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Published in:

Information Technology & People

Published: 01/03/2001

Document Version:

Post-print, also known as Accepted Author Manuscript, Peer-reviewed or Author Final version

Publication record in CityU Scholars:

[Go to record](#)

Published version (DOI):

[10.1108/09593840110694984](https://doi.org/10.1108/09593840110694984)

Publication details:

Davison, R. (2001). GSS and action research in the Hong Kong police. *Information Technology & People*, 14(1), 60-77. <https://doi.org/10.1108/09593840110694984>

Citing this paper

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Davison, R. (2001), "GSS and action research in the Hong Kong police", *Information Technology & People*, Vol. 14 No. 1, pp. 60-77.

<https://doi.org/10.1108/09593840110694984>

GSS AND ACTION RESEARCH IN THE HONG KONG POLICE

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GSS AND ACTION RESEARCH IN THE HONG KONG POLICE

Abstract

Group Support Systems (GSS), designed primarily for meeting support, are being increasingly used for learning activities. In this paper action research is applied to explore how a GSS can enrich the training of police officers. A series of five sessions conducted over the course of five months provided substantial data that informed the research methodology, the learning experience of the officers and the relative value of GSS. The use of an action research philosophy enabled the facilitation of the sessions to be tailored so as to meet the on-going needs of the officers in a precise and focused manner, with the result that their learning effectiveness increased as the sessions proceeded. A candid evaluation of both GSS and action research, as experienced in this context, is offered, while the issue of rigor in action research is examined.

Keywords: Group Support Systems, Technology Supported Learning, Action Research, Facilitation Techniques, Police Officers

INTRODUCTION

Group Support Systems (GSS), developed primarily in the USA since the mid-1980s, have been widely researched in experimental settings (see Pervan (1994) for a meta-analysis and Nunamaker et al. (1997) for a general review). However, more recent field work has examined how GSS function in real world environments involving businessmen, diplomats and the military (Dennis et al., 1990; Lyytinen et al., 1993; Briggs et al., 1999). Although originally designed as a tool to support discussion and decision making in commercial contexts, GSS are now being applied in new environments, including various forms of 'technology supported learning' (TSL) (e.g.: Alavi, 1994; Leidner & Jarvenpaa, 1995).

In this article, I (the author is referred to in the first person) first describe how GSS function and how GSS sessions can be facilitated. This is followed by an introduction to action research and the technology supported learning literature. I then describe how a GSS was incorporated into one of the Hong Kong Police Force's (HKPF) management skills training programmes. This involved a series of five action research supported sessions involving officers solving realistic, scenario-based problems. I discuss the outcomes of these sessions with respect to practice (the facilitation of learning with GSS; the use of action research to support GSS) and research (the value of the synergy that can be realised through the joint application of GSS and action research). In addition, the issue of how action research can be conducted rigorously is considered.

BACKGROUND AND THEORY

Group Support Systems

GSS are networked, computer based systems that facilitate interactive discussion in groups of people who may be communicating face-to-face or remotely, synchronously or asynchronously. A GSS comprises a set of software tools used to provide focus and structure to group deliberation, while reducing the cognitive cost of communication, and easing the burden of information access as group participants make a joint cognitive effort towards a goal. These tools typically enable participants to engage in the brainstorming, organisation and evaluation of ideas. Participants type their contributions into a PC, the system immediately making each contribution available to all other participants. In this way, participants should not forget what they want to say while waiting for a turn to speak. If participants feel unwilling to submit ideas that are considered unpopular, unusual or abnormal, or if participants perceive pressure to conform in their ideas to the expectations of others, it is possible for ideas to be entered anonymously, thereby removing the opportunity for ideas to be identified with their authors (Nunamaker et al., 1997).

Facilitation of GSS Sessions

In early GSS work, while the importance of facilitation was recognised, little GSS-specific facilitation research was published. A small number of significant studies emerged in the 1990s, indicating a fresh concern about the need for appropriate facilitation, and the consequences of its absence (e.g. Clawson et al., 1993; Griffith et al., 1998; Yoong, 1998).

Bostrom et al. (1993, p.147) consider facilitation to consist of "a set of functions or activities carried out before, during and after a meeting to help the group achieve its own outcomes. The essential characteristic of facilitation is to help make an outcome easier to achieve". In the GSS context, the purpose of facilitation is to help participants "exploit the capabilities of the technology and their group, in the pursuit of their task" (Griffith et al., 1998, p.21). Dickson et al. (1993) note the difference between the facilitation and chauffeuring of meetings. Whereas a facilitator directs the participants in the GSS and its use, influencing how the group uses the technology, a chauffeur simply implements features of the GSS on the instructions of the group members. A facilitator is thus more involved in meeting content than is a chauffeur.

