or believe any individual theory of action to be, is often contrary to the way we actually behave. Argyris and Schön have characterized this discrepancy as the difference between our "espoused theory" and our "theory in use"[4,5]:

> We called the theories of action that people actually used their theories in use. The theories of action they wrote or talked about, we called their espoused theories. Whenever they were dealing with non programmed, difficult or threatening situations, they did not act congruently with their espoused theories[5, p. 85].

The use of the red-blue exercise highlights this discrepancy and enables a discussion on theories in use. Moreover, it provides both participants and tutors with a language with which the issues can be discussed. To act, or to react to others, in a negative-defensive way is characterized as "playing a blue". While to behave with co-operative intent, seeking positive outcomes for all parties is to "play a red". In other words, the experience of taking part in the exercise provides a vocabulary for reflecting on and closing the gap between theory in use and espoused theory. It is striking how powerful this language is for transferring the concepts to other contexts. Participants will frequently use the notions of playing blues or reds to describe interactions they have had with other individuals or organizations in real-life situations.

The need for a medium through which these issues can be discussed is important. Polanyi[6] and Schön[7, pp. 22-3] have highlighted the nature and power of "tacit" or "personal" knowledge. This kind of knowledge is rarely articulated. This is partly because it is difficult to express since "the knowing is in the action"[7, p. 40]; that kind of knowing is the result of a highly personalized, internal conversation between the doer's mechanisms of conceptualization and the feedback from the action itself. An apt analogy is riding a bike. The "feel" of your body in relation to the machine enables you to make constant adjustments to your balance. You do not have to be able to articulate the physical laws of dynamics and equilibrium to be able to do this.

The question for us, then, is: What is the process by which the espoused theory of appropriate behaviour in negotiation becomes personalized by participants and consequently becomes a theory in use? Also we need to understand what the mechanisms are which are acting to prevent this happening.

Argyris has shown[5, ch. 5] that because a participant is not using an espoused theory, we must not conclude that no theory is being followed. The decision making that accompanies all problem solving has to be based on the beliefs, values and reasoning of the individuals concerned. So where the espoused theory is not put into practice, it is reasonable to suppose that an alternative, competing theory of action takes precedence.

One of the most frequently cited alternative theories is the "least worst outcome" theory. That is, a group's principal aim is not to be beaten by the other group. This is apparent both from observing group decision making and from group reactions to final results. In the latter situation a group with, say, –6 will be delighted with the result if their opposite numbers have, say –9. The aim of finishing with a positive score has been superseded by a powerful, anti-co-operative theory of action that has brought both teams to an unsatisfactory conclusion. At this point it helps to translate the result into real-world terms. So, for example, a tutor might relate the negative outcome to a business going bankrupt. In the case of two competing businesses, or businesses in a buyer-supplier relationship, the groups' reaction could be likened to saying, "Yes, we're both bankrupt and out of business, but we've gone down owing less than you". Implied in this view is the notion "so we've done better than you".

When challenged to reflect on the difficulty of importing their espoused theory into the red-blue exercise, participants use reasoning processes that Argyris has characterized as "distancing" and "disconnectedness"[5, p. 63]. Frequent explanations would be: "It wasn't a negotiation, it was a contest to see who came out on top", or, "The briefing said we had to try and beat the others". These typical and representative responses illustrate the process of distancing. Distancing occurs where individuals or groups are reluctant to take responsibility personally for ineffective behaviour, or, as in this case, for not following an espoused theory. The responsibility lies either with the brief, which was misleading,

or with the nature of the exercise, which was not similar enough to the other exercises they had been involved in. The underlying implication is that participants are entitled to use an alternative theory of action, because the situation has changed.

In addition, participants often disconnect from the reasoning demanded by their espoused theory, by working on attitudes and assumptions about the members of the other group, or about the way they presume anyone would respond to this situation. While their reasoning may prove to be legitimate, the propositions on which it rests are unchecked and unexplored. The effect of this reasoning and resulting behaviour in fact becomes self-fulfilling since the other group immediately become aware that their opposing numbers have decided to adopt a different theory and course of action related to this. It then becomes very difficult to re-establish trust in order to operate according to their espoused theory.

Conclusions

Use of the red-blue exercise has repeatedly shown that even after several experiences of negotiation, the articulation of clear, unambiguous statements from participants of appropriate strategies of negotiation, and the demonstration of a capacity to evaluate the behaviour of others using these conceptualizations as the benchmark, our participants still chose to follow a strategy of defection rather than co-operation.

The use of theory has been used to explain the apparent discrepancy of reasoning which we have observed. Argyris and Schon characterized this discrepancy as the difference between espoused theory and theory in use. While participants may be able to espouse the ideas associated with a particular theory, in practice there may well be other factors and beliefs which exist to make them adopt a different course of action. In the case of the red-blue exercise this may be the adoption of a strategy based on the least worst outcome theory, underpinned by a belief that others will not themselves adopt a strategy of co-operation. When we challenged participants

to reflect on the difficulty of importing their espoused theory into the red-blue exercise, they did this by using reasoning processes that Argyris has characterized as distancing and disconnectedness. This implies that these participants were conscious of the theory which we had introduced. They were also able to advance reasons in support of this theory. Nevertheless, they were still able to articulate reasons why they did not adopt it in practice or why it was inappropriate in their particular circumstances.

This would appear to have significant implications for the design and delivery of certain types of training or educational events, and the realization of their learning outcomes. Two aspects follow from this conclusion. In general terms trainers and tutors need to be aware of this theory in order to understand why particular intended learning outcomes may not be realized in practice. The theory allows trainers and tutors to anticipate the likelihood of discrepant reasoning and the reasons for this, and to devise strategies to overtly deal with its effects. In specific terms we have clearly found that the red-blue exercise is indeed a very useful strategy to demonstrate how apparent discrepant reasoning can occur and thereby to create an awareness of this effect.

Note and references

1 Axelrod, R., *The Evolution of Co-operation*, Penguin, London, 1985.
2 See [1], pages 6-10 for a discussion of the logic of co-operation or defection in the Prisoners' Dilemma game.
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6 Polanyi, M., *Personal Knowledge: Towards a Post-critical Philosophy*, Routledge & Kegan Paul, London, 1962.
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