With respect to the involvement of the facilitator, Griffith et al. (1998, p.23) observe that facilitators should be impartial in their facilitating, making "...only indirect contributions to the final solution through *neutral* enhancement of the *processes* of communication and information processing by the group. This assumed impartiality is a foundation of facilitation" (original emphasis). However, Griffith et al. (1998, p.27) continue by noting a paradox that they suggest must exist in facilitation, namely the fact that "*facilitators are supposed to influence without being influential*. Facilitators are supposed to influence (or specifically, enhance) the group's *process* (i.e. efficiency, effectiveness, and commitment) without affecting the *content* of the decision".

Considering the type of facilitation that is appropriate for a given task and group, Dickson et al. (1993) found that facilitated groups (as opposed to chauffeured groups) disliked a strongly imposed structure, preferring the opportunity to engage in free discussion (cf. Maier and Maier, 1957). This finding is also paradoxical, since

the GSS literature has suggested that a key benefit to emerge from the introduction of GSS to meetings is to require the creation of an agenda and to plan how a meeting should take place (e.g. Watson et al., 1994). While planning may facilitate the conduct of the process through which the group achieves its desired outcome(s), group members may feel uncomfortable in such an environment.

All too evidently, the facilitator of a meeting has a fine line to walk between impartiality and the balanced influence of a group. With respect to the myriad of activities that a facilitator might expect to be involved in, Clawson et al. (1993) observed that there is much potential for the facilitator's impartiality being prejudiced. Thus, facilitation needs both to be appropriate to the task and the group, and to be flexible (cf. Niederman et al., 1996).

Action Research

Generally speaking, action research links theory and practice through positive social changes and reflections on the theory. The action researcher is actively involved in a problem situation where benefits are expected to accrue both to the researcher and the organisation (Avison et al., 1999, Baskerville and Wood-Harper, 1996; Baskerville, 1999). Furthermore, problems for which previous research has provided a validated theory are considered particularly appropriate for the application of action research. The action researcher is required to *intervene* in the problem situation, applying and subsequently evaluating the value and usefulness of a theory. The action researcher's remit involves a contribution to research - the validation or improvement of existing theories - and a contribution to practice - introducing practical improvements in the problem situation investigated (Checkland, 1981; Elden and Chisholm, 1993). This intervention may involve controversy, threatening

the status quo in the organisation (Eden and Huxham, 1996). Indeed, action research must have implications "beyond those required for action ... in the domain of the project. It must be possible to envisage talking about the theories developed in relation to other situations" (ibid., p.84).

The action research terminology is often confusing, because the term 'action research' refers both to "a general class of methods in social enquiry, and ... to a specific sub-class of those methods" (Baskerville 1999, p.6). Avison et al. (1999, pp.95-96), considering the extent to which action research is an appropriate methodology for addressing problematic situations in organisations, delineated four separate sub-classes of action research, viz.:

- Action research focusing on change and reflection;
- Action science trying to resolve conflicts between espoused and applied theories;
- Participatory action research emphasising participant collaboration; and
- Action learning for programmed instruction and experiential learning.

Action research is usually seen as involving an iterative cycle of activities. The researcher first *analyses* the situation and *plans* activities to address diagnosed problems. The plan is important as it should also serve as the operationalisation of the research methodology. In the second stage, known as *execution* (or intervention), the researcher attempts to solve the problem or manage the change process. In the third stage, *observation*, data on the situation or phenomenon is gathered. The following *reflection* involves interpreting the data and the consequences of action. This feeds forward into the next planning stage in a modification of the methodology and helps determine the action to be taken in the next cycle. This reflective stage is judged by some (e.g. Lau, 1997) to be the most

critical part of the cycle. Further cycles of activities continue until a desired end-state is achieved (Zuber-Skerrit, 1991).

Action research provides a researcher with an inside, working view of a problem context, especially where an explicit change process becomes the subject of the research. Furthermore, it promotes synergy between research and practice where researchers and clients work together in complex situations. Negotiating entry to an organisation in order to conduct an action research project is often problematic; if negotiations are successful, then the action researcher may be confronted with ethical challenges, for example the requirement that a successful outcome be effected. Other challenges include demonstrating that a study has been conducted rigorously. This criticism can be hard to repudiate, since action research studies cannot, indeed should not, be wholly planned and directed down particular paths (Checkland, 1981).

Technology Supported Learning

Considering what constitutes an effective learning environment, Alavi (1994) identified three critical attributes: active engagement in knowledge construction, problem based learning, and cooperation. Technology supported learning (TSL) is considered effective in supporting these three attributes, though most studies have focused on students in the secondary and tertiary education sectors (e.g. Alavi, 1994; Leidner & Fuller, 1997). In order to explain why TSL should be advantageous, researchers refer to collaborative learning theory (CLT), where learners collaborate with each other and so are exposed to a wider variety of ideas that they could generate individually. A GSS is often deployed in TSL, since it can provide the structure and focus required for problem based learning. Furthermore, Khalifa and Kwok (1999) explain that a GSS can be particularly effective at enhancing

engagement and cooperation in the collaborative learning environment, for example by increasing process gains and reducing process losses (cf. Steiner, 1972).

The research results from studies with students are inconclusive, however, with respect to the benefits of GSS-enabled collaborative learning. Leidner and Fuller (1997) report that students' motivation, interest and understanding were ameliorated, but performance diminished (when compared with students working individually). Alavi (1994), on the other hand, found that students reported higher levels of skill development and learning interest, and performed better in final exams - compared to students who did not work in GSS-supported collaborative learning teams.

A key component of CLT is the notion that a diversity of ideas and feedback are essential to the effective processing of information, with 'bad' ideas exposed to criticism. At the same time, if learners are deeply involved in the collaboration process, and the task involves vested interests, then their interest in learning should be enhanced. Nevertheless, too many ideas may cause information overload and a surfeit of low quality ideas will impede the deliberation process (cf. Kamel and Davison, 1998).

CASE STUDY - THE HONG KONG POLICE FORCE (HKPF)

In this section, I describe how a GSS - Group Systems for Windows - was used to support a series of problem solving cases with police officers in Hong Kong. The background to the case, protocols used, case environment, stakeholder characteristics and scenarios employed are described. One composite 'cycle' of activities is presented to indicate how planning, executing, observing and reflecting on events occurred in the case.

The HKPF Training Division - Introduction and Protocols

The HKPF conducts courses for various groups of police officers, though the one described here (the Junior Command Course (JCC)) is targeted at Junior Inspectors with four to seven years of experience. The course covers various skills relating to management, group dynamics and interpersonal skills. I gained access to the JCC via a contact made with an officer from the Computer Security Unit (CSU) of the HKPF at an IT exhibition in Hong Kong in 1996. Five officers from the CSU used the GSS for a single session, but were unable to continue doing so for operational purposes due to resistance from their superiors. However, recognising the potential of the GSS for supporting problem solving, the CSU officer referred me to the JCC's training officer (TO), a senior officer in the HKPF, who responded enthusiastically.

The JCC includes a number of activities, one of which the TO selected for GSS support on the grounds that it required focused group discussion, deliberation and decision making. The TO explained that it was often difficult to encourage the officers to participate in discussions due to a cultural reticence to express views publicly. While he could lead them through a discussion, he believed that if they had the opportunity to participate in a less threatening environment, with diminished cultural barriers to communication (Davison and Jordan, 1998), then they might both express their ideas more effectively and achieve a greater depth of learning. At the same time, the TO was interested to see how the use of a GSS might challenge the few officers who tended to dominate discussion sessions. An informal research question thus related to the need to encourage the participation of all officers in discussions and to enhance their learning.

Given the continuous and experiential nature of the learning context, I believed that action research would be a suitable methodology to employ, each of

the sessions being treated as one cycle. Not only would action research mandate my active intervention in the facilitation of discussions, but its cyclic structure would provide a framework for ensuring that the problem of encouraging police officer participation would be reconsidered continuously. Furthermore, I believed that my facilitation of GSS sessions would be enhanced by referring to the principles of CLT. Given action research's emphasis on reflection, the opportunity to glean lessons - both about the problem and its solution, and about how GSS could be applied more generally in learning contexts - would be provided, thus linking theory and practice.

Two TOs were involved in the project, one for the first two sessions and another for all subsequent sessions. The sessions took place in a computer laboratory in the Department of Information Systems at the City University of Hong Kong, between November 1996 and March 1997. A total of five sessions involving nine groups of five to six officers were organised, each group tackling one of the scenarios described below. On four occasions, two groups worked in parallel on different scenarios but within the same computer lab. On one occasion only eight officers came to the session, so they were formed into a single, larger group. It should be emphasised that the groups of officers were always different, so that no officer attended more than one session.

The officers who took part in the sessions came from a variety of backgrounds within the police force, including: Commercial Crime Bureau, Customs & Excise, Border Patrol units, Marine Police, Organised and Serious Crimes Bureau, etc. Some were predominantly desk-based, whereas others would normally be either on the beat, in plain clothes or tackling smuggling on land or at sea. The officers were required to take both the JCC and this component of it, and brought with them differing levels of skills (in typing, communicating, leadership, consensus building),

prior knowledge, and enthusiasm. Some officers took to the task with alacrity, organising their team-mates, initiating new topics of discussion, pushing for a hard and fast solution. Others wanted to take much more time over their deliberations, ignoring the GSS altogether at times, and exploring a wide range of options. No officers rejected the task outright, but some had very weak typing skills making participation ponderous, while others thought that the task was so trivial it could be solved in half an hour and they could go home early.

Before each group of officers started work on a scenario, they were given a thorough introduction to the GSS tools that they would use. They were also informed that they should feel free to use the GSS when they believed it most appropriate: it was not compulsory to do so. The version of the software used requires participants to communicate in English. Over 90% of the officers speak Cantonese as their mother tongue, and English as a second language. The language of the overall training course, however, was English, and both TOs were English speaking expatriates.

Given restrictions of time, extensive data collection from the officers proved impossible (cf. Niederman et al., 1996). Conversations with the TOs - face to face before meetings and by telephone at other times - provided information regarding meeting planning and limited reflections on meeting progress *ex post facto*. During meetings, I needed to communicate with the officers from time to time - to ascertain their progress in their tasks, ask questions about their objectives, query 'public' reaction to their proposed solutions, and direct them towards possible outcomes. This communication was entirely task-centric and I consciously attempted to remain impartial in my 'influencing' (cf. Griffith et al., 1998) of the group discussion; since I was not a member of the group, nor had I any vested interests in a specific outcome,

there existed little danger that I would intentionally lead the group towards a particular solution. After each session, I attempted to engage the officers in a more general discussion regarding their opportunities to use computers at work, the potential usefulness of GSS in the HKPF, the officers' involvement in discussion and decision making tasks, and the attitude of senior officers towards computer technology.

In addition to these unstructured discussions, structured data was collected from all officers at the end of each session using an on-line instrument (Davison, 1997, 1998, 1999) designed to measure the perceptions of officers towards five key dimensions of meeting processes, viz.: communication, discussion quality, teamwork, status effects and efficiency. Data collected through this instrument was analysed so as to improve the facilitation technique in subsequent sessions.

Scenarios Employed

In collaboration with the TO, I developed two scenarios, both of which incorporated material that was realistic and relevant to police work in Hong Kong at the time, viz.:

(1) 12,000 Vietnamese Refugees have to be returned to Vietnam by June 30th, 1997. Agreement has been reached with the Government of Vietnam for this to happen. Your task is to discuss how this process should operate in reality, what constraints or implications for manpower or resources are involved and so on. You should attempt to come up with a plan of action.

(2) Hong Kong has recently experienced an upsurge in the smuggling of illegally copied CDs from China. The Hong Kong Government, under pressure from business groups and overseas governments, has vowed to crack down on this trade and bring the smugglers to court. Devise a policy for attacking this illegal trade - both in terms of cross-border smuggling and the retailing of the CDs on the streets. You should aim to come up with a plan of action as a solution. You should consider all resource implications likely to arise, as well as any other complications.

A Composite Cycle: Planning, Execution, Observations and Reflections

Once the scenarios were constructed, the TO considered that planning was complete. He evinced no interest in either TSL or action research, and assumed that I would provide the necessary technical facilitation. He indicated that he deliberately did not want to plan for the sessions, adopting an *ad hoc* approach to session management and encouraging each group of officers to work thoroughly through their task. As they worked, he used the GSS to inject comments into their discussion on-the-fly, acting as a Government Information Officer. For example, in the Vietnamese Refugees scenario, he informed the officers that the Vietnamese government had proposed making soldiers available as armed guards for the repatriation flights. Similarly, in the CD piracy scenario, he announced that in future, CD pirates in China would be executed. These interjections were typed in uppercase script to differentiate them from the officers' contributions.

In the first two sessions, the TO and I had no preconceived idea of where the officers' discussions would lead them (i.e. the task involved primarily intellectual and

planning components (McGrath, 1984)). This meant that a flexible facilitation style was necessary since the objective was to ensure the officers learned collaboratively how to use the technology to solve their case problem. Typically, however, a group would spend time anonymously discussing the issues in the GSS. The TO or I would intervene verbally to discuss the group's progress. A whiteboard was often used to illustrate issues, before the group was encouraged to think about developing an action plan, which required more focused idea generation. The officers would then generate a list of possible action plan components and vote on their relative importance. Finally, if time remained, they would undertake some more detailed group authoring of the items rated most important in the action plan.

After the first two sessions, the TO retired from the HKPF and was replaced by a colleague, whom he introduced to me. The new TO, recently transferred from the VIP security unit, was enthusiastic about using the GSS, but played a much less involved role, attending only the first of the three sessions that followed, expecting that I would take the leading role in facilitating the session content and process.

While the first TO's *ad hoc* style of control had worked fairly well, I observed that officers tended to generate a large amount of fairly shallow and unfocused contributions. They then experienced considerable difficulties in 'separating the wheat from the chaff'. This hindered their discussion, complicating their attainment of an action plan that they could work on in greater detail. Correspondingly, instrument data indicated that meeting efficiency was weak.

Given my new remit for greater involvement, I adapted the facilitation style further to fit the requirements of the officers. In consequence, planning for sessions was undertaken more carefully and a semi-formal agenda (see Table 1) was used to guide the sequence of activities. I was then able to ensure that the officers focused

their time better in initial stages of discussions, substantially reducing the breadth of information that they generated, while improving its depth, and making it easier for them to draw up a list of action plan components. Sufficient time then remained for these items to be deliberated, evaluated and then written up into a short action plan. Sample discussion items and action plan components from Group 9 can be found in the Appendix.

Table 1: Activities in the Informal Agenda

Activity #	Activity name	Duration (minutes)
1	Training in the use of the GSS	20
2	Introductory brainstorming/discussion	30-50
3	Focus on action plan components	15-30
4	Voting on the importance of action plan components	10
5	Group authoring of the action plan	20-30
6	Completion of the debriefing questionnaire	10

Data collected through the meeting process instrument was invaluable when reflecting on the progress of the groups in scenarios and in planning for the later sessions. Few major problems were revealed through this data analysis, with communication perceived to be effective and discussion quality to be generally high. The initial meetings were not rated as being very efficient, perhaps because of the TO's *ad hoc* approach, but in later sessions this improved. Overall, the officers' satisfaction with the meeting process improved over time, as did their comfort with the technology and their perception that the technology facilitated, rather than hindered, their participation. These improvements are attributed in part to the

change in facilitation style described above. Despite these perceived improvements, the officers did not report achieving much consensus in their solutions. This may have been due in part to the restricted time available and the fact that officers never had the opportunity to become thoroughly familiar with the technology.

The officers were generally impressed with their ability to communicate simultaneously, observing that the discussions were more interesting as the GSS enabled them to discuss many more topics and ideas than would normally be the case. Furthermore, they did not experience difficulties getting to grips with the technology. One officer commented: "once the rudiments of the programme had been worked out and mastered, then the taking part was somewhat simple". Despite the benefits, it was thought that while the GSS might be useful for initial discussions and brainstorming, there also needed to be the opportunity for face-to-face interactions to clarify issues. Some officers, notably those who did not make regular use of PCs at work, complained about the unfamiliar interface design. A significant minority of officers also criticised the technology for depersonalising their interactions.

None of the officers complained about the level of difficulty in the tasks set. Indeed, officers seconded to the Customs & Excise Department took special interest in the CD piracy scenario, while those from Border Patrol units were similarly interested in the Vietnamese Refugees scenario. The nature of the solutions that the officers proposed was purposeful and serious, complete with technical specifications and practical considerations. On the other hand, some officers felt that 2½ hours was too short a time for interaction, preferring that the session be spread over as long as two days. As one officer commented: "using the technology was interesting and I can imagine it could be extremely useful. However, I believe a certain amount

of technique and experience is required to get the most out of the process. Our group did not possess these attributes and as such our meeting did not achieve satisfactory results". Another noticed the side-effect of discussions becoming unfocused, people tending not "to concentrate on a particular issue before going on to give more and more ideas". To overcome this problem, it was suggested that the "categorising of issues to be discussed and the intervention of a facilitator at appropriate times may seem to be very important".

Concerning the use of such a system by themselves in the future, one officer suggested: "this is a good tool for meeting / discussions with other people with whom we may be afraid to have face to face confrontations. The ideas raised could be thoroughly discussed when the members have confidence in the system. Overall, it will be good to see such a system applied in our daily life". However, another officer was more cynical, noting that there were few opportunities for brainstorming in practice, giving the impression that junior officers such as themselves are seldom consulted on such matters.

Although the officers generally perceived the software to have contributed positively to their interactions, my attempts to encourage the HKPF to implement it on an operational basis failed. Shortly after the last session in March, 1997, I met the Assistant Commissioner of Police (Information Systems) (ACP IS) to explain the use of the GSS with the JCC, and to explore how the HKPF might use the GSS operationally. The ACP IS reacted positively, and referred me to two of his staff - a Superintendent and a Systems Manager, who subsequently attended a demonstration of the GSS. They commented that the system was incompatible with their existing systems, and that they had little time to consider the testing and implementation of a new system. In action research terms, their reaction suggests

that they saw the GSS as a threat to the status quo. As Olesen and Myers (1999) explain, implementing a system that threatens the status quo is very difficult, especially when the gatekeepers or key users of computer systems exercise considerable powers of veto.

REFLECTIONS ON THE TECHNIQUES AND METHODS

Although I have reflected on the progress of the sessions, and the learning that the police officers achieved, action research also requires reflection on the techniques and methods used in the research.

Generally speaking, the GSS was positively received by the officers, who indicated that it contributed to an effective learning process. This view was corroborated by the two TOs, who expressed satisfaction with the progress made by the officers. I believe that the GSS added significant value to the officers' interactions - value that might not have been achieved in the limited time available had the technology not been employed. Certainly, the first TO's hope that all officers would participate, more or less equally, was realised. While some officers dominated sessions, it tended to be those who could type faster, not those with stronger personalities. Indeed, one strong minded officer pointed out to me at the start of his session that he had no idea how to type. Nonetheless, he 'hunted and pecked' his way through the afternoon, and remarked afterwards that he had enjoyed the challenge of expressing his views in this new way.

In addition to gaining experience with the software, the officers had the opportunity to subject ideas to critical analysis (a fundamental component of CLT) without appearing to criticise their colleagues. The TOs confirmed that the officers were able to accomplish considerably more work - problem analysis, discussion,

action plan component identification and in most cases action plan authoring - and in more detail, than they would normally achieve on a task of similar complexity in 2½ hours without computer support. Indeed, the first TO's belief that the officers might be able to overcome some of the cultural restrictions to open communication was largely supported, all officers contributing to discussions. These findings suggest that the collaborative learning approach, bolstered by a GSS that facilitated focused discussion and deliberation, was successful. Furthermore, I too was engaged in an action learning experience, the facilitation style that I adopted developing continuously. The literature seldom mentions learning experienced by a facilitator, yet it is clearly important.

Despite these benefits, I needed to balance the needs of the officers with the methodological demands of action research. Some of my experiences merit discussion as they contribute towards an understanding of the difficulties that an action researcher may face. Rather than present these challenges negatively, it seems more practical to use this opportunity to re-inform action research itself. This discussion is organised around the four stages of the action research cycle.

The planning stage was one where my practice in the first two sessions deviated markedly from the norm, since the TO did not wish to pay much attention to detailed planning at all. He believed that an *ad hoc* style of session management would result in the process that he wanted the officers to experience, essentially letting them run their own session as they thought best. It is interesting to consider his behaviour in the context of Hofstede's (1980) 'uncertainty avoidance' dimension of culture, i.e. the tendency of individuals to plan ahead in order to avoid uncertainty in future events. Insofar as this project was concerned, the first TO seemed to promote uncertainty, requiring the officers to be responsible for their own problem

solving. Indeed, he further contributed towards this uncertainty by injecting his own comments into their discussion, changing the circumstances of their scenario as it was in progress and so requiring them to be constantly aware of the shifting field in which they were operating. He argued that such shifting circumstances are common for police officers, and so he was merely contributing to the realism of the scenario.

In later sessions, some elements of this uncertainty promotion were retained, such as the injection of comments whilst discussion was in progress, but an informal agenda was used to help the officers structure their discussions. This combination worked well in practice and certainly represented a new twist to conventional 'problem-discussion-solution' scenarios. Nonetheless, the insistence of the first TO on his adhocratic session management style caused me to reconsider how one should plan for activities in action research and to realise that in certain circumstances, formal, rigid planning might be counter-productive. This is particularly likely to be true for experiential learning types of action research incorporating a collaborative learning approach, where the experience is considered part and parcel of the learning, and so where facilitator driven planning may reduce the quality of the experience.

Where the execution of the sessions was concerned, the main challenge relates to the constant state of flux in group membership. While this did not cause me any operational difficulties, it did mean that improvements in facilitation style could only be received by members of subsequent groups. Both TOs overtly encouraged me to get involved in content and process facilitation from a very early stage, though I was under no obligation to produce a specific outcome for the HKPF.

In the observation stage, I was able to collect data from the officers both in conversation and through an instrument administered through the GSS. This data

confirmed my suspicion in the earlier sessions that the adhocratic session management style might be impairing the quality of the learning achieved by the officers, particularly with respect to the effective use of time. This supported my decision to include an informal agenda in the later sessions.

In the reflection stage, I was able to draw upon some rich perspectives provided by the officers through the online instrument, as well as conversations with the two TOs. However, I relied principally on my own observations of session processes and conversations with officers. In some respects, this was the strongest challenge to the action research orthodoxy, since not only is the reflection stage considered by many to be the most important, but also it is the one where researcher subjectivity may act to reduce the generalisability of findings, and hence where multiple sources of information would be valuable. There was no ready remedy for this problem, except to ensure that all opportunities to discuss issues with the officers were realised.

RIGOR AND RELEVANCE IN ACTION RESEARCH

A common, and not necessarily unreasonable criticism of action research is that it lacks rigor. However, we must note that rigor is not the sole criterion of research excellence, an equally important and mutually inclusive criterion being relevance. Robey and Markus (1998) and Senn (1998) observe that rigor and relevance tend, unfortunately, to be perceived as mutually exclusive - which they are not, each being a critical component of the other. Sample characteristics of relevant and rigorous research include the notion that it:

- primarily reflect the concerns of practice (Zmud 1996; Robey and Markus 1998);

- produce implementable results (Benbasat and Zmud 1999);
- be theory-based and context-rich (Benbasat and Zmud 1999).

In action research, rigor and relevance may depend on the flexibility of the action researcher, who must adapt his interventions according to the infinite variety of circumstances, since action research itself "cannot be wholly planned and directed down particular paths" (Checkland, 1981, p.153). Pre-programmed planning, on the other hand, may not contribute to the rigor or relevance of a study, since they may constrain the intervention to the point where it achieves little. This view is supported by Lévi-Strauss (cited in Descola, 1996, p.40) who advised that when working in the field, one should "go along with the lie of the land" rather than expecting to stick to predetermined techniques and styles of enquiry. Such a flexible approach is compatible with Dickson et al.'s (1993) observation that a strongly imposed structure is disliked by GSS groups.

In the project described here, a flexible facilitation style proved essential. Moreover, this flexible facilitation style was empowered by action research's requirement that I be reflective. Through successive reflections, I was able to make changes to the facilitation style that benefited officers in subsequent sessions. Indeed, my empowerment operated both at the session level - improving facilitation skills for subsequent sessions - and at the research level - reflecting on how GSS and action research could be combined in other learning contexts.

Through cycles of interventions, action research can enable researchers to elicit detailed, context-rich descriptions and ensure that lessons obtained during those interventions are carefully considered. Action research's cyclic structure helps build rigor into research, with the specific requirement that researchers plan, implement, observe and reflect on their progress continuously. With each

successive cycle, the problem situation can be tackled more precisely. In this way, problems can be investigated rigorously, while relevant and practical results can emerge from the analysis. These results may lead to solutions, the reinforcing and improved understanding of theories and problems by researchers, and ultimately a better action research methodology.

CONCLUSIONS

In this paper, I have attempted to demonstrate how police officers in Hong Kong successfully used a GSS to tackle realistic, problem-based scenarios on a management skills training course. The success of the project was limited to the course itself, as computing officers from the Information Technology division resisted its implementation for operational use within the HKPF at large. The researcher successfully applied aspects of CLT to his facilitation of the GSS sessions: there is great potential for GSS to be applied in support of collaborative learning situations. Furthermore, TSL, as an approach to collaborative learning, should be reinvigorated by this study, which extends the domain of application out of the traditional education sector.

An action research methodology was used to support the project, ensuring that each session was subjected to rigorous cycles of planning, executing, observing and reflecting. This process improved the quality of the experiential learning process for the police officers and the researcher. Action research also mandated subsequent reflection on the techniques and methods used as a way of re-informing the respective literatures, notably the consideration of how an action research project can combine flexibility and rigor. Although some challenges to the action research orthodoxy were experienced, these provided a novel learning environment,

where the techniques and methodology being used could be re-evaluated. The key to the success of this project, however, lay in the flexibility that permeated my interactions with the various stakeholders. Had I been constrained by methodological dogma, the project would not have taken place, and none of the stakeholders would be any the wiser.

ACKNOWLEDGEMENTS

The author is grateful for the helpful comments of Sabine Hirt, Maris Martinsons, Eugenia Ng and Doug Vogel on earlier versions of this paper, as well as the expert comments from the anonymous reviewers and the two editors of this special issue.

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Appendix - Selected Components of Group 9's Discussion and Action Plan

Items have been selected from a much larger discussion and grouped together for easier assimilation. Item headings, e.g. Intelligence, Enforcement Issues, etc. are original categories generated by the officers.

DISCUSSION

Intelligence

Arrange undercover agent operation to gather first hand information of the manufacturer and the network of the retailing.

Constant sharing with Chinese Counterpart for updated intelligence

What about that? Do you think it is worthwhile to do this?

Without good intelligence, how can you find out the network of retailing and locations of manufacturing factory.

It is a hide and seek game, no matter how much intelligence you get you are unable to eradicate the activity completely.

Enforcement Issues

Who is going to be responsible for the enforcement, which dept?

No body is prepared to take up the job.

Who will command the unit and what will be the manpower requirements?

Set up a multi agency task force (HKPF, Immigration, C&E, Labour depts).

Create a publicity campaign aimed at both the manufacturer and purchaser.

Liaise closely with the manufacturers.

X-Border Liaison taskforce.

Legislation

Enhanced sentencing for importing the copied items

Enhanced sentencing for the manufacture of such

Sentence, (custodial) for the 'Trafficking in' of such articles

Simple possession will be summoned and heavier punishment for second offence.

Impose heavy fines on both buyers and sellers

Prices

Urge the publishers to lower down their products so that more customers will automatically turn to them.

I agree with this point, but this would have to be as a result of consultation with civilian companies given the requirement to maintain present profit margins.

The price of a pirated CD is always much lower than the legitimate one.

The software company requires a large amount of copyright fee which causes the price of legitimate CDs to become much higher than the fake ones. In fact, the customers only care about the price instead of the quality.

Set up a fund to reward those who report and provide information that leads to the successful prosecution of the pirated CD-ROM.

A good idea, but it is a known fact that a number of people who sell copied CDs are in fact young people who are trying to make some money having fallen out of education; this is often a means of employment which leads to the joining of a Triad Society or involvement in Narcotics

Resources

A joint, inter-department task force should be set up in order to centralise all the present resources available, i.e. intelligence gathering, enforcement action, etc. Also, the government shall reflect the problem, adverse effect of the international trade and a rising requirement for the protection of copyright to the China government.

ACTION PLAN

1. Legislation

1.1 -Enhanced sentencing for importing the copied items

Enhanced sentencing for the manufacture of such
Sentence, (custodial) for the 'Trafficking in' of such articles

1.2 impose heavy fine on both the buyers and sellers

I consider it is one of the useful ways of stopping the selling/buying of faked CDs.

Although they can earn a lot of money by selling faked CDs, we have to make them be unable to pay the fine. Should the buyers know the heavy fine, they would not take the risk to buy something which is about \$40- or 50- cheaper.

1.3 Simple possession will be summonsed and heavier punishment for second offence.

As with the dangerous drugs or dutiable goods problem, it is only a minor offence for the buyer. If the customer buys the fake CDs, they will be fined if caught. However, if the customers continuously commit the offence of buying the fake CDs, then imprisonment of the offender will create a deterrent effect. If there is no customer, the fake CD business will also collapse sooner or later.

2. Enforcement

2.1 A joint, inter-department task force should be set up in order to centralise all the present resources available, i.e. intelligence gathering, enforcement action etc. Also, the government shall reflect the problem, adverse effect of the international

trade and a rising requirement for the protection of copyright to the Chinese government.

Funding shall be made available from the Government for the establishment of a joint agency task force consisting of elements from C&E, HKPF, Labour Dept, Immigration, TELA and other agencies as they are required. This unit shall pool information and resources in respect of manpower and will be commanded by an SSP from the HKPF and policy will be formed by the unit. A dept within this Dept will also be responsible for x-border liaison

2.2 X-Border Liaison taskforce

The task force should comprise police, C&E, Immigration, PSB, government's representative and the publisher. Meetings should be held regularly to work out the charter, its objective, mission and operations of the task force.

Notes:

TELA - Television and Entertainment Licensing Authority

C&E - Customs & Excise Dept

SSP - Senior Superintendent

PSB - Public Security Bureau (China's Police Dept)

Biography

Robert Davison is an Assistant Professor of Information Systems at the City

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His current research involves an examination of the impact of group support systems on group decision making, learning and communication, particularly in cross-cultural contexts, and informed by interpretive research methods. He is co-page manager for the Professional Ethics section of ISWORLD. His previous work has been published in Information and Management, Decision Support Systems and the Information Systems Journal